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## Amphorae and Coarse Ware Fabrics of Motya: Evidences for Local Production and Export\*

### Introduction

The amphorae production of the small island of Motya certainly ranks amongst the most-widely studied series of the Phoenician-Punic Mediterranean.<sup>1</sup> Its morphological repertoire has been outlined in detail by P. Toti<sup>2</sup> by the study of the materials from area A, while the archaeometric feature of local amphorae fabrics has been exhaustively studied by R. Alaimo and team.<sup>3</sup>

Based on these well-defined evidences for a local production, the present research focuses on the identification of amphorae from Motya documented outside the island (fig. 1). For this purpose, about 75 samples from Motya itself (areas A, E, M<sup>4</sup> and K<sup>5</sup>), Himera,<sup>6</sup> Entella,<sup>7</sup>

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\* Special thanks are due to S. Gallagher, University of Warwick, for his critical input during the correction phase of the English manuscript. Furthermore, I thank R. Lampl, University of Vienna, for the photographic documentation of the samples, the realisation of Figs. 1-2, the digitalisation of all amphorae drawings and the composition of Figs. 3-7.

<sup>1</sup> For the most recent overview of this topic, see Bechtold 2012, 1-2 with earlier references.

<sup>2</sup> Toti 2002a.

<sup>3</sup> Alaimo et al. 2005, 707–11, esp. 708; previously Iliopoulos et al. 2002, 355–57, 'impasti A–C'; Alaimo et al. 1998; Alaimo et al. 1997; ultimately Iliopoulos et al. 2009, 159, table 1. For previous, macroscopic observations on the presumably local fabrics of Motya, see Docter 1997, 218; Ramon 1995, 261; Spanò Giammellaro 2000, 303.

<sup>4</sup> I am indebted to G. Montana (Università degli Studi di Palermo) for allowing me to include eight already published samples (see Iliopoulos et al. 2002, 355-7) within the framework of the present research which served as initial reference points, already characterised by archaeometric analyses. The samples from Motya have been assigned the FACEM identification number 'M 185/1'.

<sup>5</sup> I thank G. Falsone (Università degli Studi di Palermo) for having essentially contributed to this research by sending six samples of local coarse wares and amphorae yielded by his excavations in areas K and M. Particularly interesting is sample M 185/21 (fig. 2,5-6) taken from an unfired amphora found in a pottery workshop of area K, which has been destroyed in 397 B.C.E. The samples from Motya have been assigned the FACEM identification number 'M 185/1'.

<sup>6</sup> I am very indebted to S. Vassallo (Soprintendenza BB.CC.AA. di Palermo) for the permission to study and sample the whole set of Punic amphorae yielded by the necropolis of Himera which will be published in Bechtold and Vassallo (in preparation). For the first identification of amphorae from Motya at Himera see Montana et al. 2006. The samples from Himera have been assigned the FACEM identification number 'M 179/1'.

<sup>7</sup> I thank M. Quartararo (Pisa) and A. Corretti (Scuola Normale Superiore di Pisa) for allowing me the possibility to consider, within the framework of the present research, samples of five amphorae from Motya from the settlement excavations of the Scuola Normale Superiore di Pisa at Entella and already characterised by archaeometric analysis (Montana et al. 2015; Quartararo 2012). For an overview of the assemblage of the Punic amphorae from Entella see also Quartararo 2015a. The samples from Entella have been assigned the FACEM identification number 'M 187/1'.

Selinus,<sup>8</sup> Segesta,<sup>9</sup> Lilybaion,<sup>10</sup> Carthage,<sup>11</sup> Cossyra (Pantelleria),<sup>12</sup> and Melite (Malta)<sup>13</sup> have been studied using binocular microscopy and digital photos of freshly broken surfaces (at x8, x16, and x25 magnification). About 30 items selected out of this assemblage have undergone archaeometric analysis.<sup>14</sup> As a result, in ch. 4-5 we have outlined a preliminary distribution pattern of this class through the south-central Mediterranean from the late 7th to the 4th century B.C.E. For the sake of clarity, in the following we will briefly report the basic results of previous archaeometric (ch. 1) and archaeological (ch. 2-3) research on amphora production at Motya.

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<sup>8</sup> Excavations (2006-2012 campaigns) of the New York University, Institute of Fine Arts, under the direction of C. Marconi, to whom I am very indebted for permission to study the Hellenistic finds. I am also indebted to C. Greco, then director of the Parco Archeologico di Selinunte e Cave di Cusa 'Vincenzo Tusa', for generous sampling permission. The amphorae samples from Selinus have been assigned the FACEM site identification number 'M 154'.

<sup>9</sup> I am indebted to M. de Cesare (Università degli Studi di Palermo) and M. Quartararo (Pisa) for their generous permission to consider for the present research four samples referring to Punic amphorae from the Grotta Vanella dump. The whole assemblage of Grotta Vanella is currently being prepared for publication by M. de Cesare. For an overview of the Punic amphorae from Grotta Vanella see Quartararo 2015b. The samples from Segesta have been assigned the FACEM identification number 'M 165'.

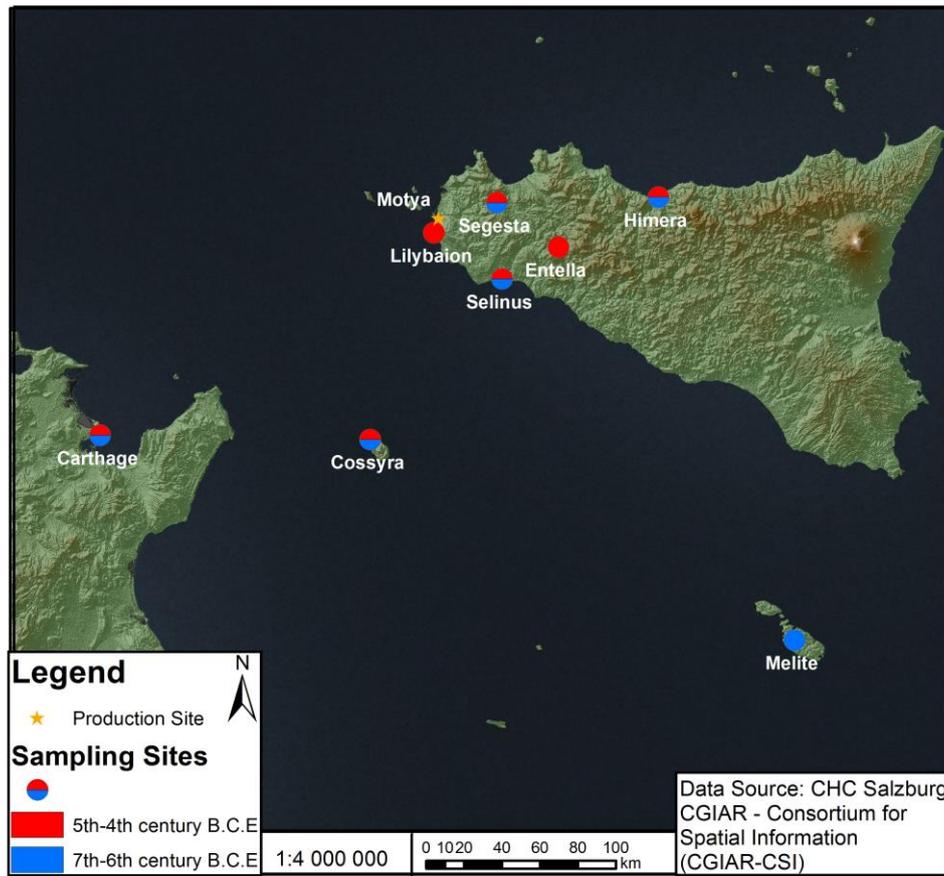
<sup>10</sup> I am indebted to M.L. Famà, director of the 'Museo archeologico regionale Lilibeo Marsala – Baglio Anselmi' for the authorisation to sample one amphora from Motya found in the Punic necropolis and already published in Bechtold 1999. It has been assigned the FACEM site identification number 'M 169'.

<sup>11</sup> I thank the directors of the excavations at the Bir Messaouda site at Carthage (2002-2005 campaigns) R.F. Docter (Ghent University) and F. Chelbi (then Institut National du Patrimoine) for allowing me to consider within the framework of this paper two samples to which have been assigned the FACEM site identification numbers 'M 92'. For the earlier identification at Carthage of Archaic amphorae presumably from Motya see Docter 2007, 651-2.

<sup>12</sup> I thank M. Almonte (Direzione Generale delle Antichità a Roma), responsible for the Cossyra survey, Th. Schäfer (Universität Tübingen) and M. Osanna (then Scuola di Specializzazione di Matera), co-directors of the excavations on the acropolis of S. Teresa (2000-2011 campaigns), for the liberty to study selected materials yielded by their research. Furthermore, I owe my thanks to the authorities of the Soprintendenza BB.CC.AA. di Trapani for granting sampling permission. All the amphorae samples from Pantelleria have been assigned the FACEM site identification number 'M 119'.

<sup>13</sup> From the Roman villa site at Żejtun. I am indebted to N.C. Vella and A. Bonanno, directors of these excavations of the Department of Classics and Archaeology of the University of Malta. The ceramic materials are currently studied by the author. The imported amphorae samples from Malta have been assigned the FACEM site identification number 'M 105'.

<sup>14</sup> G. Montana and L. Randazzo (both Università degli Studi di Palermo), in preparation. Laboratory methodologies applied in this study include thin-section petrography and chemical analyses (combination of Lithium Metaborate/Tetraborate fusion – ICP and ICP/MS).



**Fig. 1. The sampling sites yielding amphorae from Motya.** Fragment chronology as follows: Blue 7th-6th century B.C.E. Red 5th-4th century B.C.E.

