

The Resources and Economy of Roman Nicomedia

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ABSTRACT

The last twenty years have seen an increasing interest in ancient economic studies, and especially criticism of the primitivist approach to the ancient economy. Although the current state of ancient economic studies shows a range of different approaches, and has produced new models to interpret the ancient economy beyond the great debate between the modernists and the primitivists, there is still room for discussion of both old and new approaches to the study of urban economies.

This thesis studies the resources and the economy of Roman Nicomedia, a city where systematic excavation has not yet been conducted but where archaeological survey research has been carried out since 2005. The aim of this study is to assess the production, consumption, and distribution patterns of the city within its own dynamics. In terms of methodology, it takes into consideration Louis Robert's work on the Bithynian cities within the *longue durée* and accordingly, evaluates accounts from the pre-industrial period of Nicomedia, modern İzmit, under the Ottoman Empire. This study particularly takes into account the travellers' notes from the 18th to the 19th centuries along with available primary and secondary sources in order to grasp the moments of the transformation and change in the production and consumption patterns in Nicomedia/İzmit over time. Finally, the thesis, which synthesizes textual and material evidence from Nicomedia as well as from the region of Bithynia, ascertains the city's income and expenses.

The thesis challenges the Finleyan idea of self-sufficiency and scrutinizes the limits of the 'consumer city' model. By focusing on the case of Roman Nicomedia, rather than falling into generalisation, this study attempts to investigate the effects of production and consumption patterns in the development of the non-agricultural sector in general, and pays particular attention to the underestimated role of trade in the urban economy. The thesis also evaluates the role of the Roman state and army in the economy of the city and asks whether this should be seen as a stimulus or burden affecting consumption and distribution patterns. This study therefore examines the resources, the self-sufficiency, the commercial commodities, trading activities and the level of connectivity of Roman Nicomedia. The case of Nicomedia should encourage other case studies to reveal the dynamics of urban economies under the Roman Empire.

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ABBREVIATIONS

- BMC** *Catalogue of Greek Coins of Pontus, Paphlagonia, Bithynia, and The Kingdom of Bosphorus*, by W. Wroth, Bologna 1963.
- BMC Ionia** *Catalogue of the Greek Coins of Ionia*, by B. V. Head - R. S. Poole, London 1892.
- BMC Mysia** *Catalogue of the Greek Coins of Mysia*, by W. Wroth, London 1892.
- CIG** *Corpus Inscriptionum Graecarum*. Berlin 1827-.
- CIL** *Corpus Inscriptionum Latinarum*, Berlin 1863-.
- CIMRM** *Corpus Inscriptionum et Monumentorum Religionis Mithriacae*, by M. J. Vermaseren, The Hague 1960.
- Coin Hoards** *Royal Numismatic Society*, London 1975-.
- ID** *Inscriptions de Délos*, Paris 1926-1972.
- IG** *Inscriptiones Graecae*, Berlin 1873-.
- IGBulg** *Inscriptiones Graecae in Bulgaria repertae, vol. II: Inscriptiones inter Danubium et Haemum repertae*, by G. Mihailov, Sofia 1958.
- IGINS** *Inscriptiones Graecae Insularum Maris Aegaei praeter Delum*, by K. Hallof, vol. VI/II. Berlin 2003.
- IGR** *Inscriptiones Graecae Ad Res Romanas Pertinentes, Vols. I-III*, by R. Cagnat- G. Lafaye, Paris 1901-.
- IK Ephesus** *Inchriften griechischer Städte aus Kleinasien: Ephesos 14, Die Inschriften von Ephesos IV*, by H. Engelmann-D. Knibbe-R. Merkelbach, Bonn 1980.
- ILS** *Inscriptiones Latinae Selectae*, by H. Dessau.
- IosPE** *Inscriptiones antiquae Orae Septentrionalis Ponti Euxini graecae et latinae*, by V. Latyšev, Leningrad 1885.
- IRT** *The Inscriptions of Roman Tripolitania*, by J. M. Reynolds-J.B. Ward-Perkins, Rome 1952.
- MAMA** *Monumenta Asiae Minoris Antiqua*, Manchester 1928-1962.
- OGIS** *Orientis Graeci, Inscriptiones Selectae*, by G. W. Dittenberg, Lipsae 1903.
- RG** *Recueil general des monnaies grecques d'Asie Mineure*, by W. H. Waddington - E. Babelon - Th. Reinach, vol. I., Paris 1908.
- SEG** *Supplementum Epigraphicum Graecum*. Leiden 1923-.

