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# The content of amphorae from Adriatic Italy

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**Abstract:** This contribution focuses in particular on the contents of amphorae from Adriatic Italy. Data collected from historical, archaeological and archaeometric sources are presented, followed by an investigation into various research issues with some suggested directions for future multidisciplinary research initiatives. Amphorae for the transport of wine, oil, olives, sauces and preserved fish were produced in Adriatic Italy, from Istria to Apulia. The shape of these Adriatic amphorae always indicates a specific content and any anomalous content preserved demonstrates its reuse or a primary but unusual use of the containers to carry different types of food. *Tituli picti* which mention fish on Adriatic wine and oil amphorae are in effect 'labelling' a content which is different from the primary one, while *tituli picti* on small amphorae for fish and olives provide information on the specific quality of these products. Sporadic examples of reuse, whose importance is often exaggerated, are also attested: for example pine resin, augite sand or pozzolan, found in Lamboglia 2 wine amphorae.

**Key words:** Adriatic Italy amphora; reuse; wine; sauces and fish preserve; oil.

## 1. General overview (Figure 1)

Amphorae for the transport of wine, oil, olives, sauces and fish preserves were produced in Adriatic Italy, from Istria to Apulia. They are reasonably well understood and it is not necessary to re-examine the subject of their production centres, which cannot always be clearly identified, but have been investigated in a number of studies (Carre 1985; Cipriano and Carre 1989; Carre and Pesavento Mattioli 2003a; Carre and Pesavento Mattioli 2003b; Carre, Monsieur and Pesavento Mattioli 2014; Cipriano and Mazzocchin 2017; Carre and Pesavento Mattioli 2018). Furthermore, the volume on materials found in the north-eastern area of Terme del Nuotatore in Ostia contains a broad and in-depth analysis of the history and geography of productions from Venetia and Histria, Aemilia, Umbria, Picenum, Apulia and Calabria (Rizzo 2014: 117–130, with a very rich bibliography for more information on the morphology, chronology and distribution of the containers). New finds, such as those at the Nuovo Mercato Testaccio in Rome (Cafini and D'Alessandro 2010; D'Alessandro 2011; D'Alessandro 2013), or the revision of the complex of amphorae with stamps in the Modena area (Mongardi 2018) have enriched the picture of the Adriatic amphorae in various ways. In particular, the study and publication of a substantial set of materials from Aquileia, among which a large quantity of amphorae, were important: an excavation carried out in 2004–2005 investigated a section of Canale Anfora, one of the waterways which constituted the harbour system of the emporium, slowly infilled between the last years of the 1st and the 3rd

centuries, to then be totally filled within the 4th (Maggi *et al.* eds 2017).

Further perspectives on the production of amphorae along the Adriatic Sea are now opened by investigation on the east coast, in Liburnia, where Crikvenica furnaces have been identified and extensively studied (Lipovac Vrkljan 2011; Lipovac Vrkljan and Konestra eds 2018).

However, there is still room for an investigation into the content of western adriatic amphorae, starting from a very short summary of the data acquired on the basis of historical, archaeological and archaeometric criteria, followed by a discussion of various issues concerning the evidence and suggestions for possible future new avenues for multidisciplinary research.

Greco-Italic, Lamboglia 2 and Dressel 6A amphorae have a long production history, between the 3rd century BC and the first half of the 1st century AD, as confirmed by the existence of transitional shapes and the fact that they were often produced in the same kilns (Rizzo 2014 and Panella 2010). They were used for the commerce of wine. We disagree with the hypothesis (Lindhagen 2009; Lindhagen 2013) of the pioneering and primary role of central Dalmatia in the production of these amphorae, although there may have been kilns in that region – an idea that has yet to be confirmed (Carre, Monsieur and Pesavento Mattioli 2014). Aside from Dressel 6A, Dressel 2–4 amphorae are produced, albeit in smaller numbers. As of the mid-1st century AD (or perhaps earlier), flat-bottomed amphorae started to be produced:

kilns are attested mainly in Emilia (Aldini 1978 and Stoppioni 1993), but also in Abruzzo (Staffa 2003), Istria (Maggi and Marion 2011) and on the eastern shore of Liburnia (Lipovac Vrkljan 2011). The deposition conditions of Canale Anfora allowed the preservation of several *tituli picti*, now identified for the first time on these containers: mostly, they refer to numeric series interpreted as ponderal indications. Most amphorae are connected to kiln sites in Romagna, but many remain without attribution, expanding the picture of known productions (Gaddi and Maggi 2017: 263–284).