## 1. Archaeometric research and provenance of raw materials

The archaeometric aspects of the local fabrics have been outlined by R. Alaimo and team, based on petrographic and chemical analyses of 47 amphorae samples from Motya and Birgi (see note 3). 'The ceramic artefacts produced at Motya resulted characterised by a porous and quite coarse paste. The sandy temper has a packing mainly ranging between 10 and 20%, with minor exceptions (...). These sand inclusions are heterogeneously distributed, poorly sorted and, for the most of the artefacts, a distinct bi-modality can be pointed out, with a clear prevalence of medium (0.25–0.5 mm) and very fine (0.125–0.06 mm) size fractions. They are predominantly constituted of subrounded and/or subangular carbonatic lithoclasts (...) bioclasts (...) rounded and subrounded monocrystalline quartz. Chert, quartzarenite fragments, polycrystalline quartz and feldspars are also present, even if in smaller quantities. This composition can be appreciated in the artefacts not exceeding 850° C in firing temperature, which are still preserving, at least partially, the carbonate component of the temper. The samples fired at higher temperatures as well as the over-fired fragments show,

as expected, only the silicate component accompanied by secondary firing minerals, such as gehlenite and calcium pyroxene, which, were determined only through X-rays diffraction analysis. The sherds that underwent a higher firing temperature exhibit an optically isotropic paste with numerous firing macro-pores, often of vesicular form and irregular pores that represent casts of decomposed carbonate fragments.<sup>15</sup> Overall, the Motyan fabrics reveal a quite heterogeneously distributed sand temper, in addition to a high frequency of carbonatic component, which represents the most important and distinctive feature of the pottery produced on the island.<sup>16</sup> Finally, a coarser Archaic fabric (sand temper 0.25–0.8 mm) has been distinguished from a finer fabric (sand temper 0.125–0.25 mm), produced after the 5th century B.C.E.<sup>17</sup> This particular aspect has been confirmed by our microscopic analysis (see below, Schmidt), which differentiates the coarser Archaic fabric MOT-A-1 (fig. 2,1) from the more recent MOT-A-2 (fig. 2,2), which was however, already used in amphorae production of the 5th century B.C.E. (see below, ch. 4). The raw materials used for the local pottery were almost certainly extracted in alluvial deposits nearby the old fan of the Birgi river, situated on the opposite side of the island, which must have been the major clay-source exploited by the potters of Motya.<sup>18</sup>

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<sup>15</sup> Alaimo et al. 2005, 708.

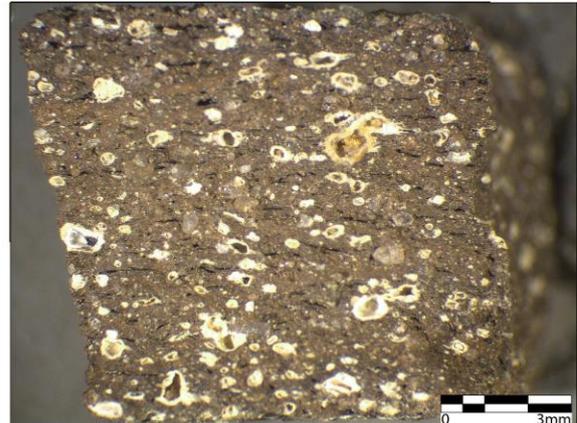
<sup>16</sup> Alaimo et al. 2005, 711.

<sup>17</sup> Iliopoulos et al. 2009, 159–60, figs. 2c–d.

<sup>18</sup> Alaimo et al. 2005, 707; Alaimo et al. 1997, 324.



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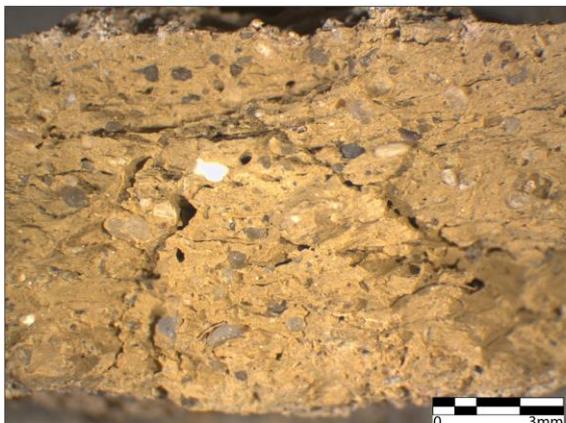
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**Fig. 2. Fabrics from Motya (at x8 magnification).** 1. MOT-A-1 (M 179/8). 2. MOT-A-2 (M 185/17). 3. MOT-C-1 (M 187/28). 4. MOT-C-2 (M 185/22). 5.-6. Unfired amphora of Toti's T18 (M 185/21: excavation 1994 in zone K62.59, locus 6222, at x8, x25 magnification).

## 2. Industrial areas

Inside the city of Motya, ceramic kilns have been unearthed in the areas 'K' and 'K EST' (kilns 1–5), situated in a peripheral position at the North of the island.<sup>19</sup> A sample of one still unfired amphora of Toti's T 18 from the destruction level of 397 B.C.E., unearthed in a potter's workshop excavated in this zone, has been included in the present study (fig. 2,5-6). Two more kilns, in use from the Archaic period until the fourth century B.C.E., have been found at the 'Luogo di arsione' located south of the Archaic necropolis.<sup>20</sup> A second industrial area is situated on the north-eastern coast, outside the city wall, just between the eastern tower and the northern gate (kiln 6)<sup>21</sup> and inside 'Porta Nord' (kiln M58). The latter of these was active during the second half of the fourth to the early third century B.C.E. at least. It produced amphorae of Ramon's T-4.2.1.4/1.7.<sup>22</sup>

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<sup>19</sup> Excavations undertaken by a team of the *Cattedra di Archeologia fenicio-punica dell'Università di Palermo*. For full references see Spanò Giammellaro 2002, 546–7, notes 6, 14, pl. II for a plan of the whole area. Furthermore, see Falsone's monographic paper on the kilns of Motya (Falsone 1981). On the basis of the materials edited by A. Spanò Giammellaro (Spanò Giammellaro 2000), the industrial area K has been in use from the Archaic period to the early fourth century B.C.E. According to M.L. Famà (Famà 2009, 271) the earliest phase of the industrial area located at the northern coast dates to the early seventh century B.C.E.

<sup>20</sup> Spanò Giammellaro 2002, 549–50 with earlier references at notes 22–5.

<sup>21</sup> See Falsone 1981, fig. 1; Toti 2002b, 555, note 2 with full references.

<sup>22</sup> Toti 2002b, 555, 565.

### 3. Amphorae fabrics and morphological repertoire: evidences from Motya itself<sup>23</sup>

On Motya, amphorae production starts towards the late 8th or the beginning of the 7th century B.C.E. with small sized, bag-shaped vessels of Ramon's T-3.1.1.1/2 / Toti's T1 (fig. 3,1), followed by the already ovoid type Ramon T-2.1.1.1 / Toti T2 (fig. 3,2). Later in the 7th and at the beginning of the 6th century B.C.E., this shape evolves to become the more elongated type Ramon T-2.1.1.2 / Toti's T3 (fig. 3,3). More or less contemporary to these are the carinated vessels of Ramon's T-13.2.1.2 (fig. 3,6). The amphorae issue of the 6th century BE is primarily characterised by the documentation of already cylindrical shaped vessels of Ramon's T-1.4.2.1 / Toti's T7 (fig. 3,5). Ramon's T-1.3.2.1 / Toti's T4 (fig. 3,4) is also found, to a lesser extent.

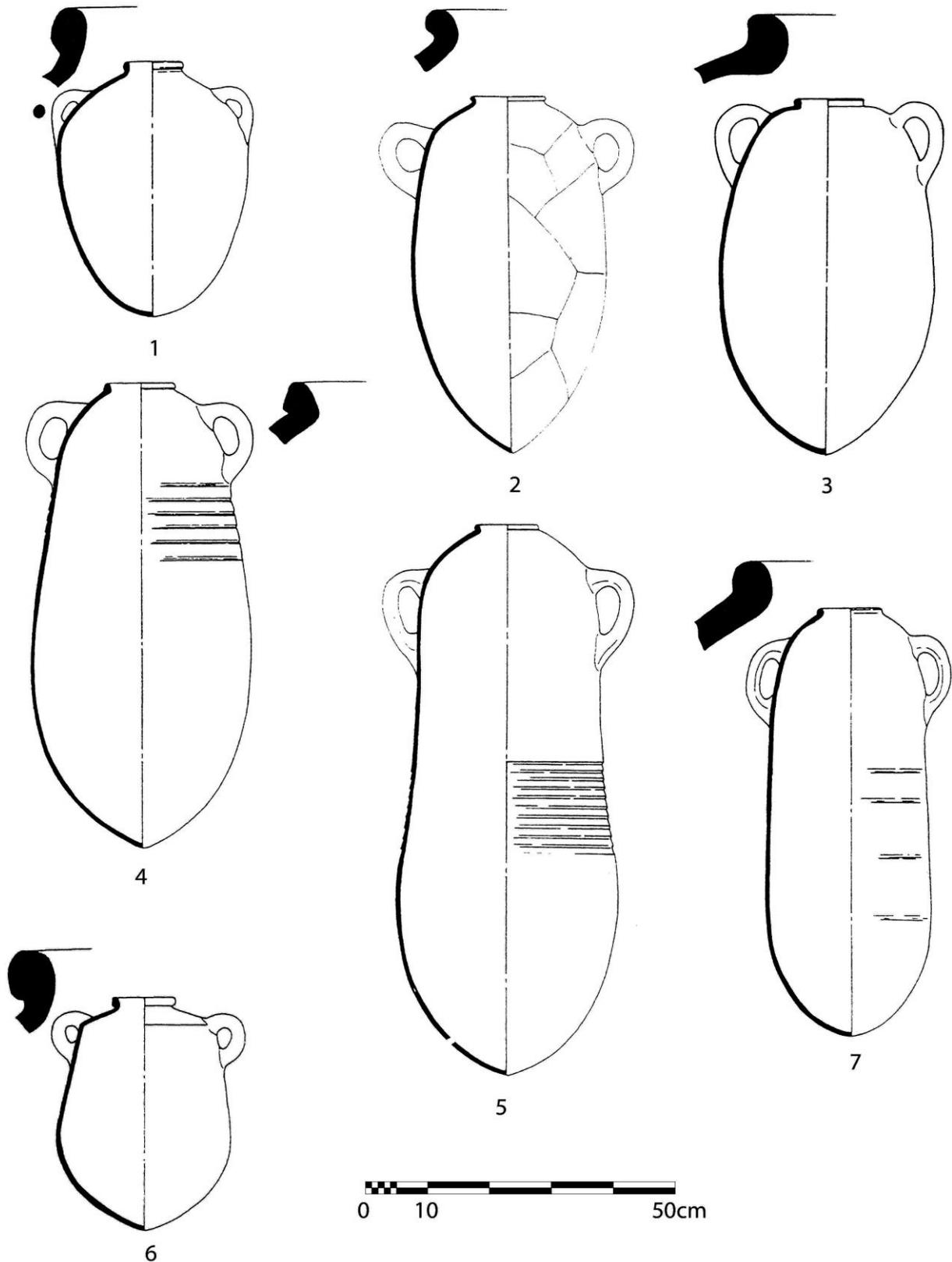
The late Archaic type Ramon T-1.4.3.1 / Toti's T8 (fig. 3,7) leads to the 5th century B.C.E. types Ramon T-1.4.4.1 / Toti T9 (fig. 4,1) with scarcely distinguished rims and, exceptionally, Ramon T-1.3.2.3 / Toti T12 (fig. 4,2), an imitation of the production of Ebusus? Towards the final decades of the 5th century B.C.E., we find Ramon's T-4.1.1.3 / Toti's T14 (fig. 4,3), T-4.2.1.1 / Toti's T15 (fig. 4,4) and, sporadically, T-1.4.5.1 / Toti's T13 (for the type see fig. 7,4), an imitation of the series of Solus/Panormos.

