

# The Dynamics of Trade in Transport Amphoras from Sinope, Thasos and Rhodos on the Western Black Sea Coast: a Comparative Approach

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One of the means most employed for dating archaeological complexes in the Hellenistic period is provided by the amphoras and the amphora stamps from important Greek production centres such as Thasos, Rhodos, Knidos in the Aegean, and Herakleia Pontike, Sinope or Chersonesos on the Black Sea. In recent decades, the chronologies of the amphora stamps from these centres have gained considerably in precision, due to the increased number of closed deposits published, and to the efforts of specialists such as V. Grace,<sup>1</sup> Y. Garland,<sup>2</sup> M. Debidour,<sup>3</sup> Y. Grandjean,<sup>4</sup> V.I. Kac,<sup>5</sup> S.Ju. Monachov,<sup>6</sup> J.-Y Empereur,<sup>7</sup> E. Doğer,<sup>8</sup> G. Finkielsztejn,<sup>9</sup> N.F. Fedoseev<sup>10</sup> and the present author.<sup>11</sup> Even if the absolute chronologies of the different lists of magistrates have yet to be documented, the relative chronologies divided into “groups”, “sub-groups”, “blocks of names”, “periods”, “types” etc. are precise enough to offer a suitable dating for the archaeological assemblages.

These chronologies were devised independently of each other, although the associations of different categories of stamps in the same deposits were noted and used. The time is still far off when we will devise “tables of correspondence” for every year and the annual magistrate names from different amphora exporters. Nevertheless, if we assume that the extant amphora stamp chronologies are generally correct, we may try to compare the influx of transport amphoras coming from several production centres in order to better understand the dynamics of their trade in particular import areas or cities. S.Ju. Monachov has successfully published such comparisons on amphoras from many closed deposits of the Northern Black Sea area.<sup>12</sup> What we still have to study is the evolution in time of the amphora imports from different centres in a particular area, according to the chronological sequences currently proposed, but we are perfectly aware that this approach is severely limited by a number of obstacles. We shall ignore:

1. The total amount of amphoras imported from every centre;
2. The real content of these amphoras (wine, oil, other merchandise), the amphoras' capacities (the same stamp found on standard and fractional amphoras), their prices, the reasons for their importation, the *ratio* of stamped to unstamped amphoras in every centre and its evolution in time, the routes followed on their journey, etc.<sup>13</sup>
3. The economic and political background in the export and import centres at a particular moment: that is, the real circumstances which could determine the directions of export or a preference for one or another kind of merchandise.
4. The nature of relations between the export and import cities and the other merchandise from every production centre that reached the import centres.

So what can we expect to discover from such comparisons?

First, if we compare the number<sup>14</sup> of amphora stamps from different "well dated" export centres in a particular import city during the same chronological sequences we have the chance to see how the extant chronologies fit each other.

Second, if the chronologies are good, we may establish, even approximately, the periods when trade increased, diminished or decayed in that particular import city and, eventually, to parallel them to the known political situation of that city.

Third, if we assume that the Greek cities served as *emporía* for merchandise to the hinterland and the neighbouring barbarian populations, we may better understand the nature of these relations and their evolution in time.

Our knowledge of the amphoras and amphora stamps from the Greek cities of the Western Black Sea coast is uneven. So far, only Istros and Kallatis have offered a large number of amphora stamps, which are published or prepared for publication. Even for these two centres the amount of entire amphoras or amphora fragments published is still very small: in addition we have to consider the lack of published closed deposits. The situation looks better for the amphora stamps: those from Thasos<sup>15</sup> and Sinope<sup>16</sup> are the best studied, and the Rhodian ones are under way.<sup>17</sup> For other Greek colonies (Orgame,<sup>18</sup> Tomis,<sup>19</sup> Bizone,<sup>20</sup> Dionysopolis,<sup>21</sup> Mesambria<sup>22</sup> and Apollonia<sup>23</sup>), the number of published amphora stamps is rather small. We know some other, larger collections of amphora stamps found in the Istrian *chora* (at Cogea<sup>24</sup> and Sarchichioi<sup>25</sup>), in the Kallatian *chora* (at Albești),<sup>26</sup> in the necropolis from Murighiol<sup>27</sup> and in the Getic fortified settlement from Satu Nou - Valea lui Voicu.<sup>28</sup> These may be considered "closed deposits", as their existence was shorter in time.

In the following, I will try to analyze the dynamics of the presence of Thasian, Sinopean and Rhodian amphora stamps at Istros, Tomis and Kallatis.

THASOS

For the Thasian stamps at *Istros* I follow Alexandru Avram’s information and statistics.<sup>29</sup> For the eponyms on the old style stamps (“timbres anciens”) I follow the order proposed by Y. Garlan (1999a), and for the new style stamps (“timbres récents”) the one proposed by Avram (1996), with the corrections made by M. Debidour (1998). The four years difference between the two series of stamps (old style and new style) in the two chronologies was eliminated by “dating” the second series four years earlier. The total number of stamps considered is 810.

For Tomis and Kallatis we used the information presented by Avram 1996, tabs. VI (87 items) and VIII (498 items).

The relative frequency of the Thasian eponyms was calculated for periods of 20 years and for decades.

Period	Istros % (810)	Tomis % (87)	Kallatis % (498)
390-371	4.07	0	0
370-351	6.42	2.3	0
350-331	21.11	22.99	4.02
330-311	33.58	43.68	6.02
310-291	8.27	5.75	11.85
290-271	18.02	11.49	26.91
270-251	6.79	8.04	36.34
250-231	1.73	5.75	14.86
	99.99	100	100

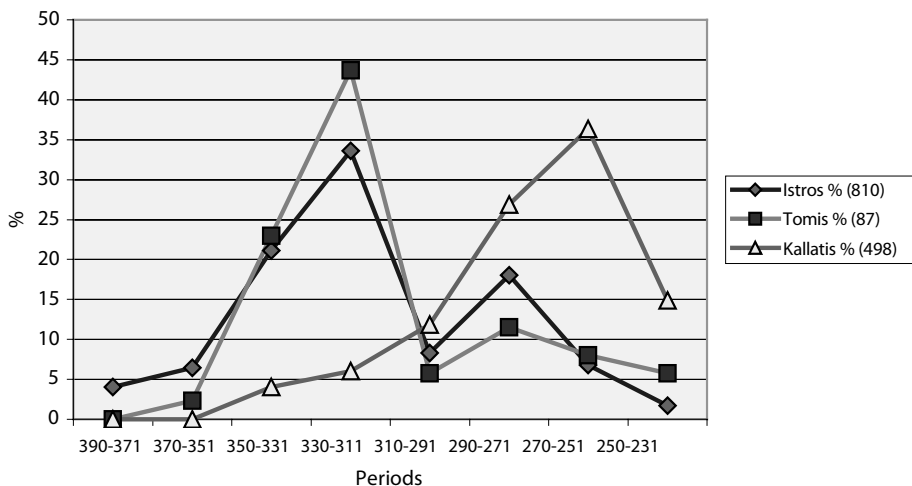


Fig. 1 The relative frequencies of the Thasian eponyms at Istros, Tomis and Kallatis by 20 years intervals.

