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ON THE ORIGINS OF AMPHORA ZEEST 90/DYCZEK 25 – ULTIMATE SOLUTION?

Amphorae of Zeest 90 type were classified by I.B. Zeest in 1960, based on archaeological material from the Bosporan Kingdom[1] (**fig. 1**). Initially, the impression was that they did not range outside the Black Sea littoral, that is, until it was noted that the form resembles vessels classified first as type 24 by H. Dressel[2] and then ten years later as type XXIX by A. Mau.[3] In spite of this, it was not until 2001[4] that it was finally understood that Dressel 24 and Zeest 90 actually represented the same type;[5] hence, practically nothing has been written about Dressel 24, while Zeest 90 is present solely in Russian and Romanian publications. My interest in the amphorae grew when dozens of these vessels were found during excavations at the hospital of the First Italic Legion in *Novae*. Sherds of this type of amphora were discovered in quantities in the stores and small vestibules preceding the sick rooms (**fig. 2**).[6] It was also the most common amphora in the assemblage,[7] justifying a look into the origins of the type. At *Novae*, these amphorae are recorded in archaeological layers from the ultimate occupational phase of the hospital in the end of the 2nd and the early 3rd century AD. Upon closer analysis, I became convinced that it was this amphora type that gave rise to the developed and widespread amphora type called LR 2, present on many different sites.[8] The type appears to have come into use at the beginning of the 4th century AD,[9] and not in the 5th century as some believed.[10] This chronological mix-up seems to be due to numerous variants apparently being produced in several pottery centers at the same time.[11] The most important issue for me was to identify the original place or region of production and I am firmly convinced that LR 2 amphorae were first produced in the same workshops as Zeest 90/Dyczek 25. The discussion of the past thirty years has centered on this issue and on what was transported in these amphorae. The general opinion was that the original manufacturing area was in the Aegean and in *Bithynia* and *Pontus*; the Istro-Pontic area was also indicated because of the finds made in Romania.[12] An important observation was made in 1968 by D. Tudor, who remarked that stamps on the vessels suggested an eastern origin; these stamps contained for the most part Greek or Latin names, the latter written, however, in Greek letters.[13]

Regarding the contents of these vessels, it was believed based solely on shape and volume that the amphorae had been used to transport wine,[14] although the conclusion was purely speculative. Taking into consideration the volume, which ranges from 40 to 59 l,[15] and comparing it with other wine amphorae like Dressel 2–4, we cannot but conclude that it was simply too big, more like amphorae used for transporting olive oil.

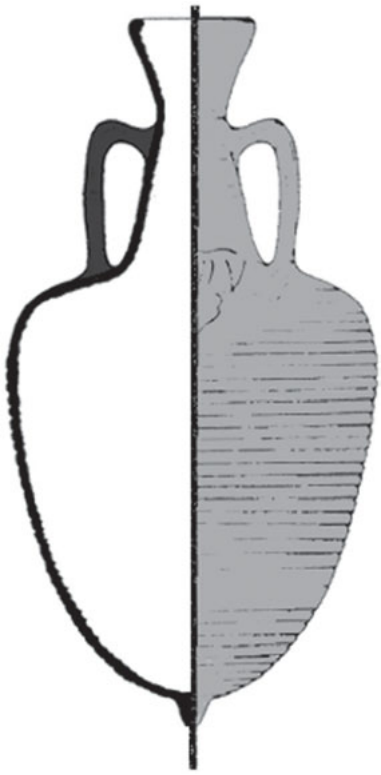

Fig. 1. Amphora of Zeest 90/Dyczek 25 type (drawn by P. Dyczek).

1 Zeest 1960, 117 pl. XXXVI,90.
2 Dressel 1899 pl. II.
3 Mau 1909 pls. II–III.
4 Dyczek 2001, 173–174.
5 Cf Peacock/Williams 1986, 213.
6 Cf. Dyczek 2000, 92–93.
7 Id. 1997, 81–96.
8 Id. 2007.
9 Id. 2001, 193–194; Peacock/Williams 1986, 183–184
10 Sibella/Sciallano 1994, 100.
11 Dyczek 2002, 7–23.
12 Sibella/Sciallano 1994, 100; Peacock/Williams 1986, 182; Panella 1986 no 22.
13 Tudor 1968, 161–164.
14 Štaerman 1951, 42; Py 1993, 70.
15 Dyczek 1999, 143.