The latest, late 5th and 4th century B.C.E. amphorae series of the island is characterised by very elongated, cylindrical vessels of Ramon's T-4.2.1.7 / Toti's T16 (fig. 4,5), T-4.2.1.6 / Toti's T17 (fig. 4,6), T-4.2.1.2 / Toti's T19 (fig. 4,7)<sup>24</sup> and most of all by Ramon's T-4.2.2.1/4.1.1.2/4.2.1.4 / Toti's T18 (fig. 4,8)<sup>25</sup>.

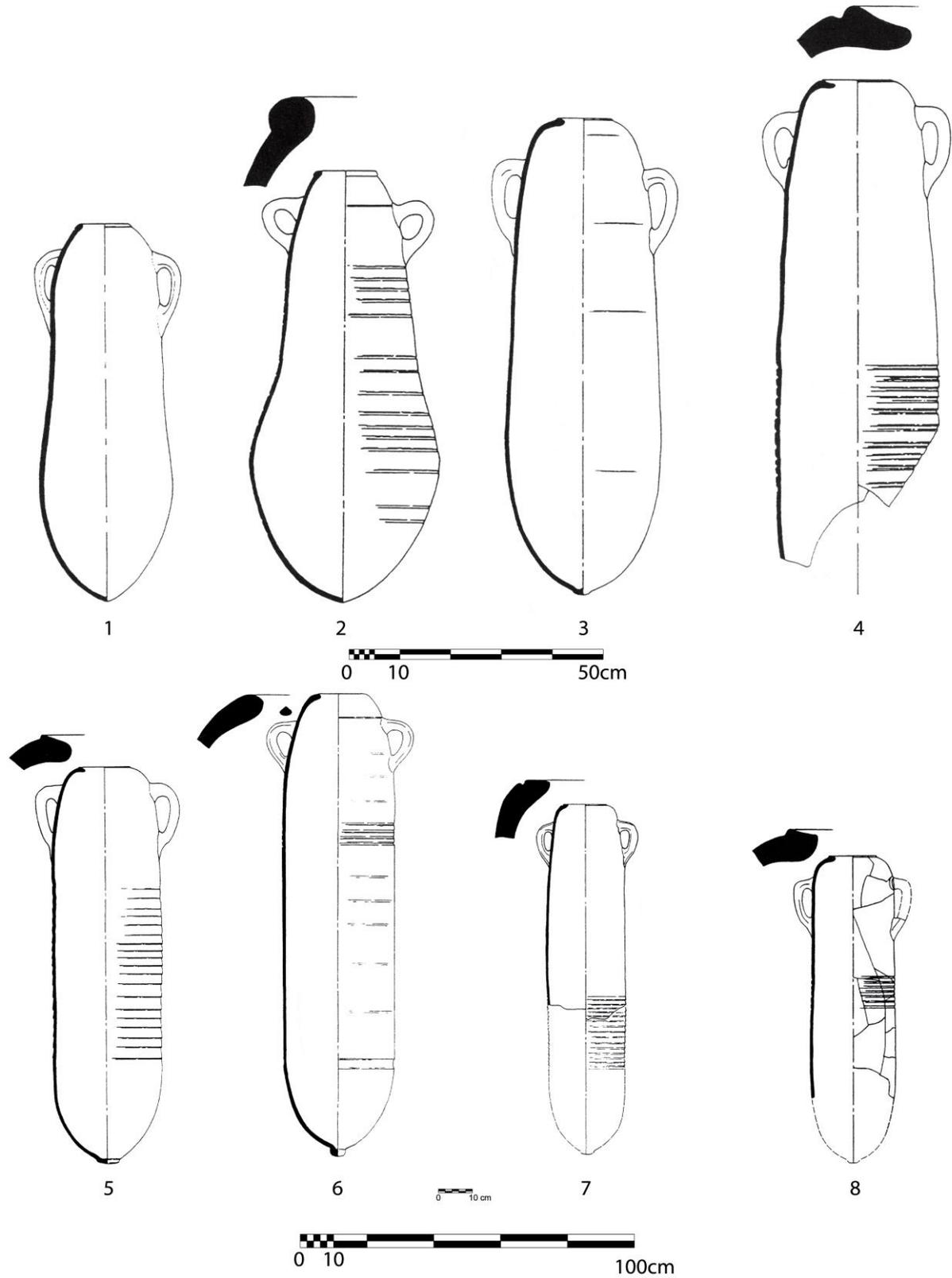
<sup>23</sup> The following ch. re-assumes the data exposed in Bechtold 2012, 1-2, pls. 1-2 with complete references.

<sup>24</sup> For one item from Motya see FACEM – <http://facem.at/m-185-20>.

<sup>25</sup> For two items from Motya see FACEM – <http://facem.at/m-185-17>. FACEM – <http://facem.at/m-185-18>.



**Fig. 3. The amphorae repertoire of Motya (7th-6th century B.C.E.):** 1. Ramon T-3.1.1.1/2 / Toti T1  
 2. Ramon T-2.1.1.1 / Toti T2 3. T-2.1.1.2 / Toti T3 4. Ramon T-1.3.2.1 / Toti T4 5. Ramon T-1.4.2.1 / Toti T7  
 6. Ramon T-13.2.1.2. 7. Ramon T-1.4.3.1 / Toti T8.



**Fig. 4. The amphorae repertoire of Motya (5th-4th century B.C.E.):** 1. Ramon T-1.4.4.1 / Toti T9  
 2. Ramon T-1.3.2.3 / Toti T12 3. Ramon T-4.1.1.3 / Toti T14. 4. T-4.2.1.1 / Toti T15 5. Ramon T-4.2.1.7 / Toti T16  
 6. T-4.2.1.6 / Toti T17 7. T-4.2.1.2 / Toti T19 8. Ramon T-4.2.2.1/4.1.1.2/4.2.1.4 / Toti T18.

#### 4. First evidences for coarse ware fabrics

Within the present research focused on amphorae production, the identification of coarse ware fabrics served only to confirm the fabric features distinguished for the transport vessels. To this end, we analysed eleven fragments of presumably local fabric from Motya itself (area K, from early 4th century B.C.E. contexts), Selinus and Entella (in both cases from 4th century B.C.E. deposits). Four items from Entella (M 187/28.29.30.37) have undergone archaeometric analysis (see note 14) which ascertained the compatibility of this small sample set with its provenance from the area of Motya. No attention has yet been paid to the morphological repertoire<sup>26</sup> represented by the selected coarse ware items. Among the analysed assemblage, we identified a larger group **MOT-C-1** (fig. 2,3, see below, Schmidt) with obvious analogies to the 5th-4th century B.C.E. production MOT-A-2 (see below, ch. 5). A smaller one, constituted by two samples from Motya, forms fabric **MOT-C-2** (fig. 2,4) which differs from MOT-C-1 due to its lower percentage of pseudomorphoses.

#### 5. Amphorae fabrics and morphological repertoire: evidences from other sites

As a result of the present research we can now affirm that the Archaic fabric **MOT-A-1** (see above, ch. 1, fig. 2,1 and below, Schmidt), already identified by Alaimo and team (see above, ch. 1), is regularly documented on regional and extra-regional scale from the advanced second half of the 7th to the early 5th century B.C.E. At Carthage<sup>27</sup> and on Ischia<sup>28</sup> amphorae from Motya might already occur in contexts of the first quarter or first half of the 7th century B.C.E. In full harmony with these earlier dating and highly important in this view is the recent identification of a Ramon's T-3.1.1.1/2 / Toti's T1 (fig. 5,1) in MOT-A-1 on the acropolis of Selinus.<sup>29</sup>

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<sup>26</sup> The best overview of Motya's coarse ware series can still be found in Vecchio 2002. For the local production of the 4th century B.C.E., see specifically Toti 2002b.

<sup>27</sup> According to Docter 2007, 617, fig. 334. Two undiagnostic fragments 'from Motya or western Sicily', from deposits of phase IIIa (700-675 B.C.E.).

<sup>28</sup> We have to remind, however, that according to Bonazzi and Durando amphorae of the earliest Motyan shape (Ramon's T-3.1.1.2 / Toti's 1) of the first half of the 7th century B.C.E. have been found on Ischia (Bonazzi and Durando 2000, 1264-7, from graves 342 and 350).

<sup>29</sup> FACEM – <http://facem.at/m-154-63> (residual find from an early Hellenistic deposit excavated in the area of temple B).