Period	Istros % (810)	Tomis % (87)	Kallatis % (498)
390-381	2.59	0	0
380-371	1.48	0	0
370-361	1.36	0	0
360-351	5.06	2.3	0
350-341	11.48	3.45	2.61
340-331	9.63	19.54	1.41
330-321	13.21	4.6	1.41
320-311	20.37	39.08	4.62
310-301	3.46	4.6	4.62
300-291	4.81	1.15	7.23
290-281	7.78	6.9	10.24
280-271	10.25	4.59	16.66
270-261	2.84	4.59	12.65
260-251	3.95	3.45	23.69
250-241	1.48	4.6	13.45
240-231	0.25	1.15	1.41

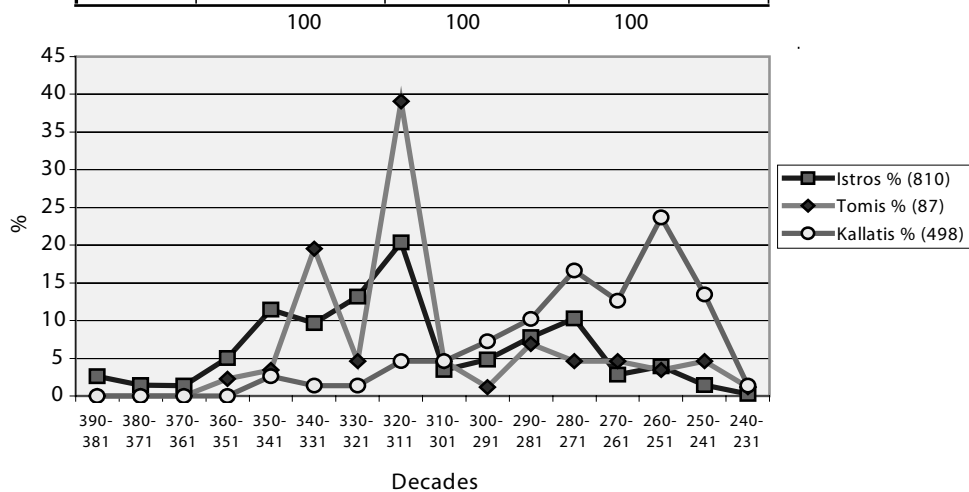


Fig. 2. The relative frequencies of the Thasian eponyms at Istros, Tomis and Kallatis, by decades.

The distribution graph plotted on the basis of 20 years intervals (Fig. 1) shows a similar situation at Istros and Tomis, in spite of the great difference in absolute figures (c. 10:1 ratio) between the two cities.<sup>30</sup> The peak for imports is up to 33.58% at Istros and 43.68% at Tomis in the interval c. 330-311 BC. A somewhat smaller peak can be observed already in the period c. 350-331 BC, with 21.11% and 22.99% respectively. A third peak falls between c. 290-271 BC, with 18.02% and 11.49% respectively. An abrupt drop in imports is registered in the interval of c. 310-291 BC (8.27% and 5.75%). After c. 270 BC,

the Thasian import is in decline in both cities, more severely at Istros. Here, the import of stamped amphoras starts from the beginning of stamping and ends shortly after c. 245 BC. At Tomis, the earliest stamps are from c. 370-351 BC (2 items, in fact from c. 360 BC, the beginning of Group F1 of the old style stamps), and the last ones shortly after c. 240, but the relative frequency is about 3 times greater (5.75%) than at Istros (1.98%).

At Kallatis, the situation is very different. The import of Thasian amphoras starts here only after c. 355 BC (second part of Group F1 of the old style stamps). The volume of imports progressively but slowly increases in the second half of the 4th century BC. In the interval c. 310-291 BC, the relative frequency is larger (11.85%) than at Istros and Tomis (where we registered a drop in the imports). The peak in imports reaches 36.34% between c. 270-250 BC, preceded by a somewhat smaller peak (26.91%) between c. 290-271 BC. Only in the next period, after c. 250 BC, do we see the decline in imports, with a relative frequency of 14.86% (about 7 times larger than at Istros and 3.5 times larger than at Tomis).

The only period with a relatively large quantity of Thasian imports in all three cities is between c. 290-271 BC, yet with a clear preference for Kallatis (26.91%, vs. 17.8% at Istros and 11.49% at Tomis).

The graph of distribution by decades (Fig. 2) offers more details, especially for Istros and Kallatis. At Tomis, the distribution graph shows more abrupt lines due to the much smaller number of items considered.

The peak of the imports falls now between c. 320-311 BC at Istros and Tomis. The second peak is no longer the same in these two cities: c. 350-341 BC at Istros *vs.* c. 340-331 at Tomis. Between c. 330-321 BC we have a small increase at Istros (13.21% from 9.63% in the previous interval) and an abrupt drop at Tomis (4.6% from 19.54%). The third peak is also different: c. 280-271 BC at Istros and c. 290-281 at Tomis. The great drop between c. 310-291 is more acute between c. 300-291 BC at Tomis.

At Kallatis, the progress of the imports is gradual through the second half of the 4th century BC. The peak is between c. 260-251 BC. The preceding somewhat smaller peak occurs between c. 280-271 BC, with a small decline in the next decade, before the great peak mentioned above.

## SINOPE

For the Sinopean stamps I follow the chronology established by myself,<sup>31</sup> keeping in mind that its relevance is not the same for the different groups and sub-groups. We consider the beginning of the Sinopean stamps with magistrate names at c. 350 BC and the end at c. 190 BC.<sup>32</sup> The absolute number of items is very different: 578 for Istros, 784 for Kallatis and only 119 for Tomis.