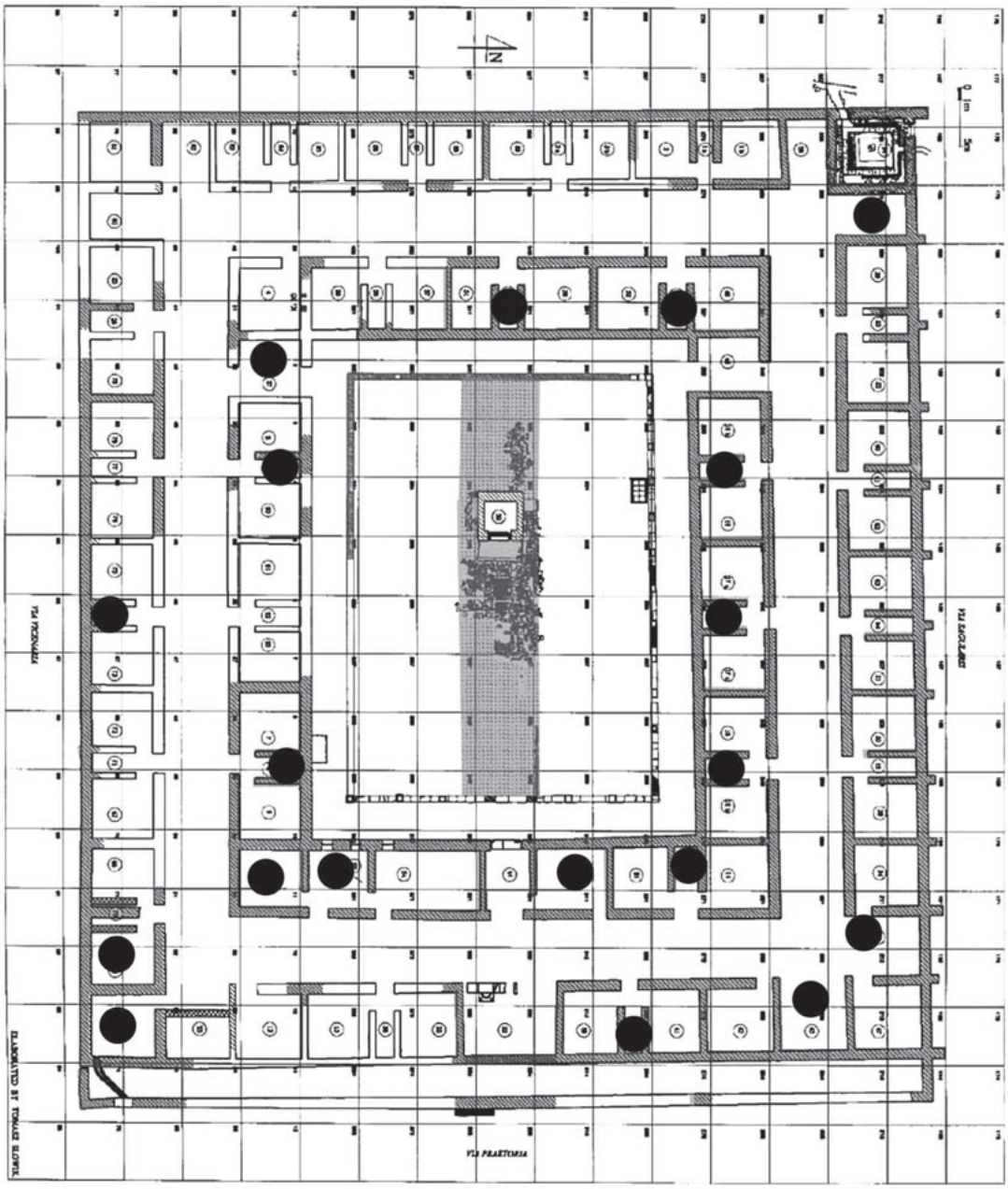

Fig. 2. Distribution of amphorae of Zeest90/Dyczek 25 type in the army hospital at *Novae* (drawn by P. Dyczek).