In the Republican period Adriatic oil was traded in ovoid amphorae from the territory of Brindisi (Manacorda and Pallecchi (eds) 2012; Palazzo 2013) and from the central Adriatic. These are followed, as of the mid-1st century BC and up to the 4th century AD, by the Dressel 6B series in its various phases, produced in territories pertaining to the central Adriatic and eastern Cisalpine, where plenty of kilns are attested in the Istrian peninsula (for an overview: Carre and Pesavento Mattioli 2003b, Cipriano 2009; for Istrian productions in Fasana and Loron: Bezeczky 1998 and Maggi and Marion 2011). A significant context is that of Canale Anfora in Aquileia: its chronology justifies the low quantities of Dressel 6B of the first three phases, while very consistent (more than 300 vessels, corresponding to the 65% of the total Dressel 6B) are the quantities of those of the fourth phase, datable within the 2nd and the 4th centuries AD. Therefore, it was possible to dedicate a thorough analysis of them, allowing to distinguish Loron and Fažana products and the different variants, to add to the group some small scale examples similar to the small fish amphorae (cf. *infra*) but lacking the inner resin lining which was otherwise preserved within this context, and to enlarge the panoramic of the stamps (Gaddi and Maggi 2017: 286–308).

Another group of containers, which certainly had an Adriatic origin, identified as ‘anfore con collo a imbuto’ (amphorae with a funnel-like neck, also named Portorecanati after the first find) thanks to their peculiar form, were probably for oil. These include those based on the numerous exemplars found mainly in northern Italy, but also in north-eastern provinces and central-Adriatic Italy. There are two types and they date from the mid-1st to the mid-3rd century AD (Mazzocchin 2009; Gaddi and Maggi 2017: 308–313).

Finally, other foodstuffs were carried in amphorae from Adriatic Italy. The Schörgendorfer 558-type amphorae (also known as ‘anfore troncoconiche da olive’), probably from the Picenum area, contained olives, and are attested from the 1st to the second half of the 2nd century AD, mainly in northern Italy and in the Danubian provinces (Pesavento Mattioli 2008; Pesavento Mattioli 2011). Small amphorae of the Grado type, Aquincum 78 and similar have been associated with products related to fish processing; among these, documented between the end of the 1st and the end of the 3rd century AD,

specific production areas have yet to be identified (Carre, Pesavento Mattioli and Belotti 2009). Many new finds or newly recognised specimens were to follow, for example in the territory of Modena (Mongardi and Rigato 2013) and in particular within the Canale Anfora assemblage, where 136 individuals have been recognised, forming a significant sample from the morphological standpoint as well, and confirming the validity of the proposed classification while enlarging it with another variant. Within all Aquileian small amphorae, resin lining has been preserved, which distinguishes them from the small Dressel 6B (Gaddi and Maggi 2017: 314–327).

## 2. Main contents, uncertain contents and reuses

The contents of these amphorae is known thanks to extensive data, which do not need to be repeated, such as sources on the use of the different territories, kiln waste, *tituli picti*, remains of the contents in specific contexts, the presence or lack of pitch coating, etc. But one aspect needs to be remembered: most of the containers found and used for our typo-chronological analyses had been reused in reclamation and drainage projects, which were quite numerous in northern Italy (cf. e.g. Pesavento Mattioli ed. 1998). In these cases no content was ever found, although the amphorae were intact, and the action of water erased any trace of pitch coating inside them. The only exception, as we have said, are the materials of Canale Anfora in Aquileia: the characteristics of the deposit have in fact conserved the internal pitch and many *tituli picti*.