The distribution graph for the 20 year intervals of the Sinopean magistrates reveals the main tendencies. It points to a peak in the imports at Istros

Period	Istros % (578)	Tomis % (119)	Kallatis % (784)
350-331	5.19	4.2	0.64
330-311	0.35	4.2	0.38
310-291	2.08	0	1.53
290-271	14.36	15.13	15.65
270-251	37.89	28.57	64.12
250-231	26.64	41.18	12.21
230-211	10.9	5.88	4.07
210-190	2.59	0.84	1.4
	100	100	100
	78.89	84.88	91.98

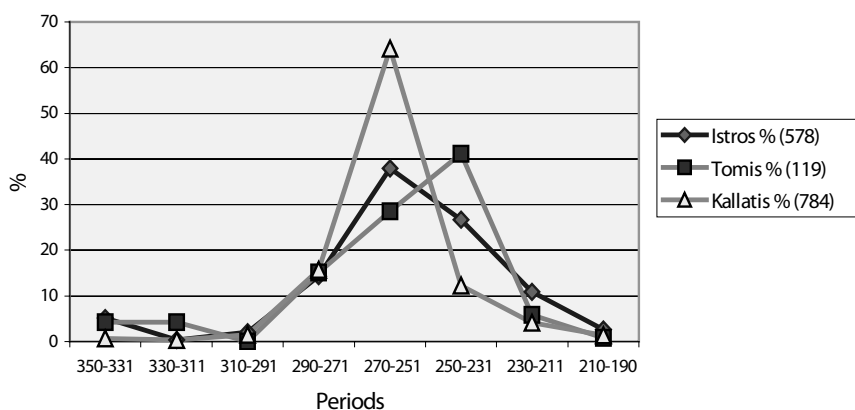


Fig. 3. The relative frequencies of the Sinopean astynoms at Istros, Tomis and Kallatis, by 20 years intervals.

and Kallatis in the same period, i.e. c. 270-251 BC, covering the second half of Group 4 and the beginning of Group 5.

The distribution line for Kallatis is yet more acute than that for Istros. After a very low presence in the first three intervals, it grows from 1.53% between c. 290-271 BC, up to 64.12% in the following interval, then it drops to 12.21% between c. 250-231 BC and then lower and lower. 92% of the Sinopean imports at Kallatis came between c. 290-231 BC.

At Istros, the first peak comes in the same interval (c. 270-251 BC), but its value is only 37.89%. The second one comes c. 250-231 BC (26.64%). The value for the interval c. 290-271 BC gives the earliest peak, with 14.36%. In all, the three intervals cover 78.9% of the imports. It is interesting to note the relatively high values in the first interval, covering Group 1 of Sinopean stamps, with 5.19% of all the imports, followed by a severe drop in the next two intervals, i.e. Group 2 and the first part of Group 3.

Almost 85% of the Sinopean imports reach Tomis between c. 290-231. Here the highest peak is later than in the other two cities, at c. 250-231 BC,

Period	Istros % (578)	Tomis % (119)	Kallatis % (784)
350-341	0.86	0.84	0.51
340-331	4.33	3.36	0.13
330-321	0.17	3.36	0.13
320-311	0.17	0.84	0.26
310-301	0.52	0	0.38
300-291	1.56	0	1.15
290-281	4.5	5.88	3.06
280-271	9.86	9.24	12.63
270-261	23.53	15.97	49.23
260-251	14.36	12.61	15.05
250-241	19.9	34.45	9.18
240-231	6.75	6.72	3.06
230-221	4.33	0.84	1.66
220-211	6.57	5.04	2.42
210-201	0.86	0.84	0.77
200-190	1.73	0	0.38
	100	99.99	100
	57.79	63.03	76.91

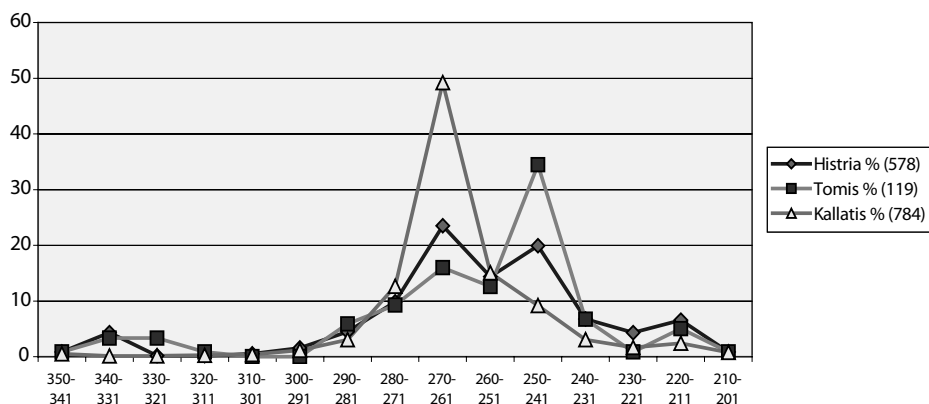


Fig. 4. The relative frequencies of the Sinopean astynoms at Istros, Tomis and Kallatis, by decades.

with 41.18%. The other two peaks came before, at c. 270-251 BC (28.57%) and c. 290-271 BC (15.13%). But the degree of approximation for this city is very high, due to the very small number of stamps.

In order to obtain more details, we have to look at the other distribution graph, that by decades (Fig. 4). We notice now that the period of the influx of Sinopean imports at Kallatis is even shorter, covering the period between c. 280-241, with 86% of the total in only 40 years. The first peak is in the interval of c. 270-261 BC (49.23%, almost the half of all the imports in 10 years!), covering mainly the last two thirds of Group 4.<sup>33</sup>

At Istros, the dynamics of the imports are more stable. After a short period of growth in imports between c. 340-331 BC (second half of Group 1), there follows a long drop in imports (c. 40 years, covering Group 2 and the first part of Group 3). Then the imports increase steadily, reaching their peak between c. 270-261 BC (23.53%).<sup>34</sup> Afterwards, the volume of imports remains high, with a slight decrease during the sub-group Va, and a second peak between c. 250-241 BC. Only from the last decade of the 3rd century BC does the volume of the imports drop dramatically. But we must remember that the officials of our sub-group Ve are not ordered at all, so in the future the distribution line may change in some way.

For Tomis, the distribution line points to a peak of the imports between c. 250-241 BC (34.45%). For the period between c. 270-241 (sub-group Vb mainly) we have 63% of all the imports, a value close to that from Istros. The second highest peak is contemporary with the highest ones from Istros and Kallatis, i.e. c. 270-261 BC.