Upon comparing the size and shape of Dressel 24, Mau XXIX and Zeest 90, it turned out that all three, despite small differences which were also partly due to the fact that the vessels were reconstructed from pieces, definitely repeated the same type (**fig. 3**). Zeest's was the fullest form, because it had the benefit of a whole vessel discovered in the northeastern part of the Black Sea. Following this observation, the range of the Zeest 90/Dyczek 25 type was greatly extended. The vessels proved to be clearly concentrated on the Lower Danube, the northern Black Sea littoral and in the Aegean. In other parts of the Empire these vessels occurred sporadically, e.g. in *Ostia*, North Africa and Malta.[16] Potential production centers were narrowed down to the Aegean upon analysis of the kind of sites on which they were found. On the Danube, it was the main stationing post of the Roman army, meaning naturally that the amphorae, or rather their content, were brought there from other parts of the Empire. This theory was confirmed by an analysis of *dipinti* containing the name of the legion, suggesting that it was a kind of address to which the amphorae were delivered. Looking at site distribution, one has the impression that the main route for the imports was via the sea: the biggest concentration occurs on the sea coast and along the Danube. Sites at the Black Sea littoral should also be deemed importers; but not of wine, because this was a local product in both these regions and indeed vine cultivation was especially intensive at the Black Sea.[17] It would have

[16] Panella 1986, 624 f. figs. 22; 24; Riley 1979, 205 f. fig. 40; id. 1979, 206.

[17] Cf. Kolendo 1965, 134 figs. 5–7; Vinogradov/Onaiko 1975, 86 fig. 1; Whittaker 1989, 64.

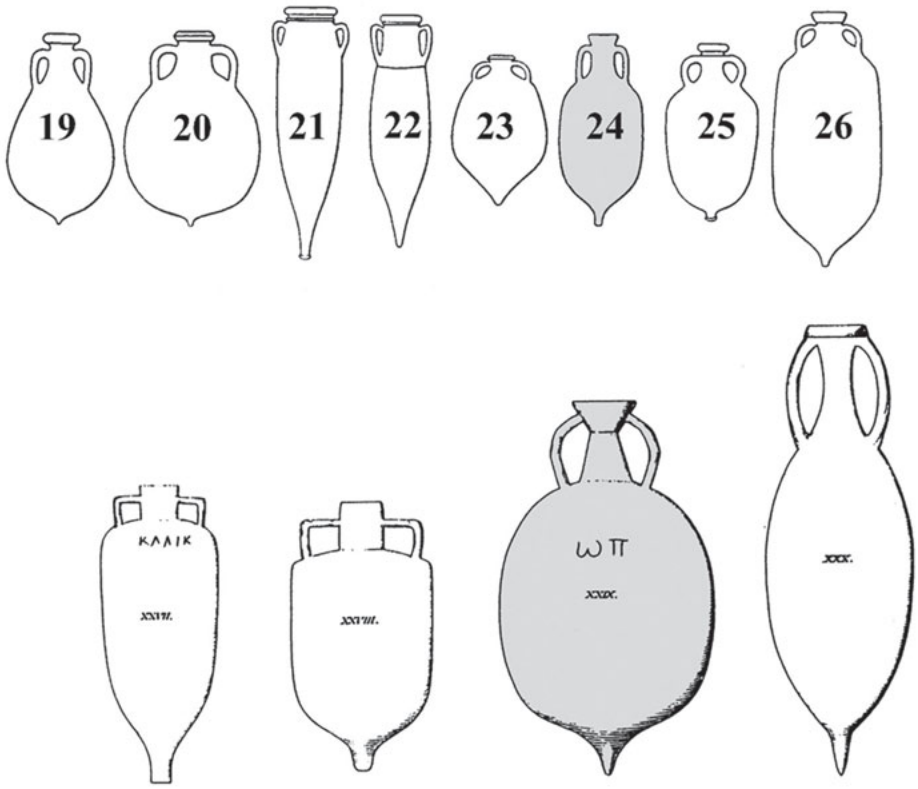

Fig. 3. Comparison of the morphology of amphorae of Dressel 24, Mau XXIX and Zeest 90 types (prepared by P. Dyczek).

made little sense to import such large quantities of wine, if the number of examples of these very capacious amphorae is any guide.