It should also be added that, despite the numerous wrecks reported or investigated in the Adriatic sea, especially along the eastern coast (cf. Parker 1992 and Jurišić 2000), very few have been published systematically and much of the data needs to be analysed. We are mainly lacking valuable information deriving from the analyses of the content of the amphorae included in the cargoes, which do not seem to have been carried out yet.

Based on our experience and the most recent studies, it therefore seemed advisable to suggest some cases where, according to us, it is possible to distinguish primary contents and secondary contents/reuse of the amphorae and others that are still complicated and deserve more in-depth analyses.

### 2.1. *Lamboglia 2: anomalous contents*

Contrary to what has been written (Loughton 2014: 77), *Lamboglia 2* amphorae were not multi-purpose containers. The first studies on *Lamboglia 2* from the *Madrague de Giens* wreck have proved that their use as oil containers initially suggested by *Lamboglia* was wrong (Formenti, Hesnard and Tchernia 1978). Some sporadic examples of reuse, often overrated, are attested: pine resin in about a hundred exemplars from the *Sud-Caveaux 1* wreck, where it is clear that the amphorae, once

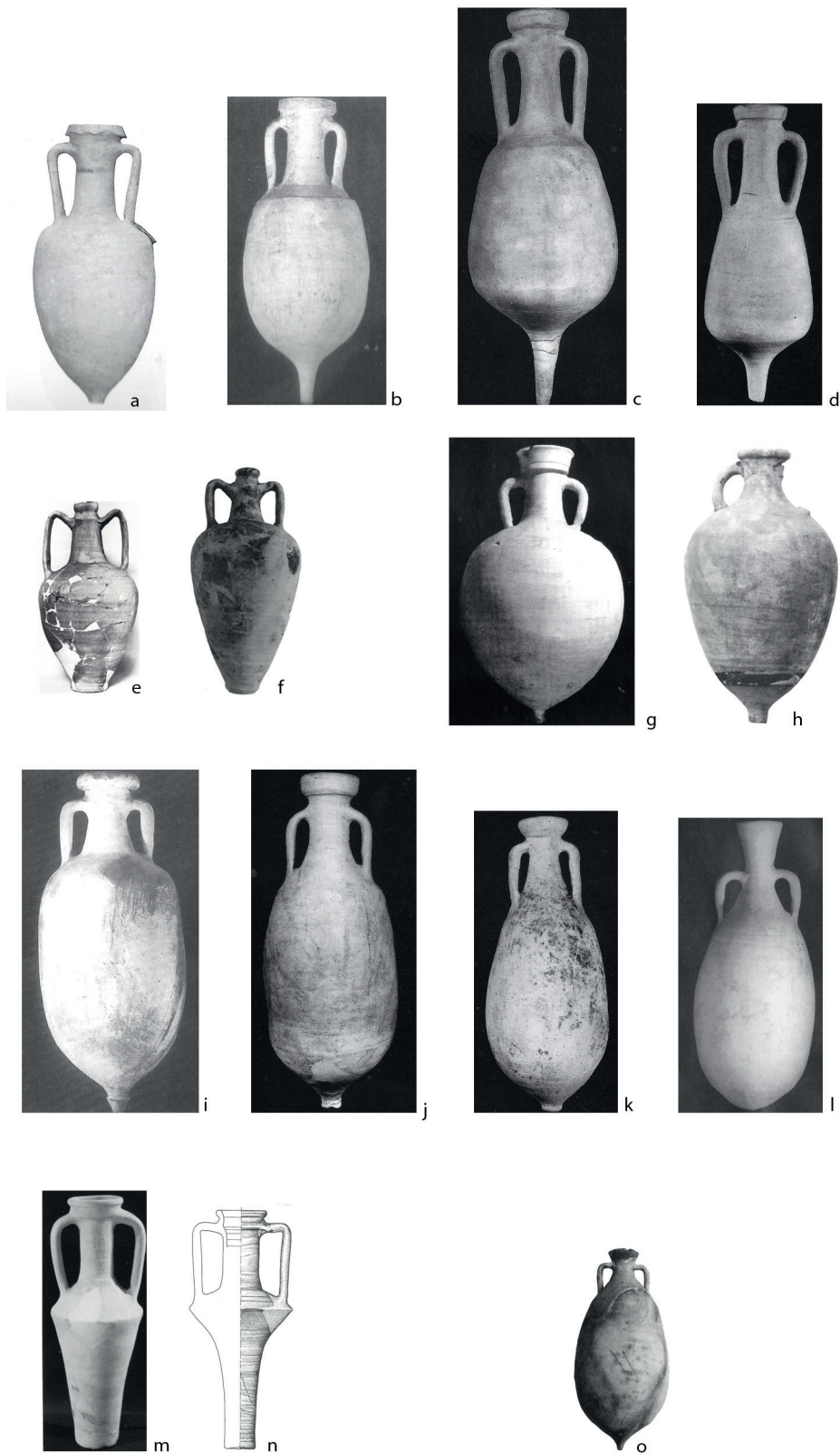


FIGURE 1. MAIN TYPES OF ITALIC ADRIATIC AMPHORAS (SC. APPROX 1:20). WINE AMPHORAS: a. GRECO-ITALIC; b. LAMBOGLIA 2; c. DRESSSEL 6A (PICENUM); d. DRESSSEL 6A (CISALPINA); e. FLAT-BOTTOMED AMPHORA (SAN'ARCANGELO DI ROMAGNA); f. FLAT-BOTTOMED AMPHORA (FORLIMPOPOLI). OIL AND OLIVE AMPHORAS: g. BRINDISI (APANI IIA); h. BRINDISI (APANI III), i. ADRIATIC OVOID; j. DRESSSEL 6B (CISALPINA); k. DRESSSEL 6B (ISTRIA); l. FUNNEL-SHAPE AMPHORA; m. SCHÖRGENDORFER 558 A; n. SCHÖRGENDORFER 558 B; o. SMALL FISH AMPHORA.