## RHODOS

The Rhodian amphora stamps now have a new chronology, proposed by G. Finkielsztejn.<sup>35</sup> Here we find for the first time a coherent order of the Rhodian eponyms, starting from the author's sub-period Ib (c. 270 BC) up to the end of V. Grace's Period V (108 BC). The most important changes proposed by Finkielsztejn come from the establishing of the real length of Period IV, c. 14-16 years instead of 29-30 in the previous chronology. This correction has modified the dating of the "Pergamon deposit", from c. 205-175 BC to c. 198-161 BC, with all the other series being re-dated accordingly. The arguments for the succession of many eponyms or groups of eponyms are very solid, as they re-establish the activity of many representative amphora workshops in connection with the evidence of some "closed deposits". Yet, the sequence of several names needs supplementary proofs and is inconsistent with other evidence.<sup>36</sup> For the present paper I adopted the Finkielsztejn's chronology, with a few changes in his order of names I consider important.<sup>37</sup>

In the West Pontic area, the number of the Rhodian amphora stamps is quite small,<sup>38</sup> if compared with the Thasian and Sinopean ones or considering the much longer period of issue (about two centuries) and the much greater number of stamps produced in this period. 460 items have been registered from Istros, 225 from Kallatis (partly unpublished) and only 195 from Tomis. For the present approach I selected only the eponym stamps with secure reading. That is 195 from Istros, 103 from Kallatis and 93 from Tomis.

The distribution graph for 20 year intervals (Fig. 5) shows greater differences between the three cities in the import of Rhodian wine.

The earlier peak of the imports is registered at Kallatis, in the interval of c. 260-241 BC (24.27%). The previous interval is also important, with 17.48%



Period	Istros % (195)	Kallatis % (103)	Tomis % (93)
300-281	0	0	0
280-261	2.56	17.48	1.07
260-241	8.72	24.27	2.15
240-221	9.23	9.71	3.23
220-201	10.77	7.77	3.23
200-181	21.03	10.68	15.05
180-161	11.28	10.68	41.93
160-141	18.46	12.62	23.66
140-121	4.62	4.85	5.38
120-101	10.26	1.94	4.3
100-81	2.56	0	0
80-61	0.51	0	0
60-41	0	0	0

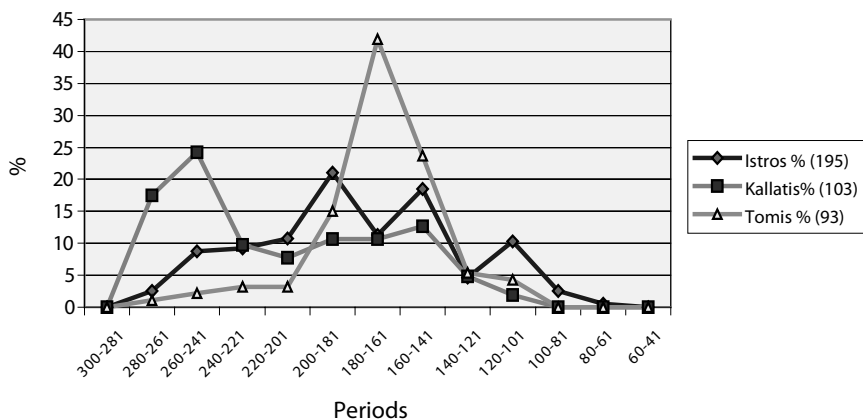


Fig. 5. The relative frequency of the Rhodian eponyms at Istros, Tomis and Kallatis, by 20 years intervals.

of all the imports, amounting to 41.75% of the stamps during Period I. This situation has no analogies in the entire Pontic area! We must remember: (a) during Period I the months were still not mentioned on the stamps, and (b) in the same period the *ratio* of stamping was much smaller than in the subsequent periods, especially 3 to 5. After c. 240 BC, the volume of the imports was relatively constant for about a century, with a small increase between c. 160-141 (Period IV and the beginning of Period V) followed by a constant decrease until the end of the century.

At Istros we have a constant growth in imports starting from the sub-period Ib, with a "normal" first peak (21.03%) in the interval c. 200-181 BC (end of Period II – beginning of Period III). The second one (18.46%) comes

Period	Istros % (195)	Kallatis % (103)	Tomis % (93)
300-291	0	0	0
290-281	0	0	0
280-271	1.02	3.88	0
270-261	1.54	13.59	1.07
260-251	4.1	22.33	1.07
250-241	4.62	1.94	1.07
240-231	3.08	4.85	3.23
230-221	1.54	4.85	0
220-211	10.26	3.88	1.08
210-201	4.62	2.91	2.15
200-191	4.62	3.88	4.3
190-181	16.92	5.82	10.75
180-171	4.62	7.77	29.03
170-161	6.66	4.85	12.9
160-151	10.26	3.88	11.83
150-141	8.2	8.74	11.83
140-131	4.1	3.88	5.38
130-121	0.51	0.97	0
120-111	5.64	0.97	3.23
110-101	4.62	0.97	1.07
100-91	2.05	0	0
90-81	0.51	0	0
80-71	0.51	0	0
70-61	0	0	0
60-51	0	0	0
50-41	0	0	0

100                      99.96                      99.99

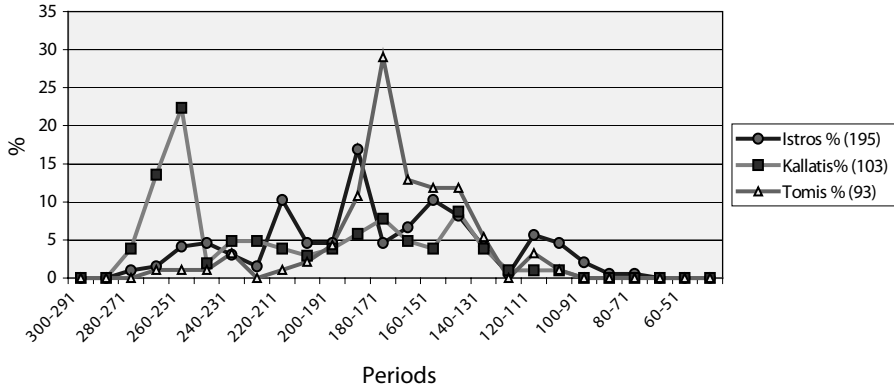


Fig. 6. The relative frequencies of the Rhodian eponyms at Istros, Tomis and Kallatis, by decades.

between c. 160-141 BC, corresponding to the slight growth at Kallatis. The later stamps cover Period VI, and the last stamp may come from the interval c. 80-61 BC (Period VII). This dynamic seems to be in accordance with the Rhodian production, indicating a constant flow of imports from that direction, although not too great in volume.

At Tomis, the peak in imports comes between c. 180-161 BC (41.93%). With the second and the third peaks in the next and the previous interval, Tomis accounts for 75% of all the stamps between c. 200-141, covering mainly periods III and IV and a little beyond that point.

The graph of distribution by decades (Fig. 6) adds new information.

