

SOME THOUGHTS ON THE PRODUCTION, DISTRIBUTION, AND CONSUMPTION OF WINE, OLIVE OIL, AND FISH PRODUCTS IN THE PONTIC AND LOWER DANUBE AREAS (1st–6th C. AD)

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Abstract: *The author, based on the analysis of the amphorae that carried wine, olive oil and fish products, makes a brief review of the main trade currents in the Pont area. Based on this analysis, the author observes a certain differentiation between the western and northern, eastern and southern Pontic areas, especially in terms of olive oil supply. If it was fairly evenly distributed throughout the Pontic space in the early Roman era, from the 4th century it continues to be distributed mainly in the military provinces from the Lower Danube through the service of the *annona*, while the rest of the Pontic space received small amounts of olive oil through free trade. Apart from the military, a big consumer of olive oil was probably the new capital, Constantinople. Vintage wine and fish products have always been distributed through free trade. The author identifies a south-north commercial axis that reached Viminacium, which operated from the 1st century to the beginning of the 7th century.*

Within the confines of this paper, I will only try to emphasize the general pattern of trade suggested by different amphora types either locally made or imported. Of course, these patterns give us a very broad spectrum of what really happened in these areas but this is due to the current stage of our studies. At this moment we can have a better understanding only by comparative regional studies.¹ Also, the intra-regional trade is better understood if we analyze well-defined eco-systems such as the Black Sea and the Lower Danube area. We can even try to assess how predominant was one type of trade versus another one, and how the new consumption practices were diffused from the upper to the lower class. The Roman period, with its long periods of peace, security and the

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¹ SCHEIDEL 2012, p. 5; WICKHAM 2005, p. 5.

logistical capabilities of the Roman government, army, and traders brought only intensification and larger diversifications of these connections. Analyzing amphorae, a proxy for some agricultural products, I have tried to assign as much as possible certain amphora types to wine and olive oil made into certain production areas. Only high-quality wines were able to cover the long-distance transport expenses.²

The picture of the Lower Danube area completely changed after the Roman conquest of Dacia, as Roman power certainly secured this area. However, the Roman position was well-consolidated at the Lower Danube beginning with the reign of Claudius. The military presence in the province of Dacia³ was estimated at ca. 55,000 soldiers while in Moesia Inferior their number is assessed at 31,500⁴ and in Moesia Superior other 30,000.⁵ The existence of ca. 100,000 veterans, their servants, and the numerous administrative officials and colonists that arrived here *ex toto orbe Romano*, created an immense market for the East Mediterranean vintage and olive oil. According to M. Duch the total population of the Province of Moesia Inferior was ca. 300,000 in the 3rd century.⁶ Another important and decisive factor was the government's will to systematically supply especially with olive oil, to its soldiers, while wine supply was in the hands of the private merchants. In this way, commercial activity was done in parallel with fiscal movement, and these activities did not have identical trajectories.⁷ The same is also partially true for the cities of the northern shores that were intermediaries between exchanges of the northern Pontic products and the southern Mediterranean goods. But it must be stressed that private commerce was the main factor⁸, as this area was an important grain producer that attracted numerous traders. In addition, it was also the involvement of the government supply with olive oil for some Roman garrisons from the Crimea⁹ and eastern Pontic coasts.¹⁰ Furthermore, when we talk about wine, the main quantities of wine, mostly table wine, were locally produced and intra-provincial distributed while only Pontic and east Mediterranean vintages were imported.

The founding in the 4th century of the new capital of Constantinople had a huge and lasting impact on the Lower Danube and the Black Sea regions. The control and domination of this zone became paramount for the safety of the core of the Empire, Constantinople. The well-being of the capital and of the troops defending the Lower Danube frontier was a primary concern for the government. The four provinces of Moesia I, Dacia Ripensis, Moesia II, and Scythia were defended by a force of ca. 44,000 – 64,000 *limitanei*¹¹ and ca. 42,000 *comitatenses*

² DURLIAT 1990, p. 505, 513.

³ PROTASE 2010, p. 114.

⁴ MATEI-POPESCU 2010, p. 275.

⁵ MATEI-POPESCU 2015, p. 407–418.

⁶ DUCH 2015, p. 240, tab.2.

⁷ WICKHAM 2005, p. 79

⁸ MATEI-POPESCU 2012, stressed the preponderance of the oriental negotiators in the province of Dacia.