Identifying the contents and examining the stamps impressed on vessel surfaces constituted an important contribution to the discussion of the origins of this type of amphora. One of the pots from Romula in Dacia[18] preserved the word *oleum* in Latin. Therefore, oil would be the chief product transported in Zeest 90/Dyczek 25 amphorae and the number of vessels of the type found in army fortresses can only stand in confirmation. Olive oil was not produced either at the Lower Danube or at the northern coast of the Black Sea and had to be imported there. What is more, at the end of the 2nd and in the early 3rd century AD no other amphorae, which could have served for oil trade, are found in the military fortresses. Dressel 20 is residual.[19] Obviously, the amphorae must have been produced in regions where olive oil production was developed and carried out on a massive scale.

The amphorae were apparently also used occasionally to carry other goods, which could be helpful in determining the original provenance of the vessels. A pot from one of the hospital rooms at *Novae* bore the word ΑΛΜΟΣΤΡΑ (**fig. 4**), which means oyster in brine.[20] Thus, it would be a special kind of *garum*, in this case a sauce consumed by the sick legionaries. There is only one parallel for this find, but despite its uniqueness, it indicates that the area where the vessels were produced also produced *salsamenta*.

With regard to the next *dipinti*, the only word that is clear is ΠΟΝΤΙΚΟ (**fig. 5**). In the second line, I think it possible tentatively to read (TO) KAPYON, the next two illegible signs probably referring to mass. Assuming the correctness of this reading, the amphora contained Pontic nuts, known to us today as walnuts. The name would suggest not so much a Pontic origin, as the kind of nut, similarly as in modern languages. Thus, the *dipinto* leads to the conclusion that this kind of nut occurred in the region where amphorae of Zeest 90/Dyczek 25 were produced. Naturally, the nuts could have also been the object of trade. Evidence from the Pontic region confirms local trade in nuts, e.g. a sarcophagus from Kerč, discovered in the early years of the 20th century, had contained walnuts and chestnuts. It is known that nuts were imported also from the region of ancient *Ionia*, that is, the Roman province of Asia.[21] More evidence in favor of this idea was supplied by discoveries made cleaning the bottom of the Danube at Batin near *Novae*. Amphorae of Zeest 90/ Dyczek 25 were found filled with walnuts.

Stamped amphora handles also contribute important evidence. Stamped onto the handles prior to firing, they are a mark of the vessels' producers. The names appearing on stamps found on the amphorae in question are mostly Greek, e.g., CTPATONEIKOY, CΩZΩN.[22] It is interesting that these names were popular and characteristic for *Asia Minor* inhabitans.[22a] Some Latin names written in Greek also occur,

[18] Tudor 1968a, 122 no 170.
[19] Dyczek 2001, 93–99.
[20] Id. 1996, 58.
[21] Kadeev/Sorocan 1989, 93.
[22] Cf. Tudor 1968,161–164; Petrolescu 1984, 196 f.
[22 a] I Fadić, Zadarska skupina liburnskih nadgrobnih spomentika tzv. liburskih cipusa. Diadora 13, 1991, 193.

Fig. 4. *Dipinti* oyster *garum* (drawn by P. Dyczek).