At Kallatis we see the first peak between c. 260-251 BC (22.33%), with 8-9 percent above that of the previous decade (13.59%). Then we have a drop to 1.94% at the end of Period I; afterwards we have a "normal" evolution, with higher figures between c. 180-171 BC and c. 150-141 BC. From c. 130 BC, the volume of the imports is very low.

At Istros, the import dynamics look less constant than in the previous graph. We notice the first important growth between c. 220-211 BC (10.26%), that is the middle of Period II (sub-period IIb according to Finkielsztejn). We notice an equal value between c. 160-151 BC (Period IV), only with a higher ratio of stamped amphoras. The peak comes, as expected, between c. 190-181 BC (Period III, with 16.92%).

At Tomis, the peak in imports comes between c. 180-171 BC (also in Period III, with 29.03%), but the interval between c. 190-141 shows constantly high values.

In all three cities, we see very small values (if any) in the decade c. 130-121 BC, indicating a general crisis as regards the Rhodian imports in the area.

The evidence of Rhodian imports in the West-Pontic gives the only available data for the 2nd century BC, when the other major exporters (Thasos, Sinope, Herakleia Pontike) were absent or no longer had any stamped amphoras. Other stamped amphoras came from Chersonesos, Kos and Knidos, but their volume was not very significant.

As I have used the same time intervals for examining the import dynamics of the three major exporters in the West-Pontic area, we can now follow the chronological distribution of these imports in one city (Figs. 7-9).

## ISTROS

The graph of distribution by decades of the imports to Istros covers the interval between c. 390-71 BC, i.e. c. 320 years (Fig. 7).

The distribution lines of the imports from the three cities point to certain time delays between them, with Thasos being the earliest and Rhodos the latest. Nevertheless, there are some periods when the imports were present simultaneously on the Istrian market: Thasos and Sinope from the middle of

Period	Thasos	Sinope	Rhodos
390-381	2.59		
380-371	1.48		
370-361	1.36		
360-351	5.06		
350-341	11.48	0.86	
340-331	9.63	4.33	
330-321	13.21	0.17	
320-311	20.37	0.17	
310-301	3.46	0.52	
300-291	4.81	1.56	
290-281	7.78	4.5	
280-271	10.25	9.86	1.02
270-261	2.84	23.53	1.54
260-251	3.95	14.36	4.1
250-241	1.48	19.9	4.62
240-231	0.25	6.75	3.08
230-221		4.33	1.54
220-211		6.57	10.26
210-201		0.86	4.62
200-190		1.73	4.62
190-181			16.92
180-171			4.62
170-161			6.66
160-151			10.26
150-141			8.2
140-131			4.1
130-121			0.51
120-111			5.64
110-101			4.62
100-91			2.05
90-81			0.51
80-71			0.51
	54.69	74.4	66.16

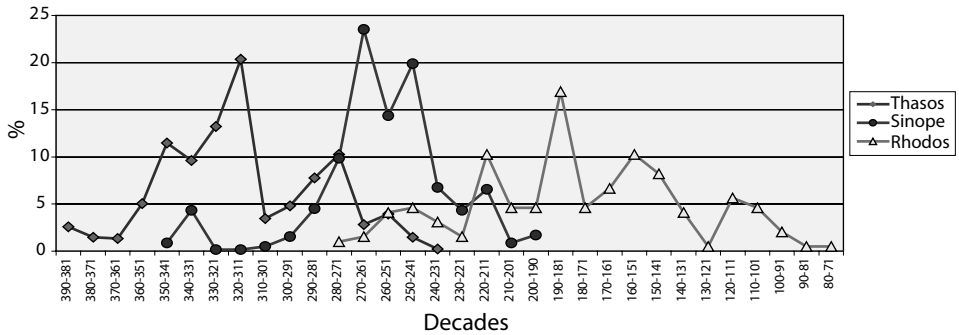


Fig. 7. Istros. The relative frequencies of the eponyms from Thasos, Sinope and Rhodos, by decades.

the 4th to the third quarter of the 3rd century, Sinope and Rhodos between c. 280 and c. 190 BC. All three centres were only exporting simultaneously between c. 280-240 BC or a little later.

The trade dynamics of imports coming from the three export centres have no points of coincidence. The peaks of the imports occur at different times: c. 320-310 for Thasos, c. 270-261 for Sinope and c. 190-181 for Rhodes. It looks as if Sinope replaced Thasos, and Rhodos replaced Sinope on the market. Those replacements took place though in a certain span of time. The four or five decades from c. 280 BC to after 240 BC indicate a period of prosperity for Istros. Similar periods are attested in the second half of the 4th century and possibly during the first half of the 2nd century BC. Those indicators still need to be supported by other evidence.

## TOMIS

The graph of distribution by decades for the imports to Tomis covers the interval between c. 360-101 BC, i.e. c. 260 years (Fig. 8).

At Tomis, the periods of imports from the three centres are better delimited. Thasos and Sinope are simultaneously present from the middle of the 4th to the third quarter of the 3rd century, Sinope and Rhodos between c. 270 and c. 200 BC. All three cities were present only between c. 270-240 BC or a little later. When Thasos was present in great quantities, the Sinopean imports were very low, the converse also being true. When Sinope reached its peak, the Rhodian imports were very weak and the Thasian amphoras very few.

We distinguish three periods of relative prosperity: c. 340-311 BC (with 63.22% of the Thasian imports), c. 280-231 BC (79% of the Sinopean imports) and c. 190-141 BC (with 76.34% of the Rhodian imports).

If we look at the absolute number of stamps from every centre, they are many fewer in number at Tomis: we can therefore consider this city as being less important than the other two.

## KALLATIS

Here, the situation regarding imports looks completely different. The graph of distribution by decades covers the interval c. 350-101 BC, i.e. c. 250 years (Fig. 9). During half a century, c. 290-241 BC, 76.7% of the Thasian imports are present, with the peak in the interval c. 260-251 BC (23.69%). We notice the same peak for Rhodos, with similar value (22.33%), and 39.8% of all imports over 3 decades (c. 270-241 BC). The Sinopean imports are very high in the same 3 decades, with 76.9% of the total and the peak between c. 270-260 BC. All other decades register less than 10% each, most of them less than 5%, although the imports are constant. In about 250 years, Kallatis knew only 5 decades of prosperity.

If we compare the dynamics of the imports at Istros, Tomis and Kallatis, we see they are different from one another, reflecting different economic histories.