However, in general, the earliest exports of the island's series can be identified with Ramon's T-2.1.1.2 / Toti's T3, attested in the necropolis of Himera (fig. 5,2),<sup>30</sup> in the suburban territory,<sup>31</sup> on the acropolis<sup>32</sup> of Cossyra (Pantelleria), on the acropolis of Selinus,<sup>33</sup> at Segesta (Grotta Vanella dump)<sup>34</sup> and apparently also in the Archaic settlement of Carthage.<sup>35</sup> One more item of Ramon's T-2.1.1.2/13.2.1.2 from Himera (fig. 5,3)<sup>36</sup> might stem from Motya.<sup>37</sup> Finally, to these early Archaic assemblages belongs a carinated vessel of Ramon's T-13.2.2.1 found at Himera (fig. 5,4).<sup>38</sup>

A very similar distribution pattern can be assumed for the following 6th century B.C.E., when we primarily find Ramon's T-1.4.2.1 / Toti's T7 attested in the Greek cemeteries of Himera (fig. 5,5),<sup>39</sup> at Selinus<sup>40</sup> and in the suburban territory of Pantelleria.<sup>41</sup> Two single items refer to Ramon's T-1.3.2.1 (fig. 6,1)<sup>42</sup> and Ramon's T-1.2.1.1 (fig. 6,2).<sup>43</sup>

The late 6th to first half of the 5th century B.C.E. issue of MOT-A-1 is documented by Ramon's T-1.4.3.1 / Toti's T8 (from Pantelleria<sup>44</sup>, for the type see fig. 3,7), while the latest appendix of this production is attested at Himera and on Pantelleria by three 5th century

<sup>30</sup> Bechtold and Vassallo (in preparation), all from the eastern necropolis: cat. 44 (FACEM – <http://facem.at/m-179-20>), cat. 43 (not sampled, but analysed by G. Montana), cat. 42, exposed in the *Antiquarium of Himera* and for this reason not sampled within the framework of the present project, belongs to the same shape and might well, according to the excavator S. Vassallo, be of Motyan origin (Vassallo 1999, 364-6).

<sup>31</sup> M 119/47 (published in Bechtold 2013, 477, cat. 64, pl. 30). M 119/100 (published in Bechtold 2013, 476-77, cat. 63, pls. 30, 90,7). Highly interesting in this regard is also the presence, in a closed deposit unearthed in 'saggio VIII' and dated between the second half of the 7th and the beginning of the 6th century B.C.E., of two undiagnostic, unpublished body fragments, probably belonging to the same vessel and now attributed to MOT-A-1 (PN 07 VIII 2453-10. PN 07 VIII 2449-10). For the context see Bechtold 2014.

<sup>32</sup> M 119/259 (unpublished), from a sealed deposit dating to the mid- second half of the 6th century B.C.E. (PN 14 ACR V/XVI, 6911-2).

<sup>33</sup> FACEM – <http://facem.at/m-154-19>.

<sup>34</sup> M 165/57, see Quartararo 2015b.

<sup>35</sup> Docter 2007, 218, fig. 224. This item has not be re-studied within the framework of the present research.

<sup>36</sup> Bechtold and Vassallo (in preparation), cat. 46 (late 7th-first half of the 6th century B.C.E.) exposed in the *Antiquarium of Himera* and for this reason not sampled within the framework of the present project. For the possible Motyan origin of this item, see Vassallo 1999, 364-6.

<sup>37</sup> A production of Ramon's T-13.2.1.2/13.2.2.1 on Motya has already been hypothesised by R.F. Docter, see Docter 1997, 162, tab. 41C.

<sup>38</sup> Bechtold and Vassallo (in preparation), cat. 45, see FACEM – <http://facem.at/m-179-42>. The fabric of this earlier 6th century B.C.E. vessel shows exceptionally already the later fabric MOT-A-2.

<sup>39</sup> Bechtold and Vassallo (in preparation), cat. 48 (not sampled, but analysed by G. Montana), cat. 49.

<sup>40</sup> M 154/71, rim fragment from a grave unearthed in the Galiera Bagliazzo necropolis and previously edited in Montana et al 2006.

<sup>41</sup> FACEM – <http://facem.at/m-119-45> (published in Bechtold 2013, 476, cat. 62, pls. 30, 90,6). M 119/44 (published in Bechtold 2013, 477, cat. 65, pl. 30).

<sup>42</sup> FACEM – <http://facem.at/m-179-9> (Bechtold and Vassallo (in preparation), cat. 47).

<sup>43</sup> M 119/252 (unpublished), from a sealed deposit excavated on the acropolis of Pantelleria, dating to the mid-second half of the 6th century B.C.E. (PN 14 ACR V/XVI, 6911-3).

<sup>44</sup> M 119/46 (published in Bechtold 2013, 477, cat. 66, pl. 30). M 119/102. M 119/103 (both still unpublished, from the acropolis excavations, campaign 2011, from a sealed context dating to the 5th century B.C.E. (US 6095).

B.C.E. amphorae of Ramon's T-1.4.2.2 / Toti's T8 (fig. 6,3-4).<sup>45</sup> Finally, highly important is the very recent identification of an undiagnostic body fragment in fabric MOT-A-1 among the finds from the Roman villa at Żejtun on Malta<sup>46</sup>, which also hints at the arrival of this class in the Maltese archipelago.

At some point within the first half of the 5th century B.C.E., the finer fabric **MOT-A-2** makes its appearance (see above, ch. 1, fig. 2,2 and below, Schmidt): at Himera it is documented by three more items of Ramon's T-1.4.2.2<sup>47</sup> (for the type see fig. 6,3-4) and Ramon's T-1.4.4.1 / Toti's T9 (fig. 7,1)<sup>48</sup> and, towards the last decade of the century, by five items of Ramon's T-4.2.2.1/4.1.1.2 / Toti's T18 (fig. 7,2)<sup>49</sup> and Ramon's T-4.2.1.2 / Toti's T19 (fig. 7,3)<sup>50</sup> which attest to the production of these types before 409 B.C.E. Two more items refer to local imitations of the Soluntinian/Palermitanian type T-1.4.5.1 / Toti T13 (fig. 7,4).<sup>51</sup> Moreover, Pantelleria continues to receive amphorae from Motya, documented by two items of Toti's T18 (for the type see fig. 7,2) and three undiagnostic fragments.<sup>52</sup> A single fragment of Toti's T18 (for the type see fig. 7,2) has been identified among the Grotta Vanella dump at Segesta.<sup>53</sup> Also of great interest is the documentation of two items of Ramon's T-4.2.1.254 (for the type see fig. 7,3) and three late 5th to first half of the 4th century B.C.E. rims of Ramon's T-2.2.1.2/1 (fig. 7,5)<sup>54</sup> at Entella. Two more fragments of Ramon's T-2.2.1.1, not yet documented among the series of Motya, stem from the acropolis of Selinus (fig. 4,6)<sup>56</sup> and from the Pantelleria survey.<sup>57</sup> One item from Carthage is of Ramon's T-4.2.1.5,<sup>58</sup> so far also unknown among Motya's production. Finally, two undiagnostic samples of fabric MOT-A-2 have been found in the necropolis of Lilybaion<sup>59</sup> and in the settlement of Carthage.<sup>60</sup>

<sup>45</sup> Bechtold and Vassallo (in preparation), cat. 50 (FACEM – <http://facem.at/m-179-34>), cat. 52 (FACEM – <http://facem.at/m-179-101>). M 119/236 (unpublished), from Pantelleria, acropolis excavations, residual in an Early Imperial level: PN 09 ACR II, 4311-115.

<sup>46</sup> M 105/52 (unpublished), residual find from an Early Imperial context (ZTN06/1513).

<sup>47</sup> Bechtold and Vassallo (in preparation), cat. 51 (FACEM – <http://facem.at/m-179-47>).

<sup>48</sup> Bechtold and Vassallo (in preparation), cat. 53-55.

<sup>49</sup> From a destruction level of 409 B.C.E. excavated in the settlement: HA 339. HA 427, published in Vassallo 1999, 371, fig. 20, n. 68; Vassallo 2005, 130, fig. 242.

<sup>50</sup> Bechtold and Vassallo (in preparation), cat. 59 (FACEM – <http://facem.at/m-179-10>), cat. 60.

<sup>51</sup> Bechtold and Vassallo (in preparation), cat. 57 (FACEM – <http://facem.at/m-179-40>), cat. 56.

<sup>52</sup> M 119/49 (published Bechtold 2013, 477, cat. 67, pls. 30, 90,8). M 119/241 (from the survey). M 119/48 (from a first half of the 3rd century B.C.E. deposit of the acropolis). M 119/238 (from a first half of the 4th century B.C.E. deposit of the acropolis), all unpublished.

<sup>53</sup> M 165/46, in addition to one more undiagnostic body fragment, see Quartararo 2015b.

<sup>54</sup> M 187/7. M 187/16, see Quartararo 2015a.

<sup>55</sup> FACEM – <http://facem.at/m-187-12>. M 187/27. M 187/22, see Quartararo 2015a. Previously, see Montana et al. 2015, 824, tab. 3, impasto 2, ANF 012, 074, 103.