⁹ For Chersonesus, KLENINA 2005 estimates 1380 troops while ZUBAR 2007 reckons on 1000.

¹⁰ OPAIȚ 2010.

¹¹ TREADGOLD 1995, p. 52; JONES 1964, p. 682.

during the 4th and 5th centuries.¹² C. Whittaker even estimates an army of 120,000 soldiers in this frontier area.¹³ M. Zahariade considers a population of ca. 650,000–800,000 inhabitants for the province of Scythia, which seems to be exaggerated, i.e., twice the population of Moesia Inferior.¹⁴ Much more balanced is A. Soficaru's opinion, which considers the province of Scythia to have a population of 180,000 people in the 4th century and a decreased one to 110,000 in the 6th century.¹⁵ Also we should not forget the great invasions of the end of the 4th and the 5th centuries that determined the flight of many peasants.¹⁶ The immense effort made by the government to supply this frontier army is marked by the creation of *Quaestura Exercitus* in 536.¹⁷ This new political situation had a deep effect on the economic life of the Lower Danube and the Pontus, and the next analysis of the wine and olive oil amphorae thoroughly demonstrates the changes in the scale and the nature of the trade.

The typology of wine, olive oil and fish product amphorae that were either made in the Lower Danube-Pontic area or were imported into this region has been discussed in some recently published papers.¹⁸ Therefore it will be pointless to make a new presentation. It will be enough to point out that beginning with the 1st century BC there was a revival of the wine south Pontic centres, which, for a short period of time continued the old production of wine and amphorae of the local tradition as well as imitation of the Koan wine, probably due to the acclimatization of the Aegean vine in this Pontic region.¹⁹ The South Pontic amphorae will have a constant presence also during the late Roman period, although the Heracleian wine seems to disappear in the 6th century and only the Sinopean and an unknown centre (*Amastris?*),²⁰ which imitated LRA 1, continue to survive during the 6th–7th centuries. The east Pontic wine was mostly focused on the eastern part of the Black Sea.

The north Pontic wine will play an important role in the regional market only between the 2nd and the 4th centuries AD. However, the largest wine consumption, both in the Lower Danube and Pontic basin, was supplied by the local, table wine, as is attested by epigraphic testimonia and artistic representations.²¹ However, in the 4th century, we witness the occurrence of some amphora workshops in the province of Scythia, which seems to have a secure market in the east Carpathian area.²²

¹² TREADGOLD 1995, p. 50.

¹³ WHITTAKER 1994, p. 99–112.

¹⁴ ZAHARIADE *et alii* 2006, p. 139.

¹⁵ SOFICARU 2011, 34.

¹⁶ SARANTIS 2016, p. 202, n. 512.

¹⁷ Just. Nov. 41 (536); JONES 1964, p. 280, 661.

¹⁸ OPAIȚ & BAUMANN 2006; OPAIȚ 2007; 2017; 2021a; OPAIȚ 2021b; OPAIȚ 2023.

¹⁹ OPAIȚ *et alii* 2022.

²⁰ OPAIȚ 2021c, p. 324–326.

²¹ MATEI-POPESCU 2012; OPAIȚ 2013; AVRAM & JONES 2011, p. 134.

²² BAUMANN 1995, p. 269–437; OPAIȚ 2004a, p. 41, pl. 33; HONCU & MAMALAUȚĂ 2021.

Most likely a west Pontic wine production, which supplied the local market in wine carried by amphorae in the shape of a torpedo, is attested also for the 5th and the 6th centuries²³.

The Aegean centres are well represented in this area since the Archaic times, but, beginning with the Roman conquest, we witness a large diversity of Aegean centres in this area as Rhodian, Coan, Chian, Ephesian, Samian, Cretan, Cilician, and even Egyptian wine amphorae can be identified in this area. Unfortunately, there are still many unknown amphora types. These vintage wines also seem to be attracted by this huge market, created after the middle of the 1st century AD, as the situation in Spain attests too. For example, in the legionary fortress of León, the east Mediterranean wine is abundant in the first half of the 1st century AD, and become significantly reduced in the second half of the 1st century.²⁴ For the Aegean producers, it was much more profitable to sail a shorter distance and to improve their profit in this way.