Period	Thasos	Sinope	Rhodos
390-381			
380-371			
370-361			
360-351	2.3		
350-341	3.45	0.84	
340-331	19.54	3.36	
330-321	4.6	3.36	
320-311	39.08	0.84	
310-301	4.6	0	
300-291	1.15	0	
290-281	6.9	5.88	
280-271	4.59	9.24	
270-261	4.59	15.97	1.07
260-251	3.45	12.61	1.07
250-241	4.6	34.45	1.07
240-231	1.15	6.72	3.23
230-221		0.84	0
220-211		5.04	1.08
210-201		0.84	2.15
200-190			4.3
190-181			10.75
180-171			29.03
170-161			12.9
160-151			11.83
150-141			11.83
140-131			5.38
130-121			0
120-111			3.23
110-101			1.07
	63.22	78.99	76.34

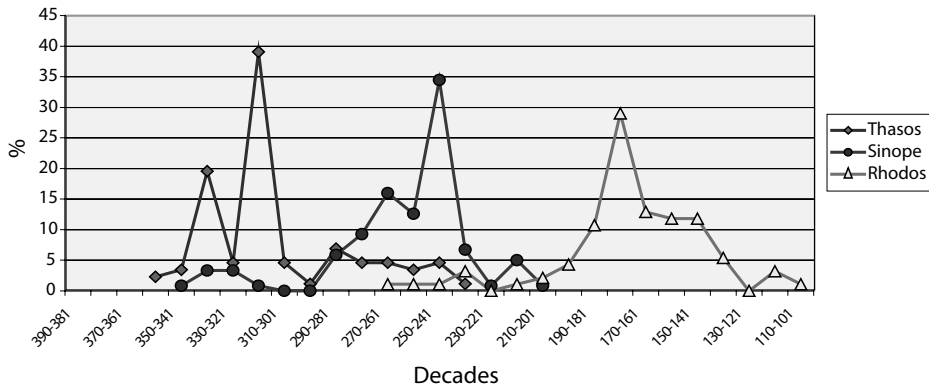


Fig. 8. Tomis. The relative frequencies of the amphora eponyms from Thasos, Sinope and Rhodos.

Istros looks more stable from the middle of the 4th to the middle of the 2nd century BC. At Tomis, the periods of prosperity are separated by periods of crisis in the main amphora imports. Kallatis had a single period of prosperity, which probably started after Lysimachos' death and ended after the defeat in the war against Byzantium for the control over the *emporion* of Tomis.<sup>39</sup>

Period	Thasos %	Sinope %	Rhodos %
350-341	2.61	0.51	
340-331	1.41	0.13	
330-321	1.41	0.13	
320-311	4.62	0.26	
310-301	4.62	0.38	
300-291	7.23	1.15	
290-281	10.24	3.06	
280-271	16.66	12.63	3.88
270-261	12.65	49.23	13.59
260-251	23.69	15.05	22.33
250-241	13.45	9.18	1.94
240-231	1.41	3.06	2.91
230-221		1.66	6.8
220-211		2.42	3.88
210-201		0.77	3.88
200-190		0.38	2.91
190-181			7.77
180-171			5.83
170-161			4.85
160-151			3.88
150-141			8.74
140-131			3.88
130-121			0.97
120-111			0.97
110-101			0.97
	76.69	76.91	39.8

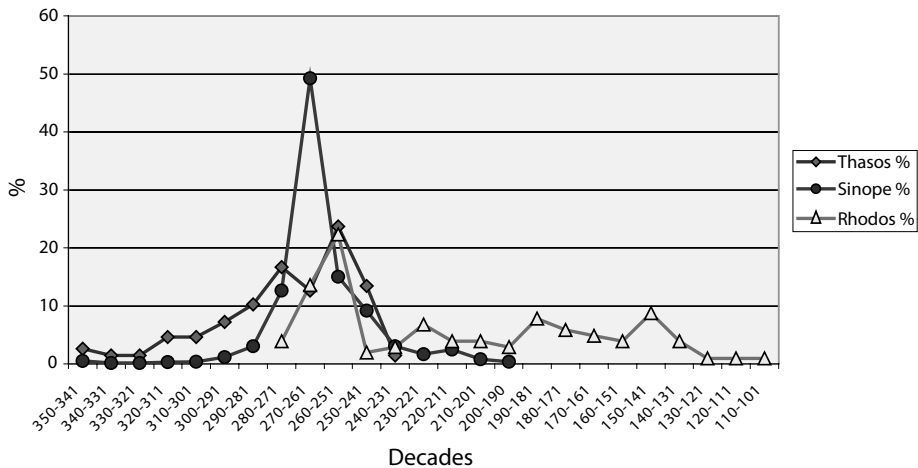


Fig. 9. Kallatis. The relative frequencies of the eponyms from Thasos, Sinope and Rhodos, by decades.

Period	Istros % (810)	Tomis % (87)	Kallatis % (498)	Odessos % (87)
390-381	2.59	0	0	4.6
380-371	1.48	0	0	3.45
370-361	1.36	0	0	0
360-351	5.06	2.3	0	13.8
350-341	11.48	3.45	2.61	2.3
340-331	9.63	19.54	1.41	0
330-321	13.21	4.6	1.41	3.45
320-311	20.37	39.08	4.62	9.19
310-301	3.46	4.6	4.62	16.09
300-291	4.81	1.15	7.23	21.84
290-281	7.78	6.9	10.24	12.64
280-271	10.25	4.59	16.66	2.3
270-261	2.84	4.59	12.65	3.45
260-251	3.95	3.45	23.69	1.15
250-241	1.48	4.6	13.45	5.75
240-231	0.25	1.15	1.41	0

100                      100                      100                      100.01

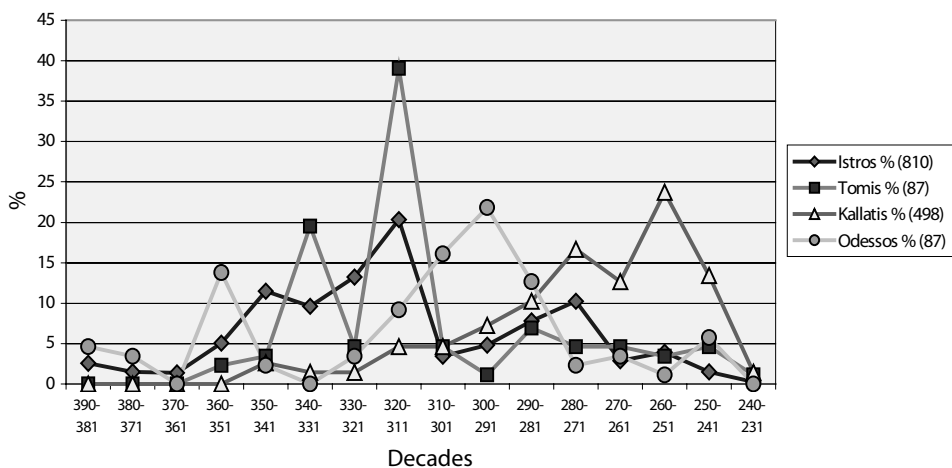


Fig. 10. The relative frequencies of the Thasian eponyms at Istros, Tomis, Kallatis and Odessos, by decades.