Fig. 5. *Dipinti* presumably concerning Pontic nuts (drawn by P. Dyczek).

e.g., MAPKOY, TATIANOY.[23] Obviously, the producers of these amphorae lived in a region where Greek predominated and where Greeks constituted the majority of the population, but where Hellenized Romans were active, too. They seem to have been involved in distribution of amphorae, meaning trade – they were the *negotiatores* as indicated by *dipinti* bearing names in the form of *tria nomina,* e.g., *Sex. Cor. Ta.*[24] Considering that the amphorae with their contents were traded to Roman army detachments on the Lower Danube, it comes hardly as a surprise that this trade was in Roman hands, distributing also goods of Greek origin. The number of Greek names, from which follows the number of pottery producers, is limited, the same names appearing on many vessels. A total of 16 Greek and six Roman producers' names have been recorded, reflecting a population ratio of 3:1 and indicating that there was a relatively big group of Roman settlers living in the region where the amphorae were produced; this suggests that it must have been under Roman influence for a considerable length of time before that.

The Archaeological Museum in Plovdiv (Southern Bulgaria) holds an important find – a Zeest 90/Dyczek 25 amphora body fragment with a coin-impression[25] instead of a stamp (**fig. 6**).[26] Other amphora fragments bore producers' stamps, e.g. CTPATONEIKOY, CΩZΩN, HEPAKΛA, TATIANOY, AΓAΘIANOY, CYNΦOY, KOΛAPTOY (museum inv. nos. II, 1571,1573,1681–1685). The impression was not very clear, but thanks to the generous efforts of Dr. Adam Łajtar from the Institute of Archeology of Warsaw University, it was possible to decipher it in part. The diameter is 3 cm. In the center, there is a flower or branch tied with a fillet. Small letters, just 2 mm, run in the legend around the image, from right to left, in retrograde. The inscription is divided into two by the top of the flower. It can be read: *[of the] Erythreans. In the* (magistracy) of *Eparatos*. A row of dots marks the edge of the coin. Was the coin impressed on the vessel fragment intentionally or by accident? Its position on the body where ordinarily one would expect a stamp leads me to think that the coin was impressed there intentionally. Perhaps the city official was at the same time the owner of this particular pottery workshop? One fact is beyond doubt – it was definitely a coin that was impressed on the vessel, or to be more exact, the reverse of a coin issued by the municipality of *Erythrai* in *Ionia*, the modern Ildire. As far as I know, no coins of *Erythrai* with a reverse like the one seen in this impression are known. Neither has the eponym Eparatos of *Erythrai* been recorded so far. Unfortunately, this particular coin cannot be dated for lack of the obverse. City coins of Greek municipalities in the Roman Empire had very limited circulation, usually not extending beyond the borders of a given *polis*. They seldom occur anywhere beyond their place of issue, carried presumably by traveling individuals, not by the monetary system. This stands strongly in favor of the amphora being produced where the coin was used, that is, in *Erythrai*. Thus, this specific form of 'numismatic' evidence has demonstrated that Zeest 90/Dyczek 25 amphorae were produced in pottery production centers in *Erythrai* and the neighboring region, at Chios for example, or perhaps the entire Dodecapolis. It cannot be excluded that a sizable Roman population in this region was not an accident. *Erythrai* was after all of symbolic importance to the Romans, Sybilla having originated from the town, at least according to Pausanias (Graec. descr. 10,12, 1f.), as well as other ancient sources.

Erythrai in *Ionia* as the original place of production of Zeest 90/Dyczek 25 amphorae corresponds well with the available evidence. The occurrence of Greek names and inscription in Greek is not surprising in this context. Amphorae could easily be transported from the said region by sea to the Black Sea and then up the Danube. The distribution pattern concentrated on the Lower Danube, Black Sea littoral and base of the Aegean is also borne out well by this theory. The vessels, at least a part of them, could have been distributed through the Greek towns on the Black Sea. The Roman *negotiatores* may have purchased the goods there and supplied them to garrisons stationed along the Danube. The

[23] Scorpan 1977, 276.
[24] Tudor 1968 a, 122.
[25] Museum inv. no. II, 1986; Dyczek 2001, 183.
[26] I am deeply grateful to Dr. A. Łajtar for reading the impression and for his commentary which has been very helpful in the description and analysis of this stamp.

goods transported in this kind of amphora constituted further confirmation. *Ionia* was an important producer of olive oil[27], and it could easily be transported to various centers around the Black Sea. Importing olive oil to *Moesia Inferior* all the way from Greece or Spain was much more complicated and definitely more expensive than getting it from *Ionia*, which was already a Roman province at the time. One should also keep in mind that one of the main land routes to *Byzantium*/Constantinople, used as a major army supply route, ran parallel to the water route down the Danube.