in the Iberian peninsula and filled with a new content, were then carried to Marseille to meet the needs of an amphora or dolium workshop or of a shipyard (Long 1998); sand with granular elements of pyroxene, sanidine and biotite from a volcanic area, such as Campania or Latium, perhaps to be used as a temper for the preparation of ceramics, in Adriatic amphorae from Ship B in Pisa (Pesavento Mattioli and Mazzocchin 2002: 786; Giachi and Pallecchi 2000: 350–351); pozzolan in a Lamboglia 2 from the wreck Chrétienne A, maybe used to seal the stoppers of the Dressel 1 amphorae loaded on the same ship (Hesnard and Gianfrotta 1989: 398).

These cases must not force us to doubt that their primary content was wine: the wide diffusion of Lamboglia 2 amphorae around the Mediterranean (cf. Loughton 2014: 359–366) made a great number of them available to be reused to carry different materials and foodstuffs, after being emptied of their original content in the place where it was consumed.

## 2.2. Fish content in Dressel 6A and Dressel 6B amphorae

Remains of fish or *tituli picti* mentioning *garum* and *liquamen* were found in some Dressel 6A (in Salzburg — Figure 2 —, Verona, Milan and *Forum Sempronii*) and in a few Dressel 6B (in Milan and Magdalensberg). We have come to the conclusion that these are not containers specifically produced to transport something different from wine and oil, but represent the reuse of amphorae which were widely available, where the ‘anomaly’ was indicated by the ‘label’ of the *titulus* itself. These vessels could contain a sauce imported probably from the Iberian peninsula in casks or barrels or occasionally produced in some locality along the Adriatic coast (Carre, Pesavento Mattioli and Belotti 2009: 215–220). The latter option has been confirmed by the content of a Dressel 6A found in Vicenza (Figure 3), consisting of a mix of saltwater and freshwater fish, which probably comes from the nearby Venetian Lagoon; although the amphora was found in an embankment area where the other amphorae recovered (over 300) were empty, it was probably buried with part of its content still on the bottom (Mazzocchin and Wilkens 2013; Mazzocchin 2013: 90–92). The absence of a *titulus pictus* showing a content different from wine does not surprise us, since very few painted inscriptions have ever survived in similar contexts.