- SIG** *Sylloge Incriptionum Graecorum*, vol. III, by G. W. Dittenberg, 1883 Lipsae.
- SNGAul.** *Sylloge Nummorum Graecorum. Deutschland, Sammlung v. Aulock, Pontus Paphlagonien, Bithynien*, Berlin 1957.
- SNGAulN** *Sylloge Nummorum Graecorum. Deutschland, Sammlung v. Aulock, Nachträge I.*, Berlin 1867.
- SNGCop** *Sylloge Nummorum Graecorum, The Royal Collection of Coins and Medals, Danish National Museum, Bosphorus-Bithynia*, Copenhagen 1944.
- SNG Fitzwilliam** *Fitzwilliam Museum Leake and General Collection, Phrygia, Volume IV, Part IV*, Cambridge 1965.
- SNGTüb** *Sylloge Nummorum Graecorum. Deutschland, Münzsammlung der Universität Tübingen*, Berlin 1985.
- SNG Turkey 3** *Sylloge ummorum Graecorum Turkey 3, Çanakkale Museum, vol. I, Roman provincial coins of Mysia, Troas etc.* by O. Tekin - S. Altınoluk - F. Körpe, İstanbul 2009.
- TAM** *Tituli Asiae Minoris: Collecti et Editi IV*, by F. K. Dörner, Apud Academiam Scientiarum Austriacam Vindobonae. 1978.
- YKY** *Yapı Kredi Koleksiyonu Grek ve Roma Sikkeleri*, by O. Tekin, İstanbul 1994.

INTRODUCTION

The aim of this study is to scrutinize the resources and economy of Roman Nicomedia (modern İzmit in Kocaeli Province), one of the most important port cities in the ancient Mediterranean, and to reveal its production, consumption, and distribution patterns by assessing important methodological considerations. The issue of the economic behaviour of ancient cities has been a controversial and disputed subject within the field of ancient economics. Although in the past two decades there has been an increasing amount of literature on ancient economic studies, hitherto only a small number of ancient cities have been studied to question the old and new approaches and determine the dynamics of urban economy in antiquity. Few monographs devoted to examine the economy of a particular city have come into existence, e.g. Jongman's Pompeii and Engels' Corinth.¹ This chapter first reviews the literature to present the current state of knowledge concerning the city of Nicomedia in general. Secondly, it gives an account of the old and new approaches to the ancient economy to delineate an appropriate perspective to the case of Nicomedia.

An overview to the sources

Throughout history Nicomedia has been one of the key bridges on the land and sea routes between Europe and Asia as well as the Black Sea and the Mediterranean. Along with its military-logistic and strategic position, the city possessed a large territory with rich natural resources.² For that reason, Nicomedia retained a prominent place in the historical accounts of almost all periods. As the city is situated between important cities, İstanbul (Constantinople) and İznik (Nicaea), and major land-sea routes, it is frequently mentioned in travellers' accounts. Thus, in addition to ancient writers, e.g. Xenophon, Athenaeus, Libanius, Lactantius³, from the 9th century onwards eastern and western travellers to Anatolia and Mesopotamia and vice versa published records of their voyages including their notes about Nicomedia/İzmit and Bithynia. Some of these provide detailed descriptions of the city and its resources, but some give rather superficial accounts depending on the expeditions' purposes. In any case, due to changes in urban and rural areas with respect to architecture and environment over the centuries, these accounts are invaluable for modern research. Lechevalier (1800),

¹ W. M. Jongman, *The Economy and Society of Pompeii*, Dutch Monographs on Ancient History and Archaeology 4, Amsterdam 1988. D. W. Engels, *Roman Corinth*, Chicago 1990.

² Ruge 1936, 490; Broughton 1938, 773; Çalık-Ross 2007, 14.

³ See almost full list of ancient writers mentioning Nicomedia, TAM IV 1-5; Çalık-Ross 2007, 29-44.

Murhard (1807), Széchenyi (1818-1819), Fraser (1838), Hamilton (1842), Fellows (1852) and Tchihatchef (1866) mention the demography, government and physical setting of the city in the Ottoman Empire in the 18th and 19th centuries. Among them, while the travellers Fellows and Fraser supply illustrations to go along with their scripts, Lechevalier, Murhand, and Wiegand predominantly provide geographical data. As well as the aforementioned travellers, other visitors used ancient written sources, and gave an account of the location of the city, the situation of the ancient remains and their position within the history of the city. Some travellers' accounts include the inscriptions found in the city, many of which are lost today. Pococke (1743), Peyssonel (1745), and Kleonymos-Papadopoulos (1867) provide archaeological data for the first time. Among those travellers, Pococke's topographic depictions of the historical background of Nicomedia and its surroundings, and Peyssonel's descriptions of Nicomedia and Nicaea are important cartographic works containing illustrations and maps. Peyssonel's account is especially valuable as it includes archaeological features of the city, e.g. the city walls, tower, the ruins, and a number of inscriptions. Hammer (1818), who followed the route from Constantinople to Bursa, gives archaeological records about both Nicaea and Nicomedia, referring, for instance, to aqueducts located on the road between Nicaea and Nicomedia. Hammer cites Pliny the Younger as a source and his book includes inscriptions together with their Latin translations, as well as a map of the Gulf of Nicomedia. Charles Texier (1862) presents the history and archaeology of both Nicomedia and Nicaea citing many ancient sources, e.g. Strabo, and Libanius.⁴ The writers Kleonymos and Papadopoulos combined all the previous studies on Bithynia and published them in Greek, presenting inscriptions, which they found in Nicomedia and Bithynia. The French authors Perrot, Guillaume, and Delbet (1872) contributed to the history of Nicomedia and Bithynia describing original inscriptions found in Nicomedia. Perrot provided a professional publication of inscriptions, many of which are lost today, as well as archaeological findings. Travellers' accounts cited in this thesis, which are especially helpful for economic studies, are dealt with in more detail in the first chapter.