One other issue deserves mention at this point. The Ionian cities of the province of *Asia*, primarily *Chios*, *Cos* and *Samos*, have until now been considered rather stereotypically as wine production centers. Other goods were not even taken into consideration as potential exports, despite solid archaeological evidence and information in the written sources to the contrary. The case of Zeest 90/Dyczek 25 amphorae indicates that they played an important role in the economy of these centers, as well as in that of the region as a whole.

The other goods confirmed as contents of amphorae of this kind conform to the theory concerning their origins. After all, not only *Chios*, but also *Cyme*, *Clazomenae* and *Samos* lying further to the south, were known producers of sauces and processed fish, which they exported to the Black Sea, despite local production of the sort. *Clazomenae* was particularly known for its products (cf. Pliny, Nat. hist. 31,94). As far as Pontic nuts are concerned, they could also be exported from this region to the Lower Danube.

Another argument in favor of my theory concerning the origins of Zeest 90/Dyczek 25 amphorae results from the physico-chemical analyses conducted on sherds of these vessels.[28] Without going into details of the examinations, which have already been published, it should be noted that the analyses confirmed the considerable technological homogenity of the group. The amphorae were made of good clay, fired at high temperatures oscillating around 1000°C. Technological changes did not appear until the end of the 3rd century AD when vessels of poorer quality started to be produced. At the same time, physico-chemical characteristics closely resemble those of early forms of LR 2 amphorae. The chemical composition of the clay corresponds to what is known of Ionian clays. There is a distinct percentage growth of calcium oxide (CaO). Peaks on the ppm scale concern chromium (Cr), strontium (Sr), circonium (Zr) and barium (Ba). Despite some differences, the clay is very much like that used to produce LR 3 amphorae, the origins of which I am inclined on the basis of chemical analyses to place in the estuary of the Maeander.[29]

The form itself must have been patterned on earlier types. The early Greek amphora, when compared to those of the Imperial period, were not so differentiated in formal terms. And virtually all of them were intended for transporting wine. The change of contents had to involve a change of shape. Vessels to carry olive oil had to be bigger and adapted to transport by water (sea and river) as well as by road over short distances. Olive oil amphorae from the western regions

Fig. 6. Impression of a coin from *Erythrai* (photo J. Reclaw).

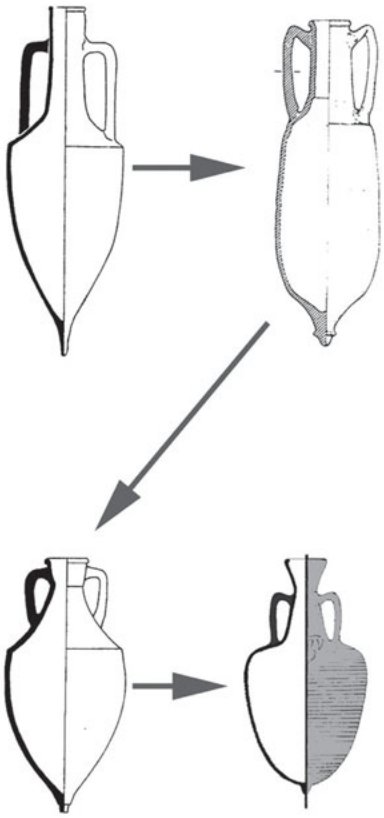

Fig. 7. Typological links – proposed by author – of amphorae Zeest90/Dyczek 25.