As I said at the beginning of this paper, our information on the amphora imports in the Greek cities of the Black Sea area is far from complete. Nor have we all the published material in our files. Therefore we cannot present the statistics for every city. In some cases however, we are able to show the relative frequency of a particular import in a particular city, in comparison with those from Istros, Tomis and Kallatis.

From the available data presented by Avram,<sup>40</sup> we can see the distribution of the Thasian eponyms at Odessos (Fig. 10). The number of stamps consid-



Period	Istros % (578)	Kallatis % (784)	Olbia % (272)	Pantikapaion % (1429)
350-341	0.86	0.51	3.31	4.62
340-331	4.33	0.13	7.72	4.76
330-321	0.17	0.13	3.68	3.5
320-311	0.17	0.26	2.57	2.38
310-301	0.52	0.38	4.04	5.39
300-291	1.56	1.15	2.57	8.68
290-281	4.5	3.06	11.76	18.26
280-271	9.86	12.63	11.03	16.79
270-261	23.53	49.23	4.78	5.95
260-251	14.36	15.05	4.78	4.06
250-241	19.9	9.18	9.56	7
240-231	6.75	3.06	7.72	6.3
230-221	4.33	1.66	10.29	4.83
220-211	6.57	2.42	8.46	3.64
210-201	0.86	0.77	4.04	1.75
200-190	1.73	0.38	3.68	2.09
	100	100	99.99	100

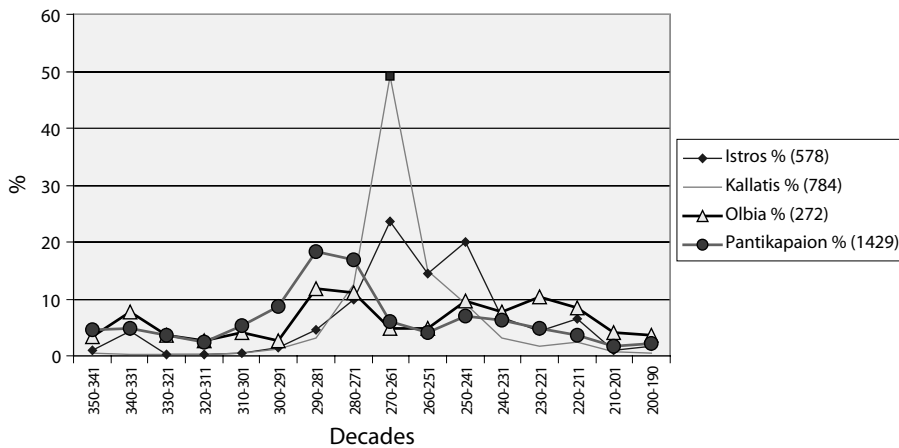


Fig. 11. The relative frequencies of the Sinopean astynoms at Istros, Kallatis, Olbia and Pantikapaion, by decades.

ered is equal to that from Tomis (87). Again the distribution line shows different dynamics.

The Sinopean stamps published from Odessos and Bizone are very few (48 and 36 items).<sup>41</sup> Instead, the published stamps from Pantikapaion and Olbia are in greater number, although far from the real figures. I present here the distribution graph of the Sinopean *astynomoi* for those cities together with the figures from Istros and Kallatis (Fig. 11). The peak in imports is again different, preceding by a decade that in the West Pontic cities.

Period	Istros %	Kallatis %	Pantikapaion %
290-281	0	0	0.9
280-271	1.02	3.88	0.45
270-261	1.54	13.59	1.81
260-251	4.1	22.33	1.81
250-241	4.62	1.94	1.81
240-231	2.56	2.91	1.81
230-221	6.67	6.8	3.17
220-211	6.67	3.88	3.62
210-201	4.1	3.88	3.17
200-191	4.1	2.91	5.43
190-181	16.92	7.77	11.76
180-171	4.62	5.83	13.12
170-161	6.66	4.85	11.76
160-151	10.26	3.88	8.6
150-141	8.21	8.74	8.6
140-131	3.59	3.88	7.69
130-121	1.03	0.97	4.52
120-111	5.64	0.97	3.17
110-101	4.62	0.97	2.26
100-91	2.05	0	2.26
90-81	0.51	0	0.45
80-71	0.51	0	0.9
70-61	0	0	0
60-51	0	0	0.9
50-41	0	0	0

100                      99.98                      99.97

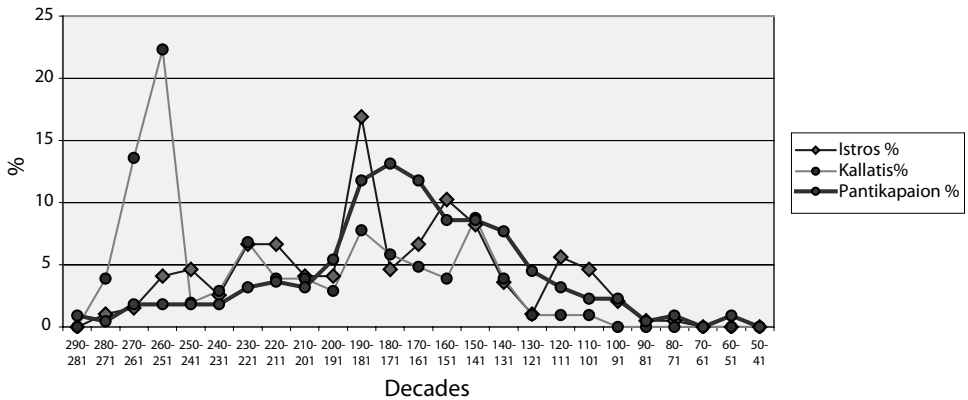


Fig. 12. The relative frequencies of the Rhodian eponyms at Istros, Kallatis and Pantikapaion, by decades.

As for the Rhodian imports at Pantikapaion,<sup>42</sup> the distribution line (Fig. 12) shows a more regular trade, most intensive from Period III to the middle of Period V, with a peak about 180-170 BC.

## CONCLUSIONS

From this analysis we can draw several conclusions.