Nicomedia attracted not only travellers, but also modern scholars. First, Ruge's article in the *Real Encyclopädie* is a useful starting point for the research on Nicomedia.⁵ Ruge's elaborate effort to present the Nicomedians abroad draws attention

⁴ Çalık-Ross 2007, 46-49. F. Y. Ulugün, local researcher who lives in İzmit, collected many travellers' accounts about Nicomedia-İzmit, translated, and published them in a volume in 2008.

⁵ Ruge 1936, 468-492.

to the maritime features and trading activities of the city. In this important port city, except for a few rescue excavations, there has been no systematic archaeological excavation, since ancient Nicomedia lies buried under the modern settlement of İzmit. During the rapid expansion of the city in the course of industrial development and the growth of modern infrastructure, some remnants of ancient Nicomedia have been revealed by the construction of roads, factories and other buildings. The 'Survey of Kocaeli and its Districts' which have been conducted by Kocaeli University since 2005 are revealing new information not only about the history but also about the economy of Nicomedia. Earlier important work was presented by Wiegand (1908) focusing on the western border of the city. Drexler (1897-1902) evaluated the architectural remains found in Nicomedia. The excavations in the SEKA plot revealed various archaeological materials.⁶ This was the earliest rescue excavation known in the city conducted in 1934, and undertaken at the time of the building of the İzmit Paper Factory (SEKA). The excavation commenced following the discovery of the remains of a public bath and agora from the Roman period during the laying of the factory's foundations.⁷ Thus Dörner (1941, 1978) published two important volumes about inscriptions and archaeological material from that side. Another rescue excavation led by R. Duyuran (1951) in Kandıra Sapağı included a building believed to be a basilica. N. Fıratlı conducted several archaeological projects in 1953 in and around Kocaeli including the Kefken and Yayla Pınar Tumulus, an underground tomb chamber (hypoge) along the road between İzmit and Derince, the İzmit Akyazı Tumulus. The excavation of the Tersiyeye Tumulus located near the village Tersiyeye near Adapazarı was another important excavation carried out in 1958.⁸ Kanlıbağ Tumulus was another discovery, which was Hellenistic tomb, but re-used in the Roman period near İzmit.⁹ In 1991-1992, the site of a necropolis was discovered during the construction of a park between Kınalı and Sakarya. The Üçtepeliler Tumulus was another example of the type of tomb with *dromos* (passage) found in Bithynia.¹⁰ Finally, Özdoğan's survey of the prehistory of the Marmara coast and the Gulf of İzmit and Avram's article on the Propontis provide the early settlements in the region.¹¹

Archaeologists at the İstanbul Archaeological Museum published archaeological material found in SEKA. For example, Duyuran (1947), Bayburtluoğlu (1967), Tunay

⁶ Çalık-Ross 2007, 50-53.

⁷ Findings of the excavation first introduced by Bittel-Schneider-Dörner 1939, 156-166.

⁸ Fıratlı 1953, 15-25; 1960, 22-25.

⁹ Meriçboyu-Atasoy 1969, 67-90.

¹⁰ Turgut-Aksoy 1996.

¹¹ Çalık-Ross 2007, 103-105; Özdoğan 1995, 349-354; Avram 2004, 974-999.

(1971), and finally Philipp (1987) published some of the sculptures found in Nicomedia.¹² After Dörner, Şahin (1974) conducted his doctoral research on the inscriptions of Nicomedia. Şahin carried out other projects in the city and found numerous inscriptions of Nicomedia, published in *Epigraphica Anatolica*.¹³ Foss has examined the city walls of Nicomedia (Foss 1996) and Aksoy (2000) has scrutinized the aqueducts of Nicomedia. Ünal (2001) and Galitekin (2006) also published on the water supply and water sources in the city. Aside from these studies, Fıratlı (1959, 1971) and Öztüre (1969) have published on the history and archaeology of Nicomedia in book-form. Recently, Zeyrek published a compilation of documents and bibliographic sources.¹⁴ Zeyrek and Özbay brought out sculptures and reliefs found in İzmit dated to the second century AD.¹⁵ More recently, the first major bilingual publication of the Nicomedia Project, *Ancient Nicomedia: İzmit* (2007), was published by A. Çalık Ross. This preliminary work on Nicomedia covers not only a well-defined literature review and the historical development of the city, but also presents findings of the 2005-2006 survey researches conducted in the city and its environs. Considering the present state of archaeological evidence from the city, all aforementioned publications throw light on the social, economic, and religious life of the city especially in the Roman period, providing epigraphic, numismatic, and archaeological evidence.