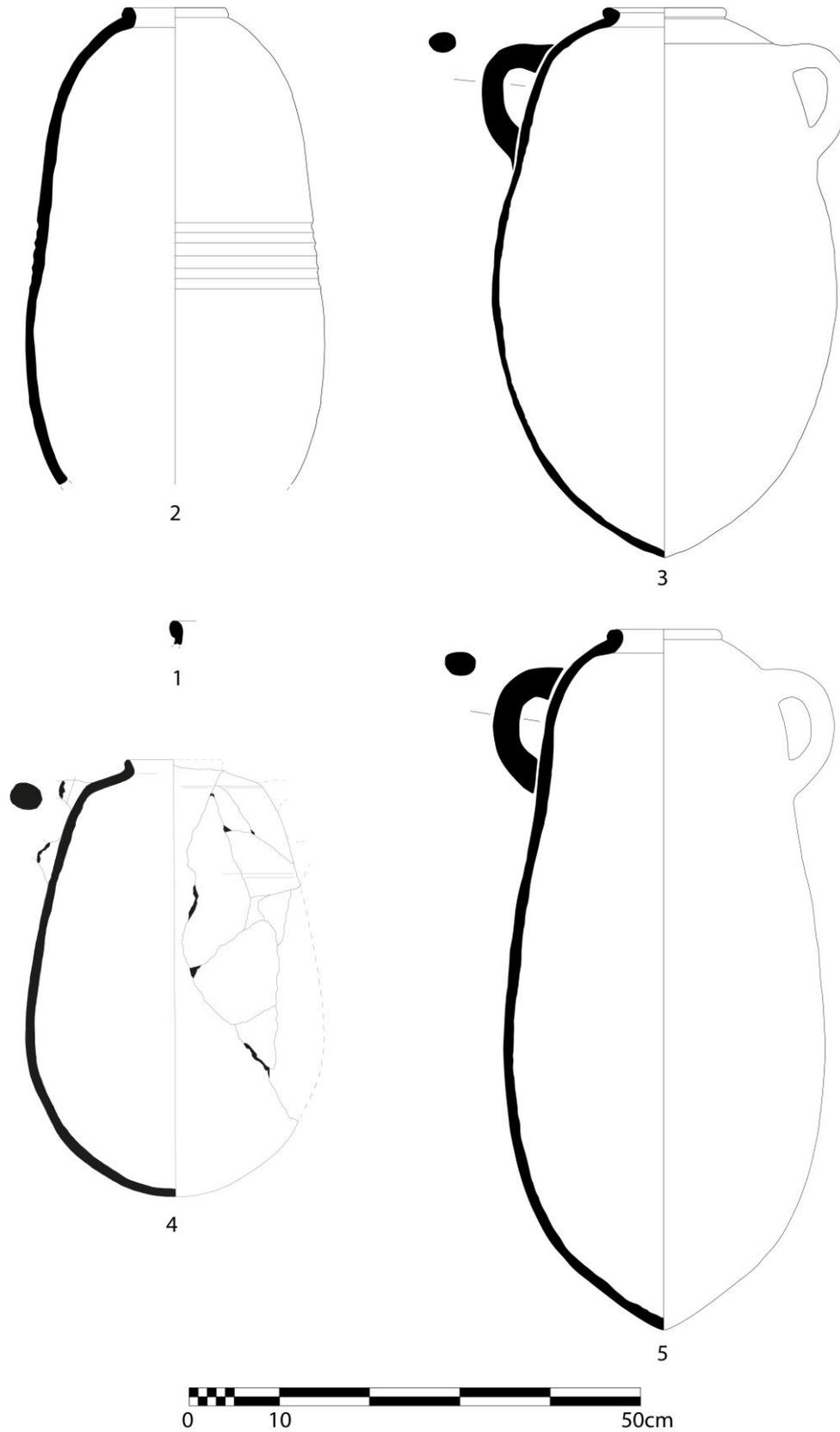
<sup>56</sup> M 154/17, unpublished, from an early Hellenistic context excavated at temple B (saggio E, US 0, P08.501).

<sup>57</sup> M 119/231 (published in Bechtold 2013, 480, cat. 78, here identified as an Archaic Carthaginian amphora).

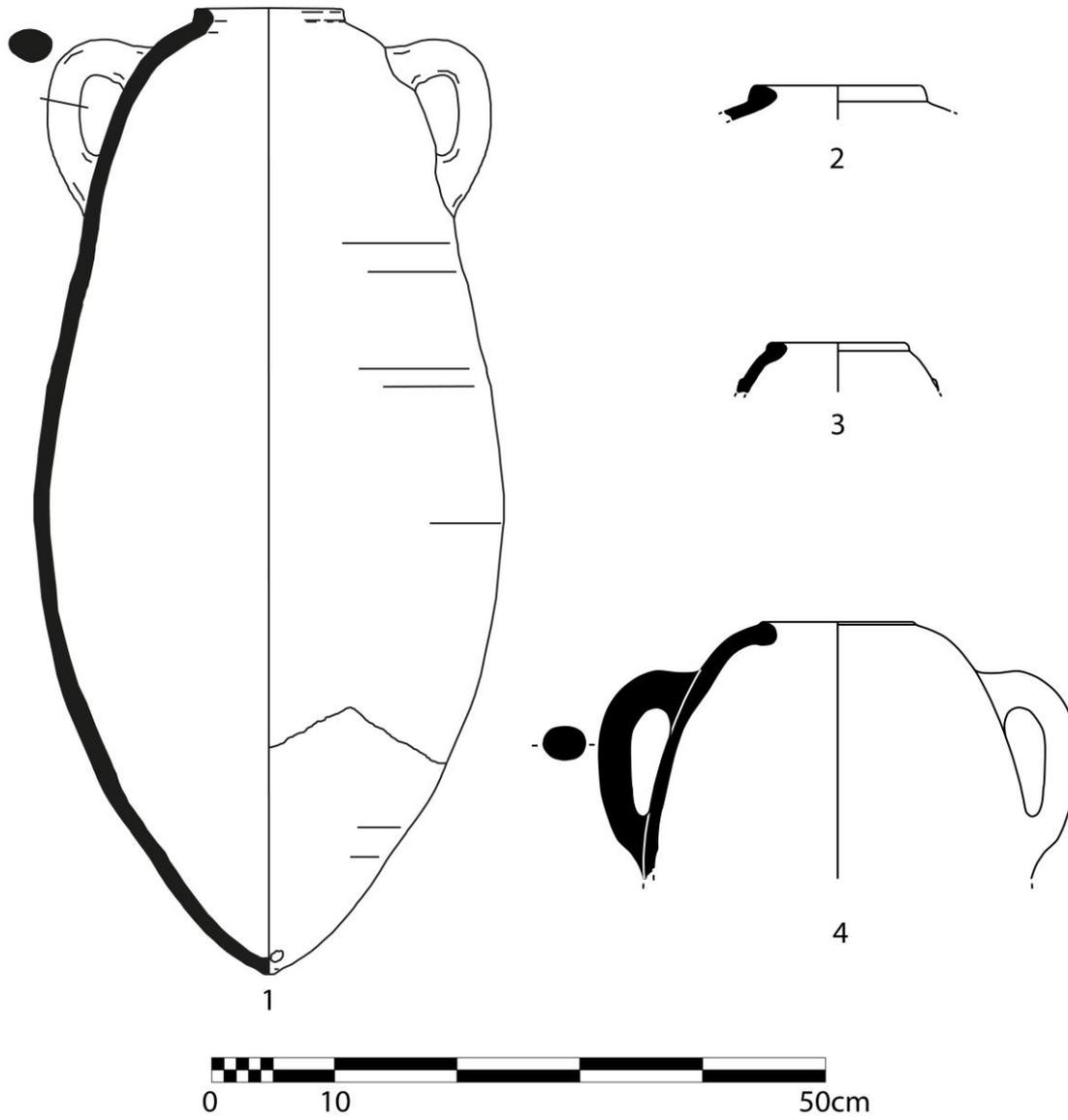
<sup>58</sup> FACEM – <http://facem.at/m-94-7>.

<sup>59</sup> M 169/8 (published in Bechtold 1999, 341, from grave 58-1 of Via Cicerone 1990, undatable).

<sup>60</sup> M 92/24 from a still unpublished, late 6th-early 5th century B.C.E. deposit (BM05/2508).



**Fig. 5 Amphorae from Motya found outside the island (7th-6th century B.C.E.): 1. Ramon T-3.1.1.1/2 / Toti T1. 2. Ramon T-2.1.1.2 / Toti T3 3. Ramon T-2.1.1.2/13.2.1.2 4. Ramon T-13.2.2.1 5. Ramon T-1.4.2.1 / Toti T7**



**Fig. 6. Amphorae from Motya found outside the island (7th-6th century B.C.E.):**  
**1.** Ramon T-1.3.2.1 **2.** Ramon T-1.2.1.1 **3.-4.** Ramon T-1.4.2.2 / Toti T8.