[27] Brun 2003, 9 f. 194f.; id. 2004, 92–94.
[28] Dyczek 2001, 177–181.
[29] Cf. ibid. 167.

of the Empire demonstrated a similar process; suffice it to compare Dressel 6 B with Dressel 20 vessels. The prototype of Zeest 90/Dyczek 25 amphorae must have undergone a similar transformation. Characteristic shape attributes, like a bulging body with small foot, distinctly ellipsoid neck profile, evidently bell-shaped rim, handles attached under the rim and to the shoulders, can be observed already on vessels of the 1st century BC from *Chios*. They are smaller than the Zeest 90/Dyczek 25 and have a different shape of rim, but the remaining attributes are virtually identical. Researchers are of the opinion that amphorae which appeared on *Cos* at the end of the 1st century BC were smaller versions of Zeest 90/Dyczek 25 (**fig. 7**), but the point of the matter is that their manufacture on the island is not certain at all. These vessels were discovered in the Tradeliè shipwreck and described as amphorae "en toupie ou de Cos ancien".[30] More importantly, they do not have the pointed handles typical of Coan products. We are not in the position to tell which of the traditions had greater impact on the modeling of the new form and to what extent various production centers mutually imitated products of the competition. We can say that at least some of these vessels were produced in *Erythrai* and, in more general terms, that the said type of amphora developed somewhere in the Dodecapolis. This process must have taken place already in the 1st century AD, which is the period to which the earliest known Zeest 90/Dyczek 25 vessels from *Histria*, a Greek town on the Black Sea, have been attributed.[31] A little later they appeared in the Bosporan Kingdom.[32] They did not reach Pannonia,[33] Upper Moesia[34] and Lower Moesia[35] before the middle of the 2nd century AD. The sequence appears to be of importance: the amphorae appeared in the Greek towns of the Black Sea trading with barbarians first and only later in the Danubian region. Trade in the latter area could develop only after the Dacian wars had ended and the borders of the province were established, stabilizing the economic situation. Conditions became conducive to commerce not only with the army detachments stationed here, but also with the local and immigrant population. Thus the chronological displacement finds explanation in the history of the region.

Zeest 90/Dyczek 25 amphorae played an important role in Lower Moesia, testifying to close and regular commercial relations with the Black Sea area and to the economic strength of the Greek towns on the Black Sea. Explaining the origins of the form and identifying the content brings new light to bear on the issue of where LR 2 amphorae were originally produced. Whatever verification of the theory that new archaeological results may bring, one thing is for sure – it reflects on a previously unknown aspect of economic life of the Greek cities in the Aegean.

30 Fiori/Joncheray 1975.
31 Scorpan 1977, 276; Suceveanu 1982, 104.
32 Zeest 1960, 135, Gajdukievic 1987, 138 fig. 162.
33 Kelemen 1993, 47.
34 Bjelajac 1996, 53.
35 Opaiț1980, 296.

Bibliography

Bjelajac 1996 — L. Bjelajac, Amfore Gornoj Mezijskog Podunavlja (Beograd 1996).

Brun 2003 — J.-P. Brun, Le vin et de l'huile dans la Méditerranée antique: viticulture, oléiculture et procédes de transformation (Paris 2003).

Brun 2004 — J.-P. Brun, Archéologie du vin et de l'huile dans l'Empire romain (Paris 2004).

Dressel 1899 — H. Dressel, Corpus Inscriptionum Latinarum XV, 2 (Berlin 1899).

Dyczek 1997 — P. Dyczek, Remarks on the Amphorae at Novae from the first to the third Century AD. Novensia 9, 1997, 81–96.

Dyczek 1999 — P. Dyczek, Amfory rzymskie z obszaru dolnego Dunaju. Dystrybucja amfor i transportowanych w nich produktów w I – III w. po Chr. (Warszawa 1999).

Dyczek 2000 — P. Dyczek, Novae – Western Sector (Section IV), 1997–1999. Archeologia 51, 2000, 89–103.

Dyczek 2001 — P. Dyczek, Roman Amphorae of the 1st –3rd centuries AD found on the Lower Danube. Typology (Warszawa 2001).

Dyczek 2002 — P. Dyczek, O genezie i rozwoju amfor typu Zeest 90 I LR 2. Novensia 13, 2002, 7–23.