- 1) The extant chronologies of the amphora stamps from Thasos, Sinope and Rhodos seem to be close to reality, as shown by some coincidences in the peaks reached by the imports in the West Pontic cities, particularly at Kal-latis. We must remember though that these coincidences are reliable only for the longer intervals, down to decades. They have no relevance for the year to year sequence of the amphora eponyms.
- 2) The dynamics of the import of transport amphoras from one or several export centres is different in every Greek city, no matter how close it is to another geographically. This may give indications of the nature of this kind of trade: directed to a specific commercial partner rather than a cabotage trade.<sup>43</sup>
- 3) The general picture of the dynamics of trade in transport amphoras needs to be completed by the other amphoras and amphora stamps discovered in every city. For the history of trade, all imports should be studied, including the coins and other kind of evidence (epigraphical, literary, etc.), in export and import cities as well.

## Notes

- 1 Grace 1952; 1953; 1963; 1974; 1985; Grace & Savvatianou-Petropoulakou 1970.
- 2 Garlan 1966; 1979; 1982; 1985; 1986; 1990a; 1990b; 1993; 1999a; 1999b; 2000; Garlan & Doulgeri-Intzessiloglu 1990; Garlan & Tatlican 1997; 1998.
- 3 Debidour 1979; 1986; 1992.
- 4 Grandjean 1992.
- 5 Kac 1985; 1994; 1997a.
- 6 Monachov 1989a; 1989b; 1990; 1993; 1996; 1997.
- 7 Empereur 1989; 1990; Empereur & Garlan 1992; Empereur & Hesnard 1987; Empereur & Picon 1986; 1987; Empereur & Tuna 1988; 1989.
- 8 Doğer 1994; 1996; Doğer, Tuna & Gezgin 1994; Doğer 1994; Doger, Tuna & Gezgin 1994.
- 9 Finkielsztejn 1995; 1998a; 1998b; 1999; 2000b; 2001; 2002.
- 10 Fedoseev 1992; 1993a; 1993b; 1994; 1999.
- 11 Conovici 1989; 1997; 1998; 1999.
- 12 Monachov 1999a.
- 13 Empereur 1982.
- 14 We compare only the relative number of amphora stamps from every export centre in time (i.e. percentages), without any relation to the real amount of merchandise imported, for the reasons mentioned above. What we obtain are thus only "vectors" pointing to certain tendencies in the import of the specific wares.
- 15 Avram 1996.
- 16 Conovici 1998.

- 17 The study and the catalogue of all the Rhodian stamps from Istros are to be published by the author. Until then, the available publications are Canarache 1957 and Coja 1986. For Kallatis, the Rhodian amphora stamps are scattered in c. 20 publications and other are still unpublished.
- 18 Baumann 1975; Canarache 1957; Lungu 1992; 1995.
- 19 Teodorescu 1918; Gramatopol & Poenaru Bordea 1968; Buzoianu 1980; 1981; 1982; 1984; 1991; 1992.
- 20 Škorpil 1934; Mărculescu 1934; 1935; Mirčev 1958; Mirčev, Tončeva & Dimitrov 1962; Lazarov 1973; 1975; Štal' 1991.
- 21 Mirčev 1958; Lazarov 1973.
- 22 Mirčev 1958; Lazarov 1973; 1980.
- 23 Lazarov 1973; 1975; 1978 (*non vidī*).
- 24 Avram 1999b with previous bibliography.
- 25 Oberländer-Târnoveanu & Oberländer-Târnoveanu 1980; Lungu 1991; Lungu, Mănuclu Adameşteanu 1995.
- 26 Gramatopol & Poenaru Bordea 1969; Irimia 1973; Bărbulescu, Buzoianu & Cheluţă-Georgescu 1986; 1987; 1990; 2001; Rădulescu, Bărbulescu & Buzoianu 1986; 1987; 1990; Rădulescu, Bărbulescu, Buzoianu & Georgescu 1989; 1993.
- 27 Baumann 1975; Lungu 1990; Opaiţ 1991; Simion 1995.
- 28 Irimia & Conovici 1989; 1990; Conovici & Irimia 1991.
- 29 Avram 1996.
- 30 In the Archaic period, the *emporion* of Tomis, a Milesian foundation, was included in the Istrian *chora*. The evidence of all the amphora imports shows great similarities between both cities.
- 31 Conovici 1988. In the order of the officials I have only modified the positions of Iobakchos Molpagorou from sub-group Vb to the end of sub-group Vc, and of Delphis Artemidorou from sub-group Ve to sub-group Vd, according to the new evidence from Satu Nou – Valea lui Voicu. Other changes in the list are expected from Y. Garlan's book about the Sinopean amphora stamps from Sinope (under way).
- 32 Conovici 1988, 51. The last period will have necessarily a year more.
- 33 The next three years have also high values (104 stamps).
- 34 The period between c. 272-258 BC covers 30.27% of the total imports.
- 35 Finkielsztejn 2001.
- 36 A slightly different order of the eponyms from the Period V and the beginning of Period VI is to be found in Palaczyk 2001, where the intercalary months are also considered.
- 37 The abbreviated names Tima( ) and Timar( ) (sub-period Ia) could be the names of Timasitheos and Timarchos (Ib), dated by myself to immediately after Lysandros and not to the end of the series; Timo( ) and Timokrates I (Ia) I consider a single person; in the sub-period IIa, I consider Philondas and Philonidas as two names, one at the beginning and other at the end of the series; the group Nikon – Daimon – Aristeios – Philokrates is to be dated at the end of the Ic series or the very beginning of IIa; Polykrates and Philonidas should precede the group of eponyms dated by the ivy-shape stamps of Epigonos I; Theuphanes II (IIc), Sostratos, Kleitomachos, Damothemis and Iasikrates (IIIa) are associated in the Tumulus B from Murighiol (Lungu 1990), therefore Damothemis and Iasikrates should precede Thestor who appears in the Tumulus A associated with later eponyms.

- 38 The *ratio* of the absolute number of Rhodian amphora stamps to the absolute number of Rhodian amphoras imported fluctuates considerably in the course of time. During Periods I and II the number of unstamped Rhodian amphoras was greater than in the later ones (except Period VII, when the number of stamped amphoras was even greater. It is thought that the inclusion of the months on the stamps starting with Period II was imposed by an important growth in amphora production.
- 39 Memnon, *FGrHist* III B, F 13(21), 347-348. Avram 1999b, 26-32, with the entire discussion.
- 40 Avram 1996, tab. X.
- 41 Conovici 1998, 181 (with slightly different figures).
- 42 For Pantikapaion, 221 stamps from the old bibliography are considered.
- 43 Garlan 1999b, 136-137, 139-140; Dupont 1999 for the Archaic period (especially 144-145).