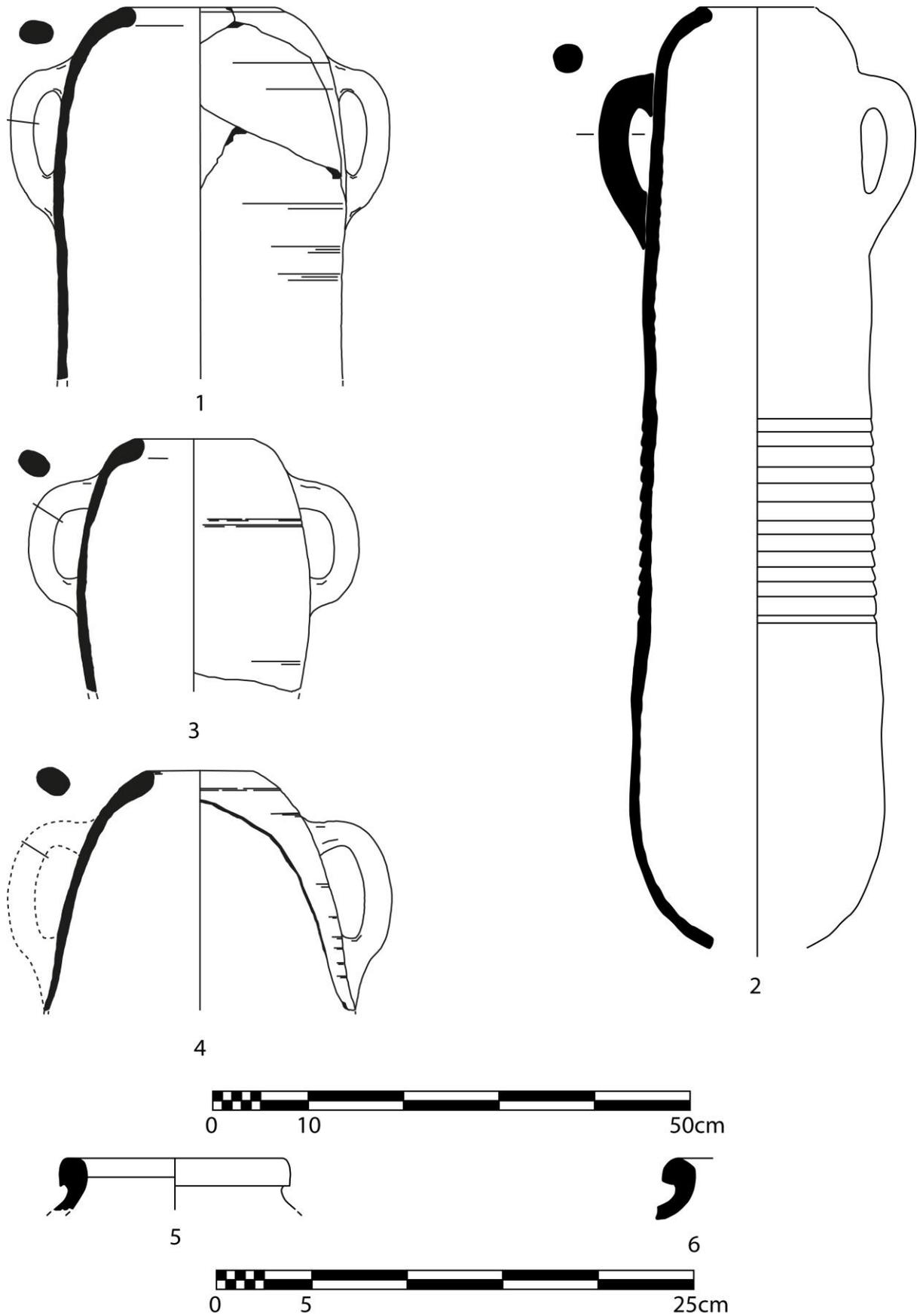


Fig. 7 Amphorae from Motya found outside the island (5th-4th century B.C.E.): 1. Ramon T-1.4.4.1 2. Ramon T-4.2.2.1/4.1.1.2 / Toti T18 3. Ramon T-4.2.1.2 / Toti T19 4. Ramon T-1.4.5.1 / Toti T13 5.-6. Ramon T-2.2.1.2/1.

## 6. Conclusions

### 6.1 Concluding remarks on Motya's amphorae fabrics

Microscopic study of about 75 samples provides reliable information about the diachronic occurrence of the two distinguished fabrics. The very coarse MOT-A-1 characterises the 7th to early 5th B.C.E. series, while from the first half of the 5th century onwards to the 4th century B.C.E. we find the more strongly tempered, finer MOT-A-2, which represents the technical evolution of the local workshops.

### 6.2 Concluding remarks on Motya's amphorae export

No clear evidences are currently available for extra-site documentation of the earliest amphora type from Motya of the late 8th and the first half of the 7th century B.C.E. Instead, from the second half of the 7th to the early 5th century B.C.E. onwards, amphorae from Motya in fabric MOT-A-1 are regularly attested at Carthage and its colony Cossyra, as well as in the major Greek and probably also Elymian towns of western Sicily and apparently also on Malta. Quantitative data are still scarce and heterogeneous: among about 75 second half of the 7th to 6th century B.C.E. enchytrismos graves of the Greek necropolis of Himera which have provided Punic amphorae (N 276)<sup>61</sup>, no less than 14 vessels, that is to say about 19%, have been referred to Motya (fabric MOT-A-1). Consequently, for the Archaic period and especially for the earliest occupation phase of the necropolis of the advanced second half of the 7th century B.C.E., we can state a significant presence of Motyan amphorae in the most western Greek colony of Sicily, which attests for stable and frequent direct contacts between the small island and Himera.<sup>62</sup> The amphora data from Himera harmonise well with the archaeological documentation on Motya itself, where the last quarter of the 7th century B.C.E. has been identified as a period of notable vitality.<sup>63</sup>

By contrast, during phase II (675-525 B.C.E.) of the ceramic periodic system of Pantelleria, transport vessels from Motya represent only about 5%.<sup>64</sup> Their occurrence at Carthage during phase IVb1 (645-550 B.C.E.) appears to be even lower, at about 2%.<sup>65</sup> Conjecturally,

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<sup>61</sup> Bechtold and Vassallo (in preparation).

<sup>62</sup> Highly remarkable in this regard is the fact that out of twenty Archaic samples from Solus which have undergone archaeometric analyses none is of imported fabric (Alaimo et al. 2005, 3).

<sup>63</sup> Di Stefano 2005, 599.

<sup>64</sup> Referred to N 61 amphorae fragments of both Greek and Punic production, see Bechtold 2013, 419, tab. 4.

<sup>65</sup> Referred to N 136 amphorae fragments of Greek, Nuragic and Punic production, see Docter 2007, 617, fig. 334.

we might suspect that Archaic Motya's commercial relations were mainly directed towards western Sicily's Greek colonies.<sup>66</sup>

No doubt seems to exist about a reduction of Motya's exports from the 5th century B.C.E. onwards. In western Sicily, this phenomenon is accompanied by the contemporaneous rise in the occurrence of amphorae from Solus (see Bechtold 2015, ch. 5). At Himera, among c. 170 5th century B.C.E. graves provided by Punic amphorae, only about 10% bear containers from Motya (fabric MOT-A-2).<sup>67</sup> On Pantelleria, the incidence of the class under focus decreases continuously from period III (525-425 B.C.E.)<sup>68</sup> – from c. 3.4% to less than 2% in period IV (425-300 B.C.E.).<sup>69</sup> Highly remarkable in this respect is the documentation at Entella of five late 5th to 4th century B.C.E. amphorae from Motya (see above, ch. 4, notes 54-55), which currently cannot be set in quantitative relation with the whole set of Punic amphorae found at the site.

Finally, it is important to note the absence of Motyan amphorae among the admittedly small assemblages of 4th century B.C.E. Punic vessels yielded by both the stratigraphic excavations at the Northern Gate (N 21) and in the territory (N 12) of Segesta<sup>70</sup>, while two late 5th or first half of the 4th century B.C.E. items have been identified among the Grotta Vanella dump (see above, note 53).

In synthesis, our new amphorae data suggest that, at least at the sites considered in the present study, the occurrence of amphorae from Motya decreases steadily after the late 6th or early 5th century B.C.E. Particularly relevant was Motya's trade relation with Himera, which certainly has to be identified as one of its most important commercial partners. In fact, it seems very likely that many of the fine ware imports of Greek or colonial Greek origin reached Motya through the emporion of Himera (see also above, note 66).

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<sup>66</sup> In this regard, see earlier Bondì 2011, 12-3 (for the Early Archaic period) and 15 for the later Archaic period. Previously Spatafora 2010, 39-40.

<sup>67</sup> Bechtold and Vassallo (in preparation), c. 17 items.

<sup>68</sup> Bechtold 2013, 423, tab. 6 (N 59).

<sup>69</sup> Bechtold 2013, 428, tab. 8 (N 123), the incidence of 2.4% here indicated encompasses also at least one item from the production area of Panormos/Solus.

<sup>70</sup> Bechtold 2008, 542-3, fig. 3.

### 6.3 Hypothesis on the content of the amphorae series produced on Motya

To my knowledge, the only edited archaeological data concerning the hypothetical content of some of the local series refer to store L.238 located on the western side of the 'Casa del sacello domestico'. The collapse of the structure, following its destruction in 397 B.C.E., has yielded about 20 fragmentary amphorae of Toti's T16 (for the type see fig. 4,5) and Toti's T18 (for the type see fig. 7,2). At least one of these is provided by a lid, which shows – according to the authors - that room L.238 served as a storeroom for liquids (wine).<sup>71</sup> Even if in the publication the local fabric of these vessels is not specified, both types represent the typical Motyan production of the late 5th and 4th century B.C.E.<sup>72</sup>

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<sup>71</sup> Nigro 2004, 189-91.

<sup>72</sup> Toti 2002a, 288, 290.

**Table of correspondence for the amphorae illustrated in figs. 3-7.**

| Fig. | FACEM inv.-no. | Site inventory number                          | Published                                                                                                                  |
|------|----------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 3,1  | --             |                                                | From: Ramon 1995, 518, fig. 155,100. Toti 2002, 279, pl. 1                                                                 |
| 3,2  | --             |                                                | From: Ramon 1995, 515, fig. 152,71. Toti 2002, 279, pl. 1                                                                  |
| 3,3  | --             |                                                | From: Ramon 1995, 516, fig. 153,78. Toti 2002, 280, pl. 2                                                                  |
| 3,4  | --             |                                                | From: Ramon 1995, 508, fig. 145,24. Toti 2002, 280, pl. 2                                                                  |
| 3,5  | --             |                                                | From: Ramon 1995, 512, fig. 149,55. Toti 2002, 282, pl. 5                                                                  |
| 3,6  | --             |                                                | From: Ramon 1995, 577, fig. 214,526                                                                                        |
| 3,7  | --             |                                                | From: Ramon 1995, 513, fig. 150,59. Toti 2002, 283, pl. 6                                                                  |
| 4,1  | --             |                                                | From: Ramon 1995, 513, fig. 150,64. Toti 2002, 283, pl. 6                                                                  |
| 4,2  | --             |                                                | From: Ramon 1995, 508, fig. 145,27. Toti 2002, 284, pl. 8                                                                  |
| 4,3  | --             |                                                | From: Ramon 1995, 521, fig. 158,127. Toti 2002, 287, pl. 12                                                                |
| 4,4  | --             |                                                | From: Ramon 1995, 522, fig. 159,135. Toti 2002, 289, pl. 14                                                                |
| 4,5  | --             |                                                | From: Ramon 1995, 524, fig. 161,150. Toti 2002, 289, pl. 14                                                                |
| 4,6  | --             |                                                | From: Ramon 1995, 524, fig. 161,149. Toti 2002, 290, pl. 15                                                                |
| 4,7  | --             |                                                | From: Ramon 1995, 523, fig. 160,141. Toti 2002, 295, pl. 20                                                                |
| 4,8  | --             |                                                | From: Ramon 1995, 525, fig. 162,153                                                                                        |
| 5,1  | M 154/63       | Selinunte, temple B, saggio H, US 3B, P09.95   | FACEM – <a href="http://facem.at/m-154-63">http://facem.at/m-154-63</a>                                                    |
| 5,2  | M 179/20       | Himera, necropolis East “Royal Himera”, RO 315 | FACEM – <a href="http://facem.at/m-179-20">http://facem.at/m-179-20</a><br>Bechtold and Vassallo in preparation, cat. 44   |
| 5,3  | --             | Himera, necropolis East, “RADEO”, RA 35        | Bechtold and Vassallo in preparation, cat. 46                                                                              |
| 5,4  | M 179/42       | Himera, necropolis West, W 955                 | FACEM – <a href="http://facem.at/m-179-42">http://facem.at/m-179-42</a><br>Bechtold and Vassallo (in preparation), cat. 45 |
| 5,5  | --             | Himera, necropolis East “Royal Himera”, RO 592 | Vassallo 1999, 368, n. 64. Bechtold and Vassallo (in preparation), cat. 48                                                 |