## 2.3. Content of ‘small amphorae’ of the Grado type (*‘anforette adriatiche’*)

The extensive analysis carried out during the 2007 conference on the production and trade of oil and fish in the Adriatic area (Pesavento Mattioli and Carre eds 2009) led to the proposal of a typological classification of small fish amphorae, which might have to be rethought and expanded in the light of continuous new findings. No problems arise as to the content of those that bear clear inscriptions mentioning *liquamen*, *garum*, *muria*, often

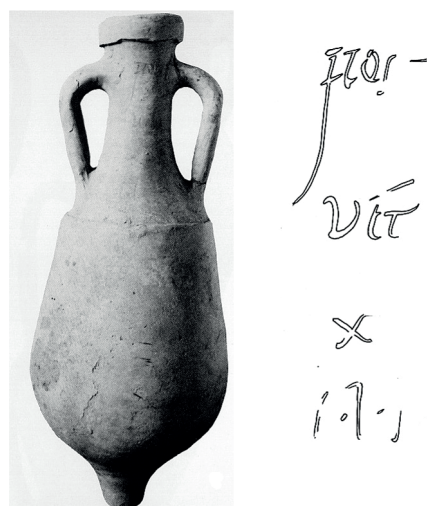


FIGURE 2. AMPHORA DRESSSEL 6A FROM SALZBURG WITH *TITULUS PICTUS* FLOS/VET/X (HEGER 1986: 133–137).



FIGURE 3. AMPHORA DRESSSEL 6A FROM VICENZA WITH CONTENTS (MAZZOCCHIN AND WILKENS 2013: 106).

first quality (*flos*) and/or that are abundantly covered in pitch, but we have obviously wondered whether this might be another case of occasional reuse of containers which were originally meant for oil (for their morphological similarity to Dressel 6B, in spite of their smaller dimensions). This hypothesis is contradicted by the presence of an abundant pitch coating even when there are no *tituli picti* and the large quantity of widespread exemplars, in contrast to the few Dressel 6A and 6B with an ‘anomalous’ content. Mineralogical and chemical analyses of the ceramic body of some exemplars

have also shown the non-compatibility with any group of Dressel 6B, confirming various productions, which have yet to be localised, but clearly focused on specific contents (Carre, Pesavento Mattioli and Belotti 2009: 221–234 and then Schimmer 2012: 57–58 and table 61; Mongardi and Rigato 2013; Mongardi 2018: 135–138).

According to us, the presence of almost 200 small fish amphorae in the ship in Grado, which also carried approximately 400 other amphorae of different origins (Africa, Tripolitania, western Mediterranean) originally produced for wine and oil but full of fish remains, can be explained with an extraordinary availability of fish in some parts of the Adriatic; small amphorae were used for *liquamen*, which probably had a tradition of being locally-produced and did not need big salting plants, whereas larger amphorae were reused for other types of preserves.

No problems are raised by those small amphorae which, despite having quite similar morphological features, do not have any pitch coating and have no *tituli picti*: this is the case of the small amphorae produced in Loron, Istria (Marion 2009; Maggi and Marion 2011: 177–178), where the absence of the above-mentioned elements has been explained with the finding of kiln waste, suggesting that this was a production site, and since the amphorae had not yet been filled we cannot say whether or not pitch and *tituli picti* would have been added at a later stage. However, we must remember that among the materials found in the fill of Canale Anfora in Aquileia, where, as previously mentioned, the original pitch coating is still present, there are some bases identical to the ones of the small amphorae but without a pitch coating: only targeted analyses could help in understanding if they contained oil and must be therefore identified as very small Dressel 6B exemplars. It should be remembered that the *tituli picti* in two of the small amphorae from Canale Anfora (Figure 4) explicitly mention *liquamen Aquileiense*, allowing the identification of a local origin for the fish sauce (Maggi 2016: 426–427).

#### 2.4. Content of amphorae with funnel-like necks ('anfore con collo a imbuto')

It is likely that these amphorae contained oil, because of the absence of pitch coating and the correspondence of the diffusion patterns with those of Dressel 6B, which in some ways they also bear some resemblance to, but no content remains have ever been identified (please note that there is evidence from wrecks or contexts where it could have survived) and there are no *tituli picti* mentioning it.

Among the exemplars from Canale Anfora in Aquileia, the constant lack of traces of pitch coating on the inner surfaces might suggest that the containers were actually used for the commerce of oil, confirming the most plausible hypothesis, but the problem remains,

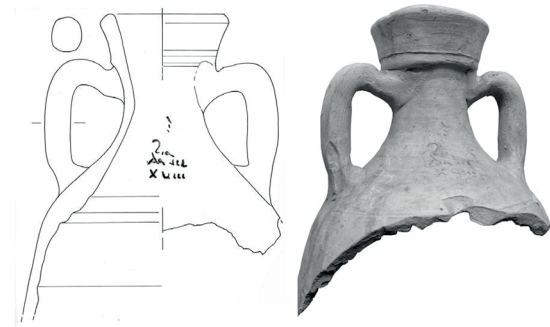


FIGURE 4. SMALL FISH AMPHORA FROM AQUILEIA – CANALE ANFORA WITH *TITULUS PICTUS* LIQ/AQUIL/XVIII (GADDI AND MAGGI 2017: 323).

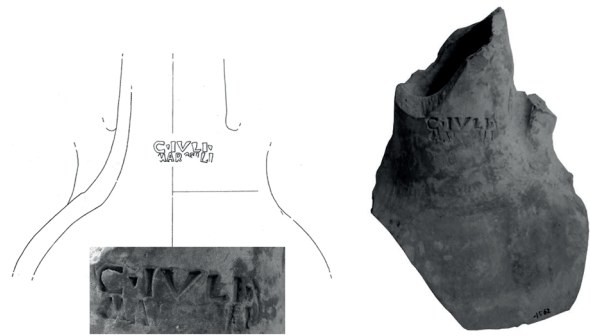


FIGURE 5. FUNNEL-SHAPE AMPHORA FROM AQUILEIA – CANALE ANFORA WITH STAMP C.IVLI MARCELLI (GADDI AND MAGGI 2017: 312.)

also because only one exemplar bearing the stamp C. IVLI/MARCELLI was pitch coated (Figure 5). This stamp, like IVLI palm/PAVLINI, also appears on flat-bottomed amphorae that were certainly used for wine (Mazzocchin 2009: 206–207): we can therefore imagine either a different type of content, oil *versus* wine, or an identical content of a different quality (Gaddi and Maggi 2017: 311–313).

### 3. Conclusion

In conclusion, at least as far as Adriatic Italy is concerned, we firmly believe that the shape of the amphorae always indicates a specific content and that any anomalous content preserved shows a reuse or a primary but fortuitous use of containers produced to carry different types of food. *Tituli picti* which mention fish on Adriatic wine and oil amphorae 'label' a content which is different from the primary one, while *tituli picti* on small amphorae and olive amphorae provide information on a specific quality of the content: *liquamen*, *garum* or *muria* and other indications that remain unclear on small amphorae, *oliva alba* or *nigra ex dulci* on olive amphorae (perhaps *ex muria* on the ones with no *titulus*).

In view of future multidisciplinary studies, useful results to better define the content of Adriatic amphorae can be obtained with analyses on amphorae with funnel-like necks and small amphorae with no pitch coating; samples are available for this purpose.

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