Nicomedia constitutes a good case study for economic research in terms of its maritime features, its natural resources, and its aforementioned strategic position. A few ancient writers occasionally specify the economic basis of Nicomedia and its environs, e.g. Xenophon, Pliny, Arrian, Dio Chrysostom, and Libanius. Epigraphic sources, e.g. the epitaphs of ship-owners along with the civic coins make the biggest contribution to the economic studies of the city. As for the secondary sources, there are limited publications related to economy of Nicomedia.¹⁶ Fernoux's volume on the notables and elite of Bithynia (2004) also includes an evaluation of epigraphic material from Nicomedia. Evidence regarding Nicomedian weights in the Roman period throws a vivid light on economic life.¹⁷ The survival of the sources has led this study to focus on the Roman period, particularly the Principate, taking into account sources from the pre-

¹² Ebcioğlu (1967, 166-74) examined a hoard of coins discovered on the SEKA plot dated to the late antiquity. Koyunoğlu (1953, 31-7) concentrated on some bronze works from the same place.

¹³ Şahin-Can-Işın 1983, 41-55; Öğüt-Polat-Şahin 1985, 9-124; 1986, 109-128.

¹⁴ Zeyrek 2005; Zeyrek-Asal 2005; Çalık-Ross 2007, 50-53.

¹⁵ Zeyrek-Özbay 2006, 273-316.

¹⁶ Robert's article on the resources of the city (1978), Ward-Perkins' article (1980a) on the distribution of marble and Nicomedia, Lazzarini's work (2002) on the marble of Nicomedia, and finally Bounegru's articles (2006a, 2010) on the ship-owners and sailors of Nicomedia.

¹⁷ Haensch-Weiss 2005, 443-498; 2007, 183-217; Dönmez-Öztürk-Haensch-Öztürk-Weiss 2008a, 243-259; 2008b, 261-265. *SEG* LV 1335, 1369-1389.

Hellenistic and Hellenistic periods as far as possible. This thesis therefore sets out to examine the resources and economy of Nicomedia according to important methodological considerations introduced briefly below.

The old and new approaches to the ancient economy

Moses Finley's book, *The Ancient Economy* (1973), introduced a new conception to the ongoing debates on the economy of Greco-Roman world during the 1960s. In fact, this debate originated during the late 19th and early 20th century. The German economist Karl Bücher (1911) had argued that the ancient economy was radically different from the more developed modern capitalist market economy. The first wave of attack came from the German ancient historian Eduard Meyer against the views of Bücher as 'primitivism'. Meyer (1910) instead claimed that the ancient economy was modern, and capitalist in nature. When the Russian historian M. Rostovtzeff published *The Social and Economic History of the Roman Empire* in 1926, the 'modernist' approach was reinforced and its dominance survived until in the 1960s. In contrast, Finley sought to present an analysis showing that the Greco-Roman economy worked differently from the way proposed by the modernists.¹⁸

In *The Ancient Economy*, Finley pointed out the agrarian nature of the Greco-Roman world and he changed the focus of economic work on the Greeks and the Romans. He did not accept that there was a close resemblance between the social and economic forms of antiquity and those of early modern Europe. Finley was inspired by the analyses of Bücher, Weber and their followers and various anthropologists.¹⁹ For example, Finley supported the economist and anthropologist Karl Polanyi in showing the inapplicability of modern market-centred economic theory to the ancient economic studies. He took the point further and discussed the absence of an economic policy in ancient economy in modern style.²⁰ Finley also put emphasis on comparability of pre-industrial societies as the most pertinent for the classical studies as opposed to tribal forms which are in the centre of anthropological research.²¹ Weber, enlarging the views of Bücher (1911) and Sombart (1913), had developed a theory that there were three types of cities based on their economic bases. They were the consumer city, the producer city, and the merchant city. Weber acknowledged ancient capitalism, and stressed that there was a dominance of the city-states over the country. The economic

¹⁸ Bang 1997. For the evaluation of 'the great debate' on the ancient economy, see Morley 2007a, 1-16.

¹⁹ Weber 1924, 7-13; see also Weber 1920, 1922 and 1972; Bücher 1911; Polanyi 1957, 243-269.

²⁰ Polanyi 1957, 243-269; Bang 2008, 22-23.

²¹ Finley 1975, 102-119.

situation of the urban elite constituted a political foundation in antiquity. However, the position of the urban elites of medieval northern European cities relied on production and exchange with the countryside, which did not rely on the city politically. According to Weber, the ancient city-states were chiefly militaristic, since war supplied booty and the exploitation of resources and people (slavery). Slave labour prevented any significant enhancement of labour-productivity.²²

Finley first returned to the concepts of Weber. He analysed the ancient economy in terms of modern capitalism, as twentieth century historians implied that manufacture and trade were at the basis of urbanisation of the ancient world. Finley's main question was "whether ancient cities were, as Max Weber thought, primarily centres of consumption".²³ According to Finley, the model of a consumer city was based not only on the rents and taxes, but also on the constraint of most urban production as a petty commodity produced by independent artisans allocated to local consumption.²⁴ Thus, the rents and taxes gathered from the countryside by the consumer city constituted a decisive part of the urban sector. Few ancient cities generated surplus income from the manufacture of products that were exchanged for necessities with a self-sufficient countryside. Finley accepted that none of the ancient cities totally matched the Weberian ideal-type of the consumer city. There were cities, which contained a mixed economy, including agriculture, manufacture, and commercial activities. He counts a group of commercial cities, which generated income from trade, tolls and harbour dues and the services for merchants and seafarers. However, he considered those cities exceptional. The role of manufacture and trade was secondary because of the low-level buying power in the countryside.²⁵ The consumer city was not only an argument, but a corner-stone of Finley's ideas.²⁶

Secondly, Finley claimed that the urban upper classes differed from the merchants and traders of medieval Europe. He argued that ancient methods of obtaining and maintaining wealth were drastically different from those of medieval traders and merchants. The wealth was not acquired to create capital, and "the prevailing mentality was acquisitive but not productive".²⁷ As the ancient urban elite were fundamentally rentiers rather than entrepreneurs, the ancient economy never constituted the legal and economic institutions, which enabled medieval merchants and bankers to grow rich, in

²² Weber 1924, 7-13; see also Weber 1920, 1922 and 1972; Erdkamp 2001, 333.