| Fig. | FACEM inv.-no. | Site inventory number                                        | Published                                                                                                                       |
|------|----------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 6,1  | M 179/9        | Himera, necropolis East "Royal Himera", RO 1180              | FACEM – <a href="http://facem.at/m-179-9">http://facem.at/m-179-9</a><br>Bechtold and Vassallo (in preparation),<br>cat. 47.    |
| 6,2  | M 119/252      | Pantelleria, acropolis, PN 14 V/XVI, 6911-3                  | unpublished                                                                                                                     |
| 6,3  | M 179/34       | Himera, necropolis West, W 6515                              | FACEM – <a href="http://facem.at/m-179-34">http://facem.at/m-179-34</a><br>Bechtold and Vassallo (in preparation),<br>cat. 50   |
| 6,4  | M 179/101      | Himera, necropolis West, W 9421                              | FACEM – <a href="http://facem.at/m-179-101">http://facem.at/m-179-101</a><br>Bechtold and Vassallo (in preparation),<br>cat. 52 |
| 7,1  | M 179/46       | Himera, necropolis West, W 4975                              | Bechtold and Vassallo (in preparation),<br>cat. 53                                                                              |
| 7,2  | --             | Himera, settlement, HA 399                                   | Vassallo 1999, 371, n. 68                                                                                                       |
| 7,3  | M 179/77       | Himera, necropolis West, W 383                               | Bechtold and Vassallo (in preparation),<br>cat. 60                                                                              |
| 7,4  | M 179/40       | Himera, necropolis West, W 8434                              | FACEM – <a href="http://facem.at/m-179-40">http://facem.at/m-179-40</a><br>Bechtold and Vassallo (in preparation),<br>cat. 57   |
| 7,5  | M 187/12       | Entella, Inv. E. 5593 (ANF 012), SAS 24, trincea 2, US 24703 | FACEM – <a href="http://facem.at/m-187-12">http://facem.at/m-187-12</a><br>Quartararo 2015a                                     |
| 7,6  | M 154/17       | Selinunte, temple B, acropolis, saggio E, US 0, P08.501      | unpublished                                                                                                                     |

KARIN SCHMIDT

## Amphorae and Coarse Ware Fabrics of Motya\*

### Introduction

About 75 samples (see above, Bechtold, introduction) from Motya itself and several other Sicilian sites, as well as from Melite (Malta), Carthage and Cossyra (Pantelleria) have been studied using binocular microscopy. This procedure has led to the distinction of two amphorae fabrics MOT-A-1 and MOT-A-2. Moreover, microscopic analyses undertaken on eleven coarse ware samples have allowed the identification of two more Motyan fabrics (MOT-C-1 and MOT-C-2) which confirm the general feature of the amphorae fabrics. The main characteristic of pottery from Motya is its dense sand temper with a high carbonate component.<sup>1</sup> Looking at freshly broken surfaces, particularly striking is the visibility and high frequency of white and yellowish calcium carbonate particles and pseudomorphoses. Iliopoulos, Alaimo and Montana distinguish three fabrics: 'impasto A' and 'impasto B' are of coarse texture with inclusions sized from 0.06 up to 0.8 mm and from 0.125 to 0.25 mm. 'Impasto C', a fine variant with smaller-sized sandy inclusions (rarely larger than 0.125/0.15 mm), is apparently quite uncommon and has not been identified among the sample set analysed within the framework of the current project.<sup>2</sup> Binocular microscopy (x25) undertaken on the here-selected samples shows that the inclusions of 'impasto A' (MOT-A-1) and 'impasto B' (MOT-A-2) might reach larger sizes (up to 1.0 mm is common, larger dimensions occur sporadically) than the dimensions indicated for the samples of Iliopoulos's team.

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\* Special thanks are due to S. Gallagher, University of Warwick, for his critical input during the correction phase of the English manuscript.

<sup>1</sup> Iliopoulos et al. 2002, 355–6; Alaimo et al. 2005, 707–11. Very recently, a brief description has been provided by Montana et al. 2015, 817: 'Fabric 2 (Fig 3b) is composed mostly (...) of mono and polycrystalline quartz, followed by K-feldspar, plagioclase and chert (...), calcareous microfossils (...) Inclusions were predominantly represented by fine to medium sized sand grains, with approximately 25% packing (area).'

<sup>2</sup> Iliopoulos et al. 2002, 355–7.

## Transport amphorae (MOT-A-1 and MOT-A-2)

### FABRIC DESCRIPTION

#### **MOT-A-1 (M 179/8. 9. 20. 34. 101; M 119/45; M 154/19. 63) Ref. M 179/8**

MOT-A-1 (see above, fig. 2,1) corresponds to the Archaic 'impasto A'.<sup>3</sup> The colour of the matrix is red or orange (often with a grey core), brownish-red, greyish-brown or dark grey to black. The texture is coarse and characterised by a poorly-sorted, but very dense, sand temper with abundant small- and large-sized, spherical-rounded to subangular or angular grains (0.04–1.0 mm; sporadically up to 2.1 mm) of white, yellowish, clear, transparent grey, white and brownish (rarely) colours. The sand composition is mainly distinguished by a high component of white and yellowish limestone fragments (calcium carbonate) and vesicular and especially irregular (vughy and spongy) shaped pseudomorphoses (from 0.04 up to 1.6 mm, in sample M 179/8 up to 2.4 mm). Red or reddish-brown inclusions are infrequent, as well as orange and black particles (iron concretions or others). Orange spots and orange clay crumbs can be present in the grey or black fired areas (e.g. M 179/9. 34; M 119/45). Mica is rare (white, rarely dark), but sometimes the clay shines due to the presence of clear quartz chips. The packing range varies between 10% and 20%.<sup>4</sup> Vughy and channel shaped voids provide a porosity between 7.5% and 12.5%.

#### **MOT-A-2 (M 94/7; M 119/49; M 179/10. 40. 42. 47; M 185/17. 18. 20; M 187/12) Ref. M 185/17**

MOT-A-2 (see above, fig. 2,2) corresponds to the more recent 'impasto B'. Its production begins no earlier than the 5th century B.C.E.<sup>5</sup> MOT-A-2 is finer than MOT-A-1, but is similarly characterised by a poorly-sorted sand temper of the same composition (see above), even if it is more densely packed. The colour of the matrix is red, reddish-brown, brownish-red and dark grey to black. The main point of difference from MOT-A-1 consists in the smaller size of the sand grains, especially among the quartz grains, calcium carbonate and pseudomorphoses (0.04 up to 1.0/1.1 mm, rarely up to 1.8 mm).<sup>6</sup> By consequence, packing (17.5%–25%) is slightly higher, while the porosity is similar to MOT-A-1 (7.5%–12.5%). Again, temper is mostly dominated by spherical and especially irregular (vesicular, spongy, vughy) shaped pseudomorphoses of small and particularly large size,

<sup>3</sup> Iliopoulos et al. 2002, 355–6, figs. 207–208; Alaimo et al. 2005, 707–8.

<sup>4</sup> Iliopoulos et al. 2002, 356: 15%–25%.

<sup>5</sup> Iliopoulos et al. 2002, 356–7, fig. 209; Alaimo et al. 2005, 707–8: >20% is rare.

<sup>6</sup> Iliopoulos et al. 2002, 357: 0.125–0.25 mm.

well visible to the naked eye on freshly broken surfaces (white and yellowish, 0.04–1.8 mm). Rare, generally small, red or reddish-brown and black inclusions are present (especially 0.04–0.2 mm). Orange clay spots occur sporadically within the dark core (M 179/10).

### **Coarse wares (MOT-C-1 and MOT-C-2)**

#### FABRIC DESCRIPTION

#### **MOT-C-1 (M 184/7. 8; M 187/28. 29. 30. 31. 32. 36. 37) Ref. M 187/28**

As with MOT-A-1 and MOT-A-2, MOT-C-1 (see above, fig. 2,3) is also characterised by a poorly-sorted, dense sandy temper with a predominance of calcium carbonate inclusions (riddled with as M 184/7.8 to very frequent or sometimes infrequent: M 187/28). In particular, pseudomorphoses are clearly visible on freshly broken surfaces (M 187/29: white, yellowish white, pale orange, 0.04–1.0 mm). Grains are small- to medium-sized (<0.04–0.8 mm, sporadically >1.0 mm). Some samples (e.g. M 184/7.8) contain smaller-sized pseudomorphoses (up to 0.6 mm). Mica is rare. The matrix is fine to middle-fine and compact with a low frequency of voids. The clay colour is red or orange or grey to black with a reddish core (M 187/29). The packing range varies between 12.5% and 20%, sometimes up to 25% (M 187/29). So far, MOT-C-1 has been found in bowls, basins and closed shapes like jugs (type Lilybaion BR 5), as well as table amphorae.

#### **MOT-C-2 (M 185/22. 23) Ref. M 185/22**

MOT-C-2 (see above, fig. 2,4) is similar to MOT-C-1 and characterised by a poorly-sorted sand temper with numerous (M 185/23) or less-numerous (M 185/22) inclusions (<0.04–0.8 mm, sporadically up to 1.2 mm). The red to orange coloured matrix has a compact, fine to middle-fine texture with infrequent voids. Quartz and especially calcium carbonate inclusions and pseudomorphoses are predominant. Red to reddish-brown and black particles, mica and voids are all rare. M 185/22 contains a few bioclasts/foraminifera. The packing range varies between 15% and 20%. So far, MOT-C-2 has been found in a jug and an amphora stand.