The late Roman period has some interesting features. The first one is the occurrence of some specialized production areas such as the Levantine area and Cilicia-Cyprus, which manufactured very standardized amphorae of type LRA 1 and LRA 4. It is quite possible that this was due to the requirements of *annona*, wine being delivered to the army.²⁵ However, other amphora types such as LRA 3 and a large variety of bag-shaped amphorae accessed the Lower Danube and the Pontic area due to free trade.²⁶ In addition to these well-known types, we can mention some amphorae from Sardis, Sicily, Crete, North African of types Keay 25/Bonifay Africaine III B & C, and many unknown, perhaps Aegean, amphora types.

As I mentioned above, the huge presence of the Roman army created a demand not only for wine but also for olive oil, an important element of the military diet, a staple that was not an option, but a 'cultural choice',²⁷ and its acquisition was a symbol and, sometimes, an enhancement of a higher social status. This demand not only prompted the creation of a large trade network but also imposed the creation of huge olive oil industry in the eastern part of the empire. Some areas, such as Chios, Erythrai, some areas of the western coast of Asia Minor, the Peloponnese, Cilicia, or the Levant, became highly specialized in producing and exporting olive oil. Olive oil amphorae, which circulated in the eastern part of the Roman empire, are not often discussed in archaeological and economic history literature. The easternmost olive oil amphora acknowledged in this literature is Dressel 6B.²⁸ Also, LRA 2 is still considered as a wine amphora by some scholars.²⁹ If this is the real situation, the obvious conclusion would be that the Roman army of the eastern part of the empire was not supplied with olive oil at all.

²³ KUZMANOV 1985, p. 20–22; OPAIȚ 2004a, p. 28–29.

²⁴ MORILLO CERDÁN & MORAIS 2019–2020, p. 261.

²⁵ C. *Th.* 7.4.25.

²⁶ An excellent example is the shipwreck Sinope F, cf. OPAIȚ *et alii* 2019.

²⁷ FUNARI 2002, p. 240.

²⁸ CARRERAS 2010, p. 8.

²⁹ FERNÁNDEZ 2010, p. 235.

In my recent papers I tried to demonstrate that most likely this olive oil was transported in amphorae of Dressel 24 and 24 *similis*,³⁰ during the early Roman times, and their late Roman subtype LRA 2. It is the only possible explanation for the discovery of many thousands of amphorae of these types in this area. In addition, these amphorae were not pitched. This hypothesis is now widely accepted,³¹ although some scholars are still reluctant.³²

The 4th century AD did not bring new elements in the olive oil supply of this Pontic-Lower Danube area, as it seems that, at least in my opinion, the typical olive oil container, Dr 24 *similis*, changed into LRA 2, and the previous trade continued under this new shape. However, LRA 2 did not have the same generous presence in this area. It is found almost everywhere in the Lower Danube area, but its presence is severely diminished in the northern, eastern, and, most likely, the southern coasts of the Black Sea. It was made in a diversity of fabrics that suggests not only an Aegean but also a Peloponnesian and even a Lebanese area³³. A similar phenomenon suffered the Cilician amphorae of San Lorenzo 7³⁴ and Zeest 80 types. If the former is still found in the 4th century only in the province of Scythia, but having a reduced capacity, the latter continued to be manufactured until at least the 5th century and it is sporadically present in the frontier area. N Africa seems to complete in some way the necessary olive oil, at least in large cities such as Tomis and some fortresses and countryside areas, while occasionally reaching the northern and southern shores of the Black Sea³⁵ (**Map 1**). Also, for the late Roman time, we have perhaps the first archaeological documentation of a Sinopean olive oil production, these amphorae being so far sporadically found at Chersonesus, an area in a dramatic need for olive oil supply.³⁶

Pontic fish amphorae are well known in the early Roman period. It is documented by literary and epigraphic information but more due to many salting factories and numerous amphora types discovered in the Crimea, Sinope,³⁷ and in some areas of eastern Moldavia and Dobrudja.³⁸ In addition, we should not forget that most of the civilian and military fortresses were on the Danube and the Black Sea coasts. Therefore, it was plenty of fresh fish as it is attested by archaeological discoveries.³⁹ To this, we must add the conservation of fish by salting. It was enough fish in the local diet to provide the needed protein and salt required both

³⁰ OPAIȚ 2007.

³¹ REYNOLDS 2021, p. 327–341.

³² MARTIN-KILCHER & TCHERNIA 2021, p. 35.

³³ OPAIȚ 2004a, p. 24–25, pl. 13.2; BÖTTGER 1982, p. 47–48, pl. 23.276; OPAIȚ & PARASCHIV 2012, p. 120–122.

³⁴ For the olive oil production in Cilicia see IACOMI 2010 and AYDINOĞLOU *et alii* 2015.