²³ Finley 1999, 125.

²⁴ Finley 1999, 131.

²⁵ Finley 1999, 131-132.

²⁶ Erdkamp 2001, 334; Davies 1998, 233.

²⁷ Finley 1999, 144.

the economic activity. Ancient economic behaviour was characterised by the pervasiveness of land-ownership, the use of slave labour, and consequently negative attitudes to labour.²⁸

Finley's argument brought about a fierce debate on the ancient economy between so-called primitivists and modernists.²⁹ Many historians criticized his arguments, which found few followers.³⁰ Eventually two aspects were made the focus of the debate. The first aspect was elite involvement in trade and income generated from their commercial activities. The second was the predominant elite attitude to commerce and trade. The past twenty years especially have seen increasing criticism of the primitivist approach and the Finleyan model. A considerable amount of literature has been published on the ancient trade revealing its scale and interrogating the limits of consumer city. The surveys of the trade and economy of Roman Empire reflect more growth, trade, and development than Finley assumed. It should be noted that much of the archaeological evidence that has shown this was not known at the time Finley was writing.³¹

A recent revision of Finley's arguments by P. F. Bang is worth mentioning here to shape the argument.³² He stressed that archaeological excavations have shown decentralised production. A recent analysis of the Arretine potteries undertaken by the archaeologist P. Kenrick consists of a key element in the analysis of M. I. Rostovtzeff who was a prominent scholar in the construction of the modernist approach, which was abandoned by Finley later.³³ The production of Arretine pottery was conducted in relatively small units, and was appropriate for decentralisation. Thus, even Rostovtzeff had come to conclude that real industry did not exist in antiquity and there were limits to the modern conception of Roman economy because the technological and economic infrastructure (capital and large units) were not sufficient to produce and conduct industrial development in the modern way.³⁴ Secondly, the dominance of agriculture, the dependence of urbanisation on aristocratic consumption, the importance of slavery, and the hegemony of an ideology of social status define policy on entrepreneurial activities as suggested by the primitivists.³⁵ Bang explains elite involvement in trade as a natural result of the accessibility of large agricultural resources. It did not result from

²⁸ Erdkamp 2001, 335.

²⁹ Frederiksen 1975, 164-171; for the summary of criticisms on "New Orthodoxy" see Harris 2001.

³⁰ Harris 2001.

³¹ Bang 2008, 29; Hopkins 1980, 1983; Harris 1993, 2000; Greene 1990; Parker 1992; Temin 2001.

³² Bang 1997 and 2008.

³³ Kenrick 2000.

³⁴ See Bang's critics on Temin's market integration in the Roman economy. Bang 2008, 31-32.

³⁵ Bang 2008, 33.

their strong inclination to undertake Mediterranean trade, but from their control of large hinterlands, which supplied agricultural surplus. He says that Roman Empire rarely considered the safety of traders in deciding to wage war in the case of violation in foreign powers. Dutch merchants, however, waged war to secure and conquer markets, since trade was dominant.³⁶ The main difference between the modernist and primitivist approaches lies not in attesting elite involvement in trade, but in whether trade dominated the ancient economy as it did in the medieval period.³⁷ By the same token, Finley undermined the large scale production in La Graufesenque (2 km from modern Millau, France) which encompassed 10 hectares production area and 50 kilns each of which fire between 20.000 and 30.000 vessels.³⁸

Thirdly, the ancient historian R. Osborne in *Pride and prejudice, sense and subsistence: exchange and society in the Greek City* criticized Finley, pointing out that the Athenian landowning elite undoubtedly relied on selling the agricultural produce of their estates on the market in Athens and they consequently were concerned about profits. Osborne has specified that Finley's argument fails because of his conception of ancient economic rationality.³⁹ D. Rathbone in *Economic Rationalism and Rural Society in third century Egypt* takes the point further. Finley pointed out the lack of an economic rationality in the modern capitalist sense as Rostovtzeff had suggested. In contrast to Finley, Rathbone points out that there is evidence of quite sophisticated accounting systems in the papyri of the Fayoum. The evidence, however, does not present all the principles of capitalist accounting because of unstable market conditions. Both Osborne and Rathbone suggest that a modern capitalist approach to investment was not possible.⁴⁰ Thus, in classical antiquity, people employed a different approach focusing on cost control rather than profitability.⁴¹

In fact, Eduard Meyer and Michael Rostovtzeff, the two founders of the 'modernist' approach in economic history, resisted the link between the culture of Greco-Roman Antiquity and primitive peoples. As they perceived it, ancient culture was the opposite of primitive culture, which is interpreted as naive. The Greeks and the

³⁶ Bang 2008, 50-51. It should however be noted that Bang's comparison between the Roman and Dutch Empires is illusory as the latter held overseas possessions though the Roman Empire had a contiguous territory.