## References

- Alaimo, R., G. Montana, and V. Palumbo. 1997. "La ceramica punica di Mozia (Trapani): natura delle materie prime e tecnologia di cottura dei reperti della Zona K (VI-V sec. a.C.)." *Miner. Petrogr. Acta* XL:303-25.
- Alaimo, R., Greco, C., I. Iliopoulos, and G. Montana. 1998. "Le officine ceramiche di Solunto e Mozia (VII-III secolo a.C.): un primo confronto tra materie prime, *fabric* e chimismo dei prodotti finiti." *Miner. Petrogr. Acta* XLI:287-306.
- Alaimo, R., G. Montana, and I. Iliopoulos. 2005. "Contribution of Mineralogical, Petrographic and Chemical Analyses in the Characterization of the Ceramic Productions of Mothia and Solunto (Sicily)." In *Atti del V Congresso Internazionale di Studi Fenici e Punici*, Marsala-Palermo, 2–8 ottobre 2000, edited by A. Spanò Giammellaro, 705–13. Palermo: Università di Palermo.
- Amadasi M.G., M. Liverani, and P. Matthiae, eds. 2002. *Da Pyrgi a Mozia. Studi sull'archeologia del Mediterraneo in memoria di Antonia Ciasca*. Vicino Oriente. Quaderno 3/2. Roma: Università degli Studi di Roma "La Sapienza".
- Bechtold, B. 1999. *La necropoli di Lilybaeum*. Palermo: Regione siciliana, Assessorato regionale dei beni culturali ed ambientali e della pubblica istruzione.
- . 2008. "Anfore puniche." In *Segesta III. Il sistema difensivo di Porta di Valle (scavi 1990-1993)*, edited by R. Camerata Scovazzo, 539-80. Documenti di Archeologia 48. Mantova: SAP Società Archeologica.
- . 2012. "Amphorae Production in Punic Sicily (7th-3rd/2nd century BCE): an Overview." In FACEM (version 06/12/2012) ([http://www.facem.at/img/pdf/Amphorae\\_in\\_Punic\\_Sicily\\_06\\_12\\_2012.pdf](http://www.facem.at/img/pdf/Amphorae_in_Punic_Sicily_06_12_2012.pdf))
- . 2013. "Le anfore da trasporto da Cossyra: un'analisi diacronica (VIII sec. a.C. - VI sec. d.C. attraverso lo studio del materiale della ricognizione." In Almonte, M., *Cossyra II. Cossyra. Ricognizione topografica. Storia di un paesaggio mediterraneo*, edited by Th. Schäfer, K. Schmidt, and M. Osanna, 409-517. Tübinger Archäologische Forschungen 11. Rahden/Westfahlen: Verlag Marie Leidorf.

- . 2014. "Un deposito domestico di età arcaica dal saggio VIII (scavo 2007)." In *Cossyra I. Ergebnisse der Tübinger Grabungen auf der Akropolis von S. Teresa/Pantelleria. Der Sakralbereich*, edited by Th. Schäfer, K. Schmidt, and M. Osanna, 335-8. Tübinger Archäologische Forschungen 10. Rahden/Westfahlen: Verlag Marie Leidorf.
- . 2015. "Amphorae Fabrics of Solus: Evidences for Local Production and Export." In FACEM (version 06/06/2015), (<http://www.facem.at/project-papers.php>).
- Bechtold, B., and S. Vassallo. In preparation. *Le anfore fenicio-puniche dalla necropoli di Himera* (preliminary title).
- Ben Tahar, S. Forthcoming. "Ghizène and the Mediterranean trade from the 6th to the 2nd century BCE." *Carthage Studies* 9.
- Bonazzi, A., and F. Durando. 2000. "Analisi archeometriche su tipi anforici fenici occidentali arcaici da Pithecoussai, Cartagine e Ibiza." In *Actas del IV Congreso Internacional de Estudios Fenicios y Púnicos*, Cádiz, 2 al 6 de Octubre de 1995, edited by E. Aubet, and M. Barthélemy, 1263-8. Cádiz: Servicio de Publicaciones Universidad de Cádiz.
- Bondì, S. 2011. "Il contesto storico (ante 397 A.C.)." In *La Collezione Whitaker. Volume II*, edited by L. Nigro, 9-28. Palermo: Punto Grafica.
- Di Stefano, C.A. 2005. "Importazioni di ceramiche greche arcaiche a Mozia." In *V Congresso Internazionale di Studi Fenci e Punici*, Marsala-Palermo, 2–8 ottobre 2000, edited by A. Spanò Giammellaro, 595-602. Palermo: Università di Palermo.
- Docter, R.F. 1997. "Archaische Amphoren aus Karthago und Toscanos. Fundspektrum und Formentwicklung. Ein Beitrag zur phönizischen Wirtschaftsgeschichte." Ph.D. diss. Amsterdam University.
- . 2007. "Archaische Transportamphoren." In *Karthago. Die Ergebnisse der Hamburger Grabung unter dem Decumanus Maximus*, edited by H.G. Niemeyer, R. F. Docter, K. Schmidt, and B. Bechtold, 616–62. *Hamburger Forschungen zur Archäologie* 2. Mainz: Philipp von Zabern Verlag.
- Falsone, G. 1981. *Struttura e origine orientale dei forni da vasaio di Mozia*. Palermo: Fondazione Giuseppe Whitaker.
- Famà, M.L., ed. 2002. *Mozia. Gli scavi nella "Zona A" dell'abitato*. Bari: EdiPuglia.

- . 2009. “L’urbanistica e le strutture abitative di Mozia allo stato attuale delle ricerche.” In *Phönizisches und punisches Städtewesen*, edited by S. Helas, and D. Marzoli, 271–88. Mainz a Rh.: Philipp von Zabern Verlag.
- Iliopoulos, I., R. Alaimo, and G. Montana. 2002. “Analisi petrografica degli impasti delle anfore fenicie e puniche.” In *Famà 2002*, 355–63.
- Iliopoulos, I., M.A. Cau, and G. Montana. 2009. “Le anfore fenicio-puniche prodotte nel Mediterraneo occidentale: caratteristiche petrografiche degli impasti siciliani e spagnoli.” In *Le classi ceramiche. Situazione degli studi. Atti della 10ª Giornata di Archeometria della Ceramica. Roma 5–7 aprile 2006*, edited by S. Gualtieri, B. Fabbri, and G. Bandini, 157–62. Bari: Edipuglia.
- Montana G., Azzarro, A., Polito, A.M., A.T. Lavore, and S.Vassallo. 2006. “Analisi petrografica e chimica di anfore puniche dagli scavi di Himera (Sicilia nord-occidentale)”. In *Atti del III Congresso dell’Associazione Italia di Archeometria: Innovazione Tecnologiche per i beni culturali in Italia. Caserta, 16–18 febbraio 2005*, edited by C. d’Amico, 145–53. Bologna: Pàtron Edizione.
- Montana, G., A.M. Polito, and M. Quartararo. 2015. “Punic Amphorae from Entella (Sicily): Archaeometric Characterisation of this Possible Consumption Centre.” In *SOMA 2011. Proceedings of the 15th Symposium on Mediterranean Archaeology. Catania 3-5 March 2011*, edited by P.M. Militello, and H. Öñiz, 815-24. BAR International Series 2695 (II). Oxford: Archaeopress.
- Nigro, L., ed. 2004. *Mozia – X. Zona C. Il Kothon. Zona D. Le pendici occidentali dell’Acropoli. Zona F. La Porta Ovest. Rapporto preliminare della XXII campagna di scavi – 2002 condotta congiuntamente con il Servizio Beni Archeologici della Soprintendenza Regionale per i Beni Culturali e Ambientali di Trapani*. Quaderni di Archeologica fenicio-punica I. Roma: Missione Archeologica a Mozia.
- Quartararo, M. 2012. “Materiali fenici, punici e di tradizione punica da Rocca d’Entella (PA). Un bollo e due graffiti.” In *Sicilia occidentale. Studi, rassegne, ricerche*, edited by C. Ampolo, 129-36. Pisa: Scuola Normale Superiore di Pisa.
- . 2015a. “Anfore e ceramica comune di produzione punica da Rocca d’Entella (PA).” In *FACEM* (version 06/06/2015), (<http://www.facem.at/project-papers.php>).
- . 2015b. “Anfore puniche dello scarico di Grotta Vanella a Segesta.” In *FACEM* (version 06/06/2015).

- Ramon Torres, J. 1995. *Las ánforas fenicio-púnicas del Mediterráneo central y occidental*. Barcelona: Universitat de Barcelona.
- Spanò Giammellaro, A. 2000. "La ceramica fenicia della Sicilia." In *La ceramica fenicia di Sardegna. Dati, problematiche, confronti*, edited by P. Bartoloni, and L. Campanella, 303-30. Roma: Consiglio Nazionale delle Ricerche.
- . 2002. "Strutture in mattoni crudi nelle aree «industriali» di Mothia." In Amadasi et al. 2002, 545–53.
- Spatafora, F. 2010. "Indigeni e Greci negli emporia fenici della Sicilia." In *Meetings between Cultures in the Ancient Mediterranean*. International Congress of Classical Archaeology. Roma 2008, 34-46. [www.archeologia.beniculturali.it](http://www.archeologia.beniculturali.it)
- Toti, M.P. 2002a. "Anfore fenicie e puniche." In Famà 2002, 275–304.
- . 2002b. "Alcune considerazioni sulla produzione vascolare di officine dell'isola di Mozia (TP)." In Amadasi et al. 2002, 555–65.
- Vassallo, S. 1999. "Himera, Necropoli di Pestavecchia. Un primo bilancio sulle anfore da trasporto." *Kokalos XLV* [2003]:329-79.
- Vecchio, P.F. 2002. "Ceramica comune." In Famà 2002, 203-73.

This article should be cited as: B. Bechtold, K. Schmidt, "Amphorae and Coarse Ware Fabrics of Motya: Evidences for Local Production and Export." In FACEM (version June/06/2015) (<http://www.facem.at/project-papers.php>)