³⁵ OPAIȚ *et alii* 2019.

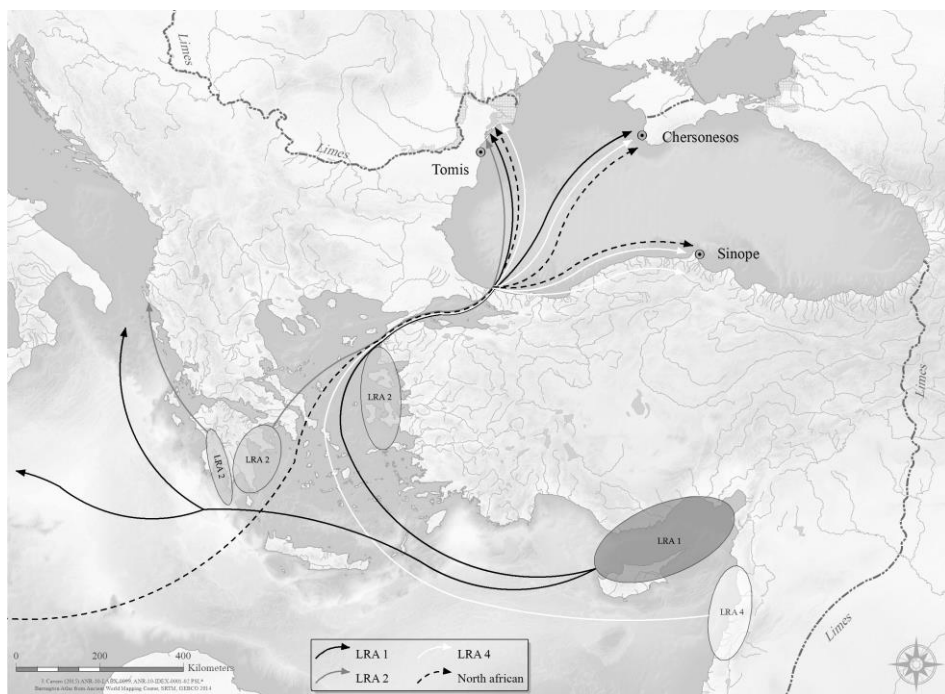
³⁶ KASSAB TEZGÖR 2010, p. 146, no.8; pls. 21, 34; a late Roman Sinopean stopper has been noticed by the author at Ibida.

³⁷ The processing of fish at Sinope is also documented by literary sources (Strabo 7.6.2; 12. 2. 11–12; 12. 3.12; Pliny *NH* 9.18; for their discussion see DOONAN 2002, p. 187–192; DE BOER 2013, p. 112.

³⁸ OPAIȚ 2007; 2021b, p. 323–331.

³⁹ STANC 2009, p. 75–86.

by soldiers and civilians. Most likely, for this reason, the number of fish amphorae is quite reduced. But, on the other hand, the capacities of these vessels were very large. This situation is in strong contrast with the German limes where the number of fish amphorae is considered to represent ca. 25% of the total amphorae discovered at Oberaden, Anreppen, Dangstetten, Rödgen and Xanten.⁴⁰



Map 1. The localization of the main amphora types production areas: LRA 1, 2, 4, North African.

Concluding remarks

This outline is perhaps too sketchy and based on information provided by limited excavations, especially for the early Roman period, many of them paying less attention to collecting all the sherds in order to reach more or less reliable statistics. Although I do not deny the importance of statistics, sometimes it is risky to extrapolate those statistics made on a reduced quantity of material or on limited areas of a site or a province.⁴¹ However, we can realize at least a hierarchy of some goods such as wine and olive oil based mainly on the amphora size, assuming that the smaller the amphora the more expensive its content and on the frequency of its appearance in certain archaeological contexts. By comparing the production and trade of these two products of the triad, grains, olive oil, wine, in a large area for such a long time we can at least grasp the main trend of their evolution and involution. I can say that the situation of these two products is

⁴⁰ CARRERAS & GONZÁLEZ CESTEROS 2013, p. 756.