³⁷ Morley 2007a, 8, attitudes of the ancients on trading, 82-85. For the views on the role of trade and the Roman government and elite, see D'Arms 1981; Whittaker 1985, 49-76; Harris 2003, 275-305.

³⁸ Finley 1999, 137; Whittaker 2002, 13.

³⁹ Osborne 1991, 119-145.

⁴⁰ Rathbone 1991.

⁴¹ Finley 1999, 109.

Romans had a superior culture to the range of indigenous peoples in the same empire.⁴² Bang here suggests that the ongoing debate about the Greco-Roman economy could be considered to be part of an ideological conflict about cultural ideals and European civilisation. This could explain why Finley's analysis received such criticism, as it was understood to be an attack on Greco-Roman antiquity, implying a deficiency in the mental capacities of the Greek and the Romans. In fact, *The Ancient Economy* was an attempt to comprehend the ancient economy on its own terms. When Finley specified that there was no economic analysis in the modern sense of the world, he did not refer to an intellectual incapability. He rather emphasised that the ancient people had a different economic mentality. Thus, Bang suggests that the vast agrarian civilisations/empires may allow a better comparative analysis with which to assess Greco-Roman antiquity than early modern capitalism, as neither of them achieved an Industrial Revolution. This presents a better understanding of *The Ancient Economy*. Eventually, he moves the debate beyond primitivist and modernist approaches and calls it "a move from primitivism to historical otherness".⁴³

As N. Morley summarised, the primitivists were right to insist that 98% of ancients lived at subsistence level in a predominantly agrarian society, and the modernists were also justified in investigating how the remaining 2% were not completely dedicated to subsistence.⁴⁴ In fact, the ancient economy does not necessarily need to bear a resemblance to any era since each political organization and geographical entity generated its own dynamics, which defined their specific forms of economic behaviour. Thus, the problem is to find the main features and dynamics of the ancient economy. Although the old debate remains important, there is a need to investigate new definitions and to propose a new model. The ancient economy can be studied in terms of production, consumption, and distribution patterns rather than under the old definitions of trade and industry.⁴⁵ The decisive effects of environment and ecology on human actions were not a new phenomenon in the social sciences. This was highly stressed by the *Annales* School and has especially been contextualised by F. Braudel. Horden and Purcell's *The Corrupting Sea* (2000) published a decade ago again pointed out the importance of understanding of the Mediterranean as a distinctive geographical entity.

⁴² Bang 1997.

⁴³ Bang 1997.

⁴⁴ Morley 2007a, 6-7, 9.

⁴⁵ The edited volume by W. Scheidel, I. Morris and P. Saller entitled *Cambridge Economic History of Greco-Roman World* (2007) introduces approaches and methods of *New Institutional Economics* in the case of Greek and Roman history.

As a result, firstly, according to the primitivist as opposed to the modernist approach, the ancient economy was not only quantitatively but also qualitatively different from later Industrial Europe (Industrial Revolution 1800s). In fact, as H.W. Pleket later stressed, the ancient economy was closely linked to that of pre-industrial Europe until the eighteenth century, where the majority of people lived in the countryside and fed the urban centres.⁴⁶ Each empire created its own economic mechanisms, but similar tendencies and economic behaviours can be observed from one empire to another within the same geographical unit, which in this case is the Mediterranean.⁴⁷ In fact, as Byzantine historian M. Hendy suggested, economic systems of later empires, e.g. the Ottoman Empire, which were better known through the existence of historical and statistical accounts, could illuminate the case of the Byzantine Empire.⁴⁸ In regard to the Ottoman Empire, it is difficult to talk about an industrial revolution in the same period. The empire made little effort to utilise the innovations, and relatively small scale industrial development was achieved.⁴⁹ Therefore, the date-range covered by the economy of Roman Asia Minor could be extended until the early period of the Republican Turkey to make a comparison between two eras. This helps one to comprehend ancient economy in different cases. For that reason, the first chapter on methodology takes into account the pre-industrial age of İzmit Mutasarrıflığı. The 19th century Ottoman Empire makes a contribution to the evaluation of the economy of Nicomedia within the *longue durée*.

Secondly, although state control of the economy was decisive, and supplying the empire was a priority in all tributary empires, e.g. the Romans and the Ottomans also enjoyed trading activities. Moreover, cities conducted trade and manufacture, as long as it was economically profitable. There were other incentives and it was sometimes even necessary for cities to generate income from non-agricultural sectors. Finley was right to distinguish differences between the ancient economy and modern economy, but his approach led him to propose a minimalist view of ancient cities as ‘self-sufficient cells’ in the Mediterranean.⁵⁰ This thesis therefore challenges explanations of the urban economy within their self-sufficient agrarian nature, and the rarity of mixed economies

⁴⁶ Pleket 1990, 28.