Dyczek 1996 — P. Dyczek, Novae – Western Sector, 1992–1995. Archeologia 47, 1996, 51–64.

Dyczek 2007 — P. Dyczek, Late roman amphorae from the site of valetudinarium at Novae. In: M. Bonifay/J.-C. Treglia (eds.), LRCW2. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry. BAR Internat. Ser. 1662 (Oxford 2007) 827–834.

Fiori/Joncheray 1975 — P. Fiori/J.-P. Joncheray, Premiers resultats de la campagne de fouille sur l'épave de la Tradeliere. Cahier Arch. Subaquatique 4, 1975, 59–70.

Gajdukievič 1987 — B. F. Gajdukievič, Antičnyje goroda Bospora. Mirmeki (Leningrad 1987).

Kadeev/Sorocan 1989 — V. I. Kadeev/C. B. Sorocan, Ekonomičeskiuje svjazi antičnyh gorodov severnovo pričernomorija (Charkov 1989).

Kelemen 1993 — M. H. Kelemen, Roman Amphorae in Pannonia IV. Acta Arch. Acad. Scien. Hungaricae 45, 1993, 45–73.

Kolendo 1965 — J. Kolendo, Études sur les inscriptions de Novae. Archeologia 16, 1965, 124–148.

Mau 1909 — A. Mau, Corpus Inscriptionum Latinarum IV, Suppl. 2 (Berlin 1909).

Opaiț1980	A. Opaiț, Considerații preliminare supra amforelor romane și romano-bizantine dîn Dobrogea. Peuce 8, 1980, 291–327.
Panella 1986	C. Panella,Oriente e ccidente, considerazoni su alcune anfore «egee» di età imperiale a Ostia. Bull. Corr. Hellénique Suppl. 13 (1986).
Peacock/Williams 1986	D. P. S. Peackock/D. F. Williams, Amphorae and the Roman economy an introductory guide (London 1986).
Petrolescu 1984	C. C. Petrolescu, Note epigrafice (VII). Studii și Cerc. Istor. Veche 35, 1984, 189–197.
Py 1993	M. Py et al., Mélanges d'Histoire et d'archéologie de Lattes. Dictionnaire des céramiques antiques (VII^{éme}s.av n.e.–VII^{éme}s. de n.e.). Méditerranée nord-occidentale. Lattara 6, 1993.
Riley 1979	J. A. Riley, The Coarse Pottery from Berenice. In: J.A. Lloyd (ed.), Excavations at Sidi Khebish Benghazi (Berenice) II (Tripoli 1979) 91–427.
Scorpan 1977	C. Scorpan, Contribution à la connaissance de certains types céramiques romano-byzantins (IV–VII siècles) dans l'espace Istro-Pontique. Dacia 21, 1977, 269–297.
Sibella/Sciallano 1994	M. Sciallano/P. Sibella, Amphores. Comment les identifier? (Aix-en-Provence 1994).
Štaerman 1951	E. M. Štaerman, Keramičeskije klejma iz Tiry. Kratkije Soob. Inst. Mat. Kultury 36, 1951.
Suceveanu 1982	A. Suceveanu, Les thermes romains. Histria 6 (Bucurest 1982).
Tudor 1968	D. Tudor, Oltenia Romana (Bucuresti 1968).
Tudor 1968 a	D. Tudor, Comunicarii epigrafice V. Studii și Cerc. Ist. Veche 19, 1968, 331–338.
Vinogradov/Onaiko 1975	J. G.Vinogradov/N. A. Onaiko, Ob ekonomičeskih svjazjah Geraklei Pontijskoj s severnym I severo-vostočnym pričernomoriem v elenističeskoj i rimskoj vrijemia. Sovetskaja Arch. 1, 1975, 86-93.
Whittaker 1989	Ch. R. Whittaker, Les frontières de l'empire romain (Besançon 1989).
Zeest 1960	I. B. Zeest, Keramičeskaja tara Bospora. Materialy i Issled. Arch. SSSR 83, 1960.