⁴¹ RILEY 1979, p. 402; OPAIȚ 2004b, p. 294.

mainly typical for this area and cannot be extrapolated to the eastern or western Mediterranean. We witness a cohabitation both of a market-centered system and a controlled economy system that was balanced and unbalanced in certain areas and at certain times according to different political and economic challenges. Some points should be emphasized:

What it is worth pointing out for the Lower Danube area in the late Roman period, is the perfect overlapping of LRA 2 amphorae on the distribution of the early Roman Dr 24 and 24 *similis* amphorae types. The mapping of the latter shows how they stop between Viminacium and Singidunum, this line being perhaps the maximum of stretching the line of supply with Aegean olive oil. Scheidel arrives at the same conclusion by geospatial modeling for the time and cost of delivering goods to the army. Thus, the formal division of the empire, which happened in AD 395, followed the structure of the various networks.⁴² However, the northern Pontic shore did not enjoy the same situation as the presence of LRA 2 decreases gradually whereas we go to the eastern Crimea and the Colchian shore. This is a shocking contrast with the situation of this area in the early Roman times when Dr 24 and 24 *similis* were abundantly found here. The presence of Zeest 80 is restricted only to the Lower Danube area during the late Roman time, and that also points to an olive oil content carried by this vessel, this time much more controlled by the state. Most likely the creation of the new capital absorbed much of this olive oil and the existent resources were able to supply only the border provinces, leaving much of the Pontic basin to be provisioned by the surplus existent on the free market. This situation is very well epitomized by the shipwreck Sinop F, which carried olive oil North African amphorae in addition to the wine amphorae LRA 3, LRA 4, and some Aegean small bag-shaped amphorae⁴³. It is perhaps the most visible effect of the *annona* in this Pontic area.

Another point to be stressed is the thriving countryside of the Lower Danube, especially during the first three-quarters of the 4th century. We have attested for the first-time workshops that manufactured amphorae for exporting the local wine from the province of Scythia, and plenty of table amphora variants for the locally consumed wine. Olive oil amphorae of type LRA 2, Zeest 80, and occasionally even N African continued to be present in this milieu in modest but constant quantities. The imported wine had mostly a south Pontic provenance, Heracleian, and Sinopean, with the prevalence of the latter. The situation is dramatically changed beginning with the 5th century, mainly after 450 AD, when the *vicus*-based agricultural system of Scythia⁴⁴ and the *villa*-based agricultural system of Moesia Secunda⁴⁵ are abandoned and the rural population found shelter behind or in front of the cities walls.⁴⁶ The agricultural land continues to be

⁴² SCHEIDEL 2013, p. 20.

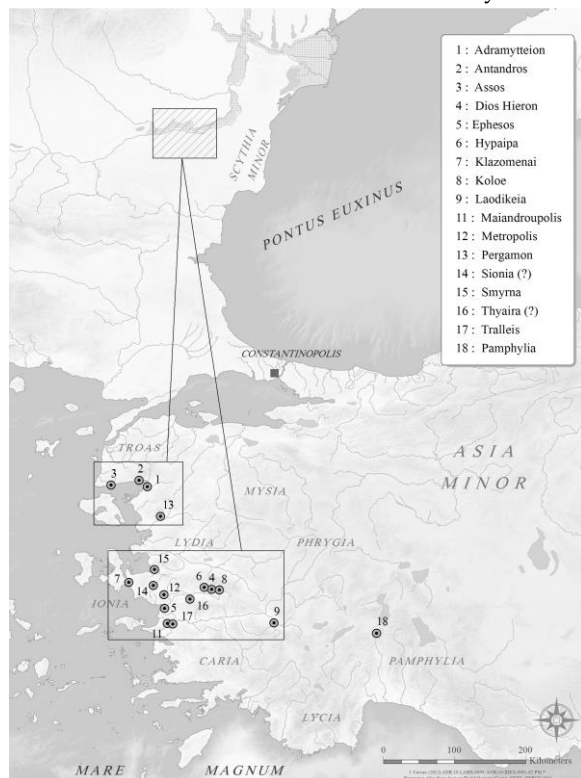
⁴³ OPAIT *et alii* 2019.

⁴⁴ OPAIT *et alii* 1992.

⁴⁵ CONRAD 2006, p. 318–19, fig. 2.