⁴⁷ Bang 2008, 42. For example, Asian and Indian traders present a vivid commercial life and large amount of trade. Again autarchic and traditional Indian village communities were not completely involved in closed economies but rather were opened to wider market economies.

⁴⁸ Hendy 1989, 6. “In place of traditional view there now obtains the one in which the basic structures are seen as a type; as not at all dissimilar to those operating in some better known and more recent economies and societies; and as one in which the piecemeal known elements of the earlier situation are now to be illuminated by the more uniformly known ones of the later as a matter of deliberate policy.”

⁴⁹ Pamuk 1987, 18-40.

⁵⁰ Morley 2007b, 580-581.

in the Mediterranean. It examines those considerations within the consumer type, and investigates whether the economic activities of Nicomedia define it as a producer city or one with a mixed economy. Its own economic dynamics, with its vast, rich territory on one hand, and its role in maritime trade on the other hand, make the city a bilateral case. How far is the self-sufficient agricultural city type valid for Nicomedia? What was the economic basis and behaviour of the city? How far do production and consumption patterns affect development of non-agricultural sectors? How was the distribution patterns shaped? These questions, along with others, are posed in the first chapter.

This study is divided into six chapters in which the resources and economy of the city of Nicomedia are examined. Chapter 1 begins by laying out the methodological considerations of the research, and looks at how self-sufficiency at Roman Nicomedia can be gauged by an investigation of the *longue durée*, drawing especially on L. Robert's works. It will then go on to the connectivity of micro-regions, as defined by Horden and Purcell, and evaluates the connectivity of the Propontis and today's Marmara region with respect to geopolitics. The final part of the first chapter deals with the limits of the consumer type, and the impositions of the Roman state and army. Chapter 2 examines the historical setting of settlements and settlers in Nicomedia and its environs from the archaic period to Roman times. This overview helps to set the scene for the historical and economic development of the city. Chapter 3 accounts for the production and consumption patterns of the city and eventually returns to the question of the self-sufficiency of Nicomedia. There are two questions: what products were produced in the land, and what products were consumed? The chapter examines another important problem of the ancient economy, which is how much the city produced and consumed and what the production and consumption patterns of the city were within a broader context. Chapter 4 takes the point further and evaluates the revenues, distribution patterns, trading activity, and the connectivity of the city. It examines the city from the point of view of service, commercial, and producer city types, and compares it to the results derived in the previous chapter. The last chapter assesses the survival and distribution of the civic coins especially in the light of army movements and trading activities in the economy of Roman Nicomedia. The study ends with a concluding chapter comparing Nicomedia to the other cities, and evaluating the connectivity and networks of the city in a broader context.

CHAPTER I

Methodological Approaches to the Economy of Nicomedia in the light of modern scholarship

I. Introduction

The aim of this chapter is to discuss the available sources for the economy of Nicomedia in antiquity. The chapter focuses on the evaluation and selection of appropriate methodological approaches to reconstruct the economic basis of the city within the Bithynian region. There are three sections in this evaluation of methodological approaches.

The first section approaches the resources of Nicomedia both qualitatively and quantitatively. T. R. S. Broughton's chapter on the economy of Roman Asia Minor in volume-IV is the largest single section of *An Economic Survey of Ancient Rome* and is an invaluable source of information about the general economic situation in Asia Minor, although it does not contain detailed economic analysis.⁵¹ As Broughton simply pointed out, the wealth of Nicomedia rested on a "triple base, a large territory with great natural resources, its place on an important road, and its port."⁵² This well-defined statement for the economic basis of the city leads this thesis to ask how far Broughton's definition can be tested in terms of Nicomedia's rich civic resources and the quantitative value of the resources. Because of the lack of any direct and sufficient ancient sources, it deals with F. Braudel's model on the unity and distinctiveness of the Mediterranean, and inevitably the *longue durée* and its strengths and weaknesses. It discusses these considerations in the light of Robert's work, for the case of the resources of Nicomedia. Finally, it seeks to gauge the question of the self-sufficiency of Nicomedia for further implications in terms of producer and consumer city types.

The second section emphasises the location of Nicomedia in accordance with its second and third features providing wealth to the city. It includes P. Horden and N. Purcell's new approaches to Braudel's Mediterranean, and the possibility of applying their ideas about the connectivity of micro-regions for the case of Bithynia.⁵³ It considers the recent interpretation of network theory and Mediterranean paradigms introduced by I. Malkin, which builds on the ideas suggested in the *Corrupting Sea*.⁵⁴

⁵¹ T. R. S. Broughton, "Roman Asia Minor", in T. Frank (ed.), *An Economic survey of Ancient Rome*, vol. IV, Baltimore. 499-918.

⁵² Broughton 1938, 773.

⁵³ P. Horden- N. Purcell, *The Corrupting Sea, A Study of Mediterranean History*, Oxford 2000.

⁵⁴ Malkin 2005, 1-8; 2009, 1-11.

Having evaluated these approaches, the third section addresses the economy and economic behaviour of Nicomedia starting with the Finleyan approach and reactions to it, including Hopkins' response and Pleket's criticisms. It discusses appropriate approaches to the economic activities of Nicomedia and, inevitably, in which type the city can be considered, e.g. the Weberian producer-consumer cities. It questions the validity of E. Gren's theory, for the northwest Anatolia in order to understand impact of Roman state and army on the economy of the city.⁵⁵

For the general economic picture of the Roman Empire, the chapter specifically uses the recently published *Cambridge Economic History of the Greco-Roman World* volume, in which articles demonstrating patterns of production, consumption, and distribution of Roman Empire are especially relevant.⁵⁶ This volume introduces approaches and methods of *New Institutional Economics* in the case of Greek and Roman history.⁵⁷

On the other hand, the economic character of Nicomedia cannot be fully illuminated, since these works are based on different case-studies, such as south Etruria in Italy or the Biqa valley in Lebanon, as seen in the Horden and Purcell's volume, or the western part of Roman Empire as focused on in the Hopkins' tax and trade model. Regional and even micro-regional discrepancies through history are always an obstacle to the application of sweeping methodological considerations. This probably is the main difficulty of examining a particular city in a particular region, as it is unsafe to try to adapt these general considerations to the situation of a particular region possessing its own different dynamics, the Marmara region today and Bithynia region in antiquity (figure 1). Therefore, the chapter approaches all methodological considerations, as useful and significant tools helping to evaluate the material, rather than as central movement points.

This main obstacle, however, is partly solved by the existence of substantial publications, which demonstrate the economic patterns of Roman Asia Minor. Within this context, Broughton's monograph on the economy of Roman Asia Minor is a significantly informative compilation regarding land, products, trade, and transport, also

⁵⁵ E. Gren, *Kleinasien und der Ostbalkan in der Wirtschaftlichen Entwicklung der Römischen Kaiserzeit*, 1941. Especially, the chapter four, entitled "Die Römische Armee als Wirtschaftsfaktor in Kleinasien und auf dem Balkan", 89-155.

⁵⁶ *The Cambridge Economic History of the Greco-Roman World*, W. Scheidel - I. Morris - P. Saller (eds.), Cambridge, UK, New York 2007.

⁵⁷ Bang 2009, 194-206. p. 199: New Institutional Economics is an economic approach, which perceives social and legal systems as main factors underlying the economy. It highlights the importance of historical study of institutions in order to understand economic developments. More importantly, it organises the material under distribution, consumption and production patterns rather than conventional division e.g. industry, trade. Morley 2007a, 103; see also Bang-Ikeguchi-Ziche's edited volume (2006).

dealing with the structure of enterprises and financial matters in Roman Asia Minor.⁵⁸ After Broughton's work, it is worth mentioning the theoretical approach by Eric Gren since he proposed troop movements between East Balkans and Asia Minor as a stimulus to the economic development of the two regions.⁵⁹ L. Robert's works are a substantial endeavour revealing conditions of Asia Minor by evaluating a combination of different sources, and his convincing approach and its weaknesses will be discussed in the second section of this chapter.⁶⁰ One important attempt for the production, consumption, and distribution patterns of Asia Minor has been presented by S. Mitchell in a chapter titled "Tax, Grain and the Economy" which will be used in this chapter. Generally, his book entitled *Anatolia, Land, Men, and Gods in Asia Minor* is useful for economic studies to see the structure of Roman Anatolia, e.g. rural settlements, administrative structures, estates and land, urban growth and development of cities. It can be said that Mitchell's work gave more details and a refreshed view in the light of new archaeological findings after Broughton's important work.⁶¹ Another important volume titled *Patterns in the Economy of Roman Asia Minor* edited by S. Mitchell and C. Katsari has been published in 2005. The volume addresses themes concerning Roman agriculture, trade and commodity exchange, sanctuaries, the monetary economy and impact of population movements on local economies in Roman Asia Minor. It helps to see recent examinations of the economic studies of Roman Asia Minor in the light of new archaeological data and new approaches.⁶²

II. The Resources of Nicomedia in the light L. Robert's Works within Braudelian long-term history (*longue durée*)

F. Braudel, by changing the perception of time and place in the historical studies, not only criticized the Annales' approach but also its general understanding of history. His book on the Mediterranean stresses the "unity and distinctiveness" of the Mediterranean in an "almost timeless" geographical context, slowly changing history of social and economic structures, and "fast-moving history of events".⁶³ In other words, Braudel distinguished time as having three different scales and each of them having its

⁵⁸ Broughton 1938, 499-918; Katsari-Mitchell 2005, xvii.

⁵⁹ E. Gren, *Kleinasien und der Ostbalkan in der Wirtschaftlichen Entwicklung der Römischen Kaiserzeit*, Uppsala 1941, rev. Gray 1947, 212-214.

⁶⁰ L. Robert, "Documents d'Asie Mineure, 6. Epitaphes de Nicomédie", *Bulletin de Correspondance Hellénique* 102, 1978, 408-428, and *A travers l'Asie Mineure. Poètes et prosateurs, monnaies grecques, voyageurs et géographie*, Paris 1980.

⁶¹ S. Mitchell, *Anatolia, Land, Men and Gods in Asia Minor I-II*, Oxford 1993. 241-259.

⁶² *Patterns in the Economy of Roman Asia Minor*, S. Mitchell and C. