THE USE-LIFE OF WINE AMPHORAE

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Summary: *This article deals with estimating the use-life of ancient wine amphorae. It analyzes Hellenistic stamped Heraclean and Rhodian containers and Roman amphorae with dated tituli picti. In order to determine the duration of prime use and reuse of amphorae, it is necessary to analyze ceramic assemblages of different nature and origin. This article discusses several groups of such assemblages.*

The conclusion is that the duration of the prime use of amphorae was about 5-7 years and exceeded 10 years only in rare cases. The use-life of reused wine containers usually lasted for about 10 years, but this period might have been as long as 20 years and even more. These figures also show the possible level of accuracy in the dating of the container assemblages of different nature.

Amphorae are common finds at all Classical and many barbarian sites in the Mediterranean and the Black Sea regions. The shape of the containers changed rather quickly over time. Therefore, they are very important for the dating of different layers and assemblages. For that reason it is essential to establish how long amphorae were in use and how precisely we can date assemblages on the evidence of wine containers. This paper tries to answer these questions.

It is necessary to make several methodological remarks before considering this matter. Ancient amphorae were special containers designed to transport liquid and some other goods on ships. Mostly wine, oil, and fish products were carried in those containers.

The use-life of ancient amphorae may be divided into several stages. The first stage started with the manufacture of the containers and ended with the delivery to the consumer. It may be referred to as the "technical" stage. Amphorae were not designed for keeping goods for a long period. The first stage of their use-life might have lasted from several weeks (when the goods were produced and consumed in the same place) to one or two years (when they were exported to distant sites for consumption[1]). Bottled or ready-to-be-bottled wine

[1] We do not deal with sporadic export of goods in amphorae to the distant barbarian sites deep inland (such as Southern Byelorussia or Northern Kazakhstan). The way there might have taken several years.

was not usually kept long before it was sold to wine merchants. As a rule, winegrowers tried to sell their wine during the navigation season that followed, before the new crop was harvested, in order to prepare pithoi and storage places for the coming production. This stage was not long[2]. When supply was regular, it lasted for almost the same time everywhere. It was also much shorter than the time period to which we can possibly date archaeological material with any precision.

The second stage of amphora use-life was a period of keeping the goods in the containers after their delivery to the place of consumption until the contents were used. After having been emptied, some containers were no longer used, but discarded or deposited in some way. A discussion of this stage is one of the main topics of the paper.

The last stage of the use-life of amphorae was their reuse. Not all amphorae were reused. After having been emptied of the contents (wine, oil, fish products), amphorae could not be reused for the storage of the same substance on a large scale. It would have been necessary to organize the collection, sorting, washing and fumigation of empty amphorae on a large scale. All this involved large expenses and was not justified from an economic point of view. Therefore, in big ancient centers that imported goods in amphorae regularly most of the containers were simply discarded or reused in a rather unusual way[3], for instance, as building materials or child coffins.

People of small rural inland settlements, especially in *barbaricum*, valued empty amphorae higher. They used them as containers for water, dry substances, for transitional keeping of wine, and for other purposes. S. Monachov rightly noticed that at the sites where (and when) the import of goods in amphorae was less regular and less intensive the empty containers were reused more often and for longer, and vice versa[4]. Indeed, when imports came in large quantities, the containers were valued lower, but in the case of sporadic imports, empty amphorae were of high value for local people. Every empty vessel and even big fragments were kept and reused to the utmost. The settlements of the Northern Black Sea area, both Greek and barbarian, provide many examples of such reuse and storage of even broken amphorae and large fragments[5].

In order to estimate the use-life of amphorae with high precision, it would be necessary to know the date of manufacture or the primary filling of the container and the date of its coming into disuse. Such cases are unique. Therefore, we have to consider other dated amphorae.

For solving that problem, stamped Heraclean and Rhodian amphorae of the Hellenistic period, as well as some other amphorae with stamps of magistrates or eponyms may be used. The chronology of the stamps of these centers is elaborated in the latest works by S. Monachov[6] and G. Finkielsztejn[7], and it is

[2] FINKIELSZTEJN 2004, p. 279.
[3] PEÑA 2007, p. 119-192.
[4] MONACHOV 1999a, p. 418-419.
[5] OPAIŢ 1987a; MONACHOV 1999a, p. 457.
[6] MONACHOV 1999a.
[7] FINKIELSZTEJN 2001.

possible to date most stamps of these centers with high precision. Both amphora types were used only as wine containers. Dated *tituli picti* connected with the prime use of the containers may also be employed for the Roman period.

Evidently, for such an analysis we need assemblages which contain several stamped vessels with the names of eponyms. It is very important here to clearly understand the character of the assemblages that we are dealing with. Amphora assemblages, as well as assemblages of other artifacts, may be divided into several groups, depending on their nature, the duration and conditions of their accumulation, and the character of the use of those containers before their deposition. The first group consists of assemblages where the dated containers were evidently in prime use only, i.e. they contained wine and were deposited with it or just after having been emptied. The group includes cargos of shipwrecks, funerary wine gifts in single or synchronous collective burials, amphorae, emptied and crashed during funeral feast, various kinds of suddenly destroyed storages and wine shops, and some other.

The second group includes other "closed" assemblages of dated containers. They may be further divided into two subgroups. The amphorae from the complexes of the first subgroup might have been manufactured at different times, but were in use at the same time and were deposited simultaneously. Such complexes occur in litter pits, suddenly destroyed buildings, and so on. Usually they include both vessels of prime and secondary use, which cannot be easily distinguished in this case.

The second subgroup includes the vessels that were out of use (prime or secondary), but for some reason were kept unused for some time before their final deposition. The vessels in such assemblages might have been manufactured and used actively at different times, but were ultimately deposited all together. These complexes had accumulated over a long period. They include special storages of empty containers, structures in graves or other constructions where amphorae were reused as building material, and some others.

All other assemblages are not suitable for solving the problem under consideration. Therefore, it is a rather small amount of appropriate complexes with series of Heraclean or Rhodian stamped amphorae or vessels with dated *tituli picti*. Moreover, only the stamps on complete vessels or on big fragments are analyzed here. Individual small stamped fragments were not considered. They might have become part of the assemblage by chance.

It is also worth mentioning that we know the exact date of the complex deposition only in rare cases. Therefore, in most cases, it is impossible to estimate the precise duration of the period from the manufacture of a stamped amphora until its deposition in the assemblage. Traditionally, the date of an assemblage is estimated according to the latest artifact. Numismatists apply the same method for dating coin hoards. In the case of representative amphora assemblages, it is very unlikely that such a complex may have been deposited much later after the date of the youngest item in it. However, the dates of single stamped vessels or small “open” assemblages may differ much from the date of their real deposition[8].

[8] FINKIELSZTEJN 2004, p. 281-282, 284.

Therefore, when applied to the analysis of dated amphorae this approach gives us the possibility to estimate only the difference between the dates of the containers presented in a particular assemblage. It is necessary to keep in mind that the period of use of the youngest sample in a complex before its deposition cannot be estimated. In most cases, it was not very long and did not exceed the difference between the dates of the vessels in the assemblage. It does not affect our conclusions fundamentally.

The complexes of Heraclean stamped amphorae from the Black Sea area were published by S. Monachov[9]. Heraclea exported only wine. In most cases, S. Monachov determines the year of duty of each magistrate whose name is on a stamp with a precision within 5 years. Therefore, the date of every stamp is usually presented as a period of no longer than 5 years (for example 335-330 BC). Nevertheless, it is enough for getting a general idea about the use-life of the stamped amphorae.

There are 35 published assemblages with several Heraclean stamped containers which meet the conditions mentioned above. Among these, 26 complexes (74.3%) contain Heraclean amphorae with stamps which differ in dates by up to 10 years, and 9 complexes (25.7%) include stamps which differ by 11-20 years (tabl. 1). There are no assemblages where the difference in stamp dates exceeds 20 years.

Twenty one complexes of the amphorae under consideration come from single graves or the remains of funeral feasts, i.e. they were used only as wine containers and not reused afterwards. In 18 such assemblages, the difference in dates of the stamps ranges from 0 (all stamps bear the same magistrate's name) to 7 years. Only in three complexes it reaches 10 and even 15 years. It is noteworthy that these assemblages include single amphorae with rare stamps whose dates are still disputable or whose origin is not absolutely clear.

The estimated average difference between the dates of stamped amphorae in these complexes is 3.7 years, if we use the minimal possible difference between the dates of the stamps, and 5.0 years, if we use the maximal possible difference between them. Taking into account the precision of the dating of most magistrates (witin 5 years), it is possible to infer that the stamped Heraclean amphorae in the complexes under consideration are almost synchronous in most cases. Therefore, we can conclude on the basis of Heraclean stamps that wine amphorae used as funerary gifts or during funerary feasts were not kept for a long period after their manufacturing. Generally, they were emptied within 5-7 years (including the delivery period) or even before that. The duration of the primary use-life of Heraclean wine amphorae was rather short.

Another picture was obtained after studying the assemblages of the second group, i.e. from special storages of empty containers, from structures in graves where amphorae were reused as building material, from litter pits, and from suddenly destroyed buildings. Many containers in such complexes (but not all) had been in secondary use or, for some reason, were kept for some time after having been emptied. S. Monachov published 14 such complexes with several

[9] MONACHOV 1999a.

Heraclean stamped amphorae bearing the names of the magistrate. The dates of the stamps vary, with the difference ranging from 0 to 20 years. The estimated average difference between the dates of Heraclean amphorae here is 9.7 years, if we use the minimal possible difference between the dates, and 12.5 years, if we use the maximal possible difference. Some of these complexes had accumulated very quickly, others, over a long period. Thus, a storage pit with empty amphorae at Berezan' contained 4 Heraclean vessels with magistrate stamps. All of them bear the name of magistrate Aristokles in combination with the names of three different fabricants[10]. There is no doubt that the depot contained Heraclean vessels from one particular batch, which had been in prime use. The early complex from cellar 1 (1960) at Nikonion is similar. It includes three stamps with the name of magistrate *ΠΑ(-)* and one of magistrate *ΙΑ(-)*, who was on duty a year earlier or so[11]. These assemblages may be considered together with the complexes of the first group.

On the other hand, the difference between the dates of the Heraclean magistrate stamps from litter pit 312 at Gorgippia is up to 20 years[12], of those from pit 5/87 at Porthmeus, up to 15 years[13], from the storages of empty containers discovered in 1947 at Olbia, up to 10 years[14]. These semi-closed assemblages had accumulated vessels both after their prime use and reuse for a rather long period before their final closing.

Thus, on the basis of stamped Heraclean amphorae we can conclude that the period of prime use of those vessels in the Black Sea region lasted for up to 5-7 years. These containers may have been in secondary use for up to 20 years, and even longer in some cases.

We have a possibility to check this conclusion using some data from the Mediterranean. C. Barker published 7 pairs of stamped Rhodian amphorae from graves at Nea Paphos, Cyprus, dated to the period between 184 and 124-120 BC[15]. No doubt, they were put in the graves filled with wine, as funerary gifts. Rhodian stamps can be dated with accuracy within 1-3 years, in most cases. The difference between the dates of stamps in each pair of amphorae ranges between 0 (in the case of two vessels with the same eponym's name) and 5-9 years. The average difference is then 3.1 years; if we use the minimal possible difference between the dates, this number will be 2.0 years, and if we use the maximal possible difference between the dates, it will be 4.3 years (*Table 1*).

This data shows that Rhodian wine in amphorae was kept for up to 5-9 years (or, on average for 3.1 year) before it was deposited into a grave. These figures are very similar to the ones obtained from the analysis of Heraclean stamped amphorae that were only in prime use (taking into consideration the difference in the precision of the dating for the amphorae from both centers).

It is remarkable that G. Finkielsztejn obtained similar results when analyzing

[10] *Ibid.*, p. 202-203.
[11] *Ibid.*, p. 227-229.
[12] *Ibid.*, p. 278-280.
[13] *Ibid.*, p. 260-263.
[14] *Ibid.*, p. 194-202.
[15] BARKER 2004.

the complexes of stamped Rhodian amphorae from rooms at three sites in Israel. These complexes belong to the subgroup 2 of group 2, described above that had accumulated over a long period. He concluded that the bulk of these vessels was produced between 1 and 17-24 years before the destruction or abandonment of the sites and that the earliest amphorae had been in use for 53 years. This conclusion shows then that the studied amphorae from the abandoned rooms were in use for up to 20 years, on average[16]. It agrees with the results of our analysis of the complexes of the same kind.

Another way to verify these results is to study the data of *tituli picti* on amphorae from the Western Mediterranean. J. Theodore Peña published raw statistics in regard to this subject [17]. The discovery of 24 such complete wine vessels in Pompeii is most important for our discussion [18]. Apparently, most of them were still in use at the time of the disaster, but there is no information about whether it was prime use or reuse. At the same time, some of these vessels might have been out of actual use at the moment of the eruption, but they were kept somewhere uncovered for some reason. Therefore, we can only have a general idea about the use-life of wine amphorae in Pompeii. According to the published data, 15 such vessels (62.5%) were in use for 10 years and less before the eruption of the Vesuvius, 6 amphorae (25%) were in use for 11 to 23 years, and 3 containers (12.5%) for more than 30 years (54 years, at most) (*Table 2*).

These figures are comparable with the ones obtained from the analysis of the complexes containing Heraclean stamped amphorae and with the results of G. Finkielsztejn's studies presented above. The main difference is the relatively high number of containers from Pompeii that had been in use for a very long time. It is noteworthy that they are separated from the main group of vessels by a gap of 7 years. This is difficult to explain. Seven of such vessels (29,2%) were in use before the earlier catastrophic earthquake of AD 62.

Analysis of 13 dated *tituli picti* from the First Amphorae Wall at Carthage gave nearly the same results[19]. Empty amphorae were used there as building material for the construction of the wall. We cannot establish for how long these amphorae had been collected for the purpose of construction and were kept after their actual prime use or reuse, but it is unlikely that it took several decades.

The oldest container from the wall bears the date of 43 BC, the youngest the date of 15 BC, the difference in dates being 28 years. The youngest amphora gives us the *terminus post quem* for the wall construction. According to T. Peña, 9 dated vessels (69.2%) were in use for up to 8 years and 4 (30.8%), for a period from 15 to 28 years (tab. 2). It is noteworthy that the amphorae filled in during the period between 28 and 23 BC (i.e. 9-14 years before the wall construction) are absent here.

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[16] FINKIELSZTEJN 2004, p. 287. The results of G. Finkielsztejn's analysis of the vessels from the tombs at Marisa are not very reliable because these tombs were repeatedly used for burials and it is impossible to correlate particular burials with vessels and dated funerary inscriptions- *Ibid.*, p. 285-286.

[17] PEÑA 2007, p. 51-54.

[18] *Ibid.*, p. 51, tabl. 4.1.

[19] *Ibid.*, p. 54, tabl. 4.3.

The same approach was applied to the study of amphorae from the landfill from a ditch in the Castro Pretorio district of Rome, published by J.T. Peña[20]. They show a quite different picture (*tab.* 2). About 73% of the containers have dates that differ from the date of the youngest vessels by 11 to 69 years. Evidently, they had been collected over a long period. The formation of the assemblage from this landfill must have been very different from that of other analyzed complexes. It is a "semi-open" assemblage, and therefore it cannot be used for our purposes here.

In conclusion of her analysis of all this data, J.T. Peña writes that a "substantial number of these containers remained in the systematic context for periods of time ranging up to two decades, and, in some instances, for considerably longer than this"[21]. In general, this agrees with the results of our analysis of other material.

Thus, based on the analysis of the dated stamped amphorae found in graves and in remains of funerary feasts, most wine containers were in prime use for up to 5-7 years, while only few of them were used for up to 10 years. The reuse of amphorae might have lasted much longer. The average use-life of reused amphorae was about 10 years, but some closed complexes contain vessels that differ in dates by as much as 20 years and even more, in some cases. Therefore, these figures demonstrate the possible level of precision for the dating of amphora assemblages, which depends on the character of the complex. Individual finds of amphora stamps are not very reliable for this purpose[22]. The prime use of oil, fish, and fruit containers, as a rule, was shorter because of the perishable nature of these goods[23].

[20] *Ibid*., p. 53, tabl. 4.2.
[21] *Ibid*., p. 54.
[22] FINKIELSZTEJN 2004, p. 281-82, 284.
[23] PEÑA 2007, p. 50.

	THE USE-LIFE estimated on base of all groups of complexes		THE AVERAGE USE-LIFE estimated on base of			
			complexes of prime use		complexes of reuse	
	up to 10 years	11-20 years	and the minimal possible difference between the dates	and the maximal possible difference between the dates	and the minimal possible difference between the dates	and the maximal possible difference between the dates
Heraclean; Black Sea Area	74.3%	25.7%	3.7 years	5.0 years	9.7 years	12.5 years
Rhodean; Cyprus, Nea Paphos necropolis	100%	0%	2.0 years	4.3 years		

Table 1 – The use-life of Heraclean and Rhodian stamped amphorae with the names of the magistrates and eponyms.

Site	THE USE-LIFE estimated on base of all groups of complexes				remarks
	up to 10 years	11-23 years	24-30 years	more than 31 years	
Pompeii	62.5%	25.0%	0%	12.5%	
Carthage, First Amphorae Wall	69.2%	23.1%	7.7%	0%	no instances of usage for 9-14 years
Rome, landfill in Castro Pretorio	27.3%	18.2%	0%	54.5%	

Table 2 – The distribution of the use-life of the amphorae with dated *tituli picti* from three sites of the Mediterranean.