⁴⁶ For example, at the Murighiol fortification a considerable *extra muros* quarters defended by ditches embankments, developed during the 5th–6th centuries AD, cf. ZAHARIADE *et alii* 2006, p. 144–145; Troesmis: BAUMANN 1980, p. 159–196. The same situation existed also at Argamum, Noviodunum, and Histria.

worked but the peasants used only seasonal dwellings, usually a large rectangular room as is the case in the territories of Ibida,⁴⁷ Argamum,⁴⁸ and Chersonesus.⁴⁹ This situation is also attested by the literary sources.⁵⁰



Map 2. The origin of the seals discovered in the province of Scythia, after Chiriac & Munteanu 2014, pl. IV.

ered many lead seals found in Dobrudja brings to light important economic

I am wondering if we cannot connect the diminished local wine production with the massive presence of LRA 1 amphorae in these frontier provinces. Grain was preserved now mostly in fortified *horrea* such as Topraichioi,⁵¹ Capidava,⁵² and Dicin⁵³ or warehouses such as Capidava,⁵⁴ and Aegyssus⁵⁵ from the last quarter of the 4th and the 6th centuries.

Public (*annona*) and private activities in border provinces, such as those of Lower Danube, overlapped. If the olive oil was distributed through the *annona* system, the expensive vintages arrived due to the market exchange mechanism.

These Aegean amphorae can stand proxy also for other goods that did not leave visible archaeological traces. However, in some cases such as packs of textiles or clothes that were tied up and sealed, the seals can be found in archaeological excavations. A recent paper that gathered

⁴⁷ OPAIȚ *et alii* 1992, 105, fig. 4.2.

⁴⁸ V. Lungu, pers. comm.

⁴⁹ Farm 151, pers. observation.

⁵⁰ Sirmium: Theoph. Sim. 1.4.1–2, trans. Whitby & Whitby 1986, 24–25 (“He encountered the majority of the city’s inhabitants encamped in the fields, since the harvest constrained them to do this; for it was the summer season and they were gathering in their subsistence”). Thessalonica: the Miracles of St. Demetrius 2.2.199 (“Armored horsemen came from all sides, fell on the Thessalonians who, expecting nothing, were in the fields for the harvest, killed them or made them prisoners, and rounded up all the cattle they found as well as the agricultural equipment”).

⁵¹ OPAIȚ 1991b.

⁵² OPRIȘ 2003, p. 31–33, pl. IV.

⁵³ POULTER 1999.

⁵⁴ OPRIȘ & RĂȚIU 2016.

⁵⁵ Personal observation, excavation 1976; MOCANU & NUȚU 2017, fig. 3.

connections with exactly that part of the Asia Minor area that was involved in extensive oil and vintage production (**Map 2**).

The seals mention 17 cities from Ionia (especially Smyrna and Ephesus), Lydia, Phrygia, Mysia, and Pamphylia.⁵⁶ And as Ward-Perkins put it for the cloth produced in Antiochia, the cloth industry dwarfed the production and exchange of wine and olive oil from the same region.⁵⁷

The strong connection of this western Asia Minor and Syrian-Palestinian areas with the *annona* supply of the Lower Danube provinces is attested by many inscriptions discovered at Novae and Oescus erected by *primipilarii*. These were civilian officials in charge of the transport of supplies, *pastus militum*, from their home provinces to the legions on the frontiers. Certain provinces supplied *annonariae species* to certain assigned legions.⁵⁸ For example, *Legio V Macedonica* from Oescus was supplied by the provinces of Asia and Syria Palaestina, while *Legio I Italica* in Novae was by the end of the 3rd century supplied from Phoenicia and in the late 4th and early 5th centuries from Hellespont and the Islands.⁵⁹ These supply lines had perhaps deep roots as amphorae from Lebanon area occur at Ibida and Troesmis even from the end of the 1st – beginning of the 2nd centuries AD.⁶⁰ If they could arrive at such an early time and so far inland of Moesia Inferior, it was only due to the state logistics. Amphorae from this area, Böttger type II 2, were identified at Topraichioi, Troesmis and Iatrus in the 4th century AD.⁶¹

“Land transport was slow, inefficient, and costly” is a frequent statement made by some historians.⁶² However, recently Wickham conceded that although “Land transport was so much more expensive for bulk traffic than routes by water...the state could defy this logic if it wanted to...”.⁶³ Fortunately, economic antiquity did not follow the principles of the modern economy. The theory of supply and demand worked differently in antiquity. The state could not leave the supply of soldiers with olive oil at the whim of the free market. If a vintage could be preserved in amphorae for many years, the olive oil cannot be stored and resist more than two years; therefore, a constant supply of this staple was necessary to be secured. The state applied a harsh regime on merchants and sea captains through the *annona* system for providing wheat and olive oil for the capital and the army⁶⁴. Additional help perhaps arrived from the imperial domains.⁶⁵ However, the state did not suppress private commerce in other products such as vintage, spices, or textile and clothes as plenty of amphorae and lead seals attest to. In addition, the desire and financial power of elites facilitated the trade-in

⁵⁶ CHIRIAC & MUNTEANU 2014.

⁵⁷ WARD-PERKINS 2001, p. 169.

⁵⁸ See the discussion and bibliography in SARNOWSKI 2013; ŁAJTAR 2013, and ŁAJTAR 2021.

⁵⁹ ŁAJTAR 2013, p. 106.

⁶⁰ OPAIȚ & PARASCHIV 2012, p. 120–122, fig. 15.

⁶¹ OPAIȚ 2017a, p. 599.

⁶² HOPKINS 1983, p. xxiv; WICKHAM 1984, p. 13; 1998, p. 284; GARNSEY & SALLER 1987, p. 44, 90.

⁶³ WICKHAM 2005, p. 709.

⁶⁴ C. Th. 13.5.26; 13.5.32; SIRKS 1991, p. 232–33.

⁶⁵ OPAIȚ & DIAMANTI 2014.

vintages, occasionally even olive oil far inland. This is the situation with fine wines such as amphorae of Kapitän 2 imported in the mountainous north of Moldavia,⁶⁶ or in northern Anatolia at Pompeiopolis.⁶⁷ The same city imported an impressive number of LRA 4 and large and heavy Tunisian and Tripolitanian olive oil amphorae. In conclusion, when it was a political command or a strong elite desire, expensive agricultural products were supplied regardless of how costly and slow was their transport. However, at the beginning of the 7th century AD the increased cost of funneling supplies to the borders of the empire came to a cost as the coercive capacities weakened.⁶⁸

I totally agree that the role of the church in the late antique economy and the long-distance trade was minimalized.⁶⁹ Beginning with the 6th century we see veritable osmosis between state and church, the former passing more of its responsibilities to the church. It might be the church that created its own channels for an ecclesiastical trade with a far inland city such as Pompeiopolis, although we should not exclude the development of a Levantine trading diaspora.⁷⁰ I am wondering if we cannot tie the presence of so many amphorae of LRA 1, 2, and 4 types bearing Christian inscriptions to the existence of an episcopal service of charity that acted in times of crisis.⁷¹ This is an aspect of the late Roman economy that deserves further studies.

In conclusion, from an economical point of view, what happened during the late Roman times in the Lower Danube area is not a dramatic change in comparison with the early Roman times. The supplying of the Danubian Roman garrisons followed the same axis South-North, from the Aegean to beyond the Iron Gate reaching the Sirmium-Viminacium area as the maximum point of extending the line of supplies; this maximum of stretching should be considered not only in terms of time and price cost but maybe also of the production capacities of olive oil in the Aegean areas. Also, the extremely reduced number of LRA 2 at Pompeiopolis might suggest that the olive oil production of the Aegean region was mostly devoted to the army of the lower Danube frontier. Therefore, it is a little bit too much to say that the Aegean and the Black Sea constitute the “new core” and “the most accessible hinterland for Constantinople”.⁷² This axis N-S existed since Archaic times and it was only reinforced by the state-directed transport, and by the *pax Romana* that encouraged a booming free trade in the early Roman times. The establishment of Roman garrisons and their need for supply contributed to substantial development of the producing areas such as the Aegean, the Peloponnesus, and the Levant.⁷³ Even if Rome was the capital, the supplying lines of the Lower Danube functioned on the South-North axis and not

⁶⁶ OPAIȚ 2017b.

⁶⁷ OPAIȚ 2018, p. 702, fig. 18.

⁶⁸ SCHEIDEL 2013, p. 25.

⁶⁹ KINGSLEY & DECKER 2001, p. 10; BERNAL-CASASOLA 2010; REYNOLDS 2021, p. 340.

⁷⁰ OPAIȚ 2021a.

⁷¹ DURLIAT 1990, p. 456, 540–54; see for example the LRA 1 amphora with a dedication to Luconochos, son of Lykatios, found at Sucidava, cf. POPESCU 1976, p. 317–318, no. 316.

⁷² SCHEIDEL 2013, p. 20–22.

⁷³ OPAIȚ 2004b, 306; LEWIT 2015, p. 37.

the West-East axis. The latter axis stopped also in the Singidunum/Viminacium area due to the same principle of equidistance of logistics. This eastern axis, the Aegean-Lower Danube/Pontus worked in parallel with the western axis i.e., West Mediterranean-Rhine-Upper/Mid Danube, both axes respecting the principle of equidistance between producing-consuming zones. Most likely the eastern axis was perfected by Trajan that took care to stretch this axis to Viminacium-Singidunum, digging a special channel at the Iron Gate and easing the transport of supply to the west.⁷⁴ Occasionally, in this contact area between west and east, we can find olive oil amphorae DR 6 B and Dr 20 in the eastern area such as Dacia, and vice versa Dr 24 *similis* in Pannonia, but these containers occur in reduced quantities. Most likely, in a period of shortage, each system borrowed from its neighborhood. The situation is much simplified, from a logistic point of view, after the abandonment of Dacia. However, even during the late Roman time, in Pannonia and Noricum LRA 2 amphorae are almost totally missing.⁷⁵ Most likely the olive oil reached some remote settlements of this area due to a private trade at this time.⁷⁶ The situation is better on the eastern coast of the Adriatic that belonged to the Eastern Roman Empire, probably due to its proximity to the Peloponnesus, an important olive oil producer area.⁷⁷ Therefore, what we have at the Lower Danube in the 4th century is only a continuation and reinforcement of the early eastern Roman axis,⁷⁸ as a different variable entered into this equation, the new capital, Constantinople. The traffic on this axis was much increased as the Egyptian grain and more Aegean olive oil entered into those huge five granaries and many *horrea olearia* of Constantinople.⁷⁹ This new variable substantially changed the economic situation of the northern and eastern areas of the Black Sea. In addition, a certain division of the Pontic Pond seems to be more accentuated after the creation of the new capital. The number of olive oil amphorae of LRA 2 type becomes shorter in the northeastern and eastern Pontic area perhaps as a reflection of the state-controlled system that had a kin interest in supplying firstly the border provinces of the Lower Danube, an area that is clearly dominated by LRA 1 and LRA 2 during the late Roman time. This imperial policy had as a direct consequence the strengthening of an autarchic system, a system that was well-known to this area even before the Roman arrival in the Pontic basin. The answer of the northeastern Pontic area was to attract some olive oil from private trade, either Sinopean or North African, and to rely mostly on animal fat, as the local, large lamps clearly attest to.⁸⁰ Although the northeastern Pontic area developed its own micro-regional trade in wine, we find modest imports of Cretan and Cilician vintages. However, the central southern coast,

⁷⁴ ŠAŠEL 1973.

⁷⁵ NAGY 2014, fig. 3; HÁRSHEGYI & OTTOMÁNYI 2013; MODRIJAN 2010; 2011.

⁷⁶ WICKHAM 2005, p. 78 and note 57.

⁷⁷ Personal observations at Butrint, Dyrrachium, Apollonia, and Saranda; REYNOLDS 2021, p. 332, fig. 24.a–h.

⁷⁸ LEWIT 2015, p. 32.

⁷⁹ MANGO 1985, p. 40.

⁸⁰ FEDOSEEV *et alii* 2010, p. 89, fig. 39; it is worth noting that in this late 6th century Panticapaeae closed context exists only one small size LRA 2 amphora of ca. 3 litres capacity.

such as Sinope, according to a recent underwater discovery, imported vintage wine in Bag-shape, LRA 3, LRA 4 amphorae types, and olive oil in N African amphorae.⁸¹ These economic connections vanished forever after the empire lost its prolific southern regions due to the Persian and Arab invasions. Other areas, such as the province of Scythia or the territory between the Carpathians and the Danube, profited by the peaceful time of most of the 4th century and developed their own wine production.⁸² The same situation I have observed inland the Anatolian Plateau at Pompeiopolis where the local wine production was flourishing during the 4th–7th centuries but the local elite had enough connections and financial resources to import impressive quantities of Aegean wine in Kapitän 2 amphora type in the 3rd–4th centuries and Palestinian in LRA 4 amphora type in the 4th–6th centuries. Here again, after the Persian and Arab invasions, the Mediterranean wine and olive oil ceased to arrive and the city relied only on south and east Pontic wine.

Certainly, our vision of ancient economic life, based mainly on discoveries made in the coastal regions, might be distorted as some pottery analyses seem to suggest. Different demands satisfied by different networks seem to be in action and only future research will shed light on this chapter of ancient history.

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⁸¹ OPAIȚ *et alii* 2019.

⁸² OPAIȚ 2017a; HONCU & MAMALAUĂ 2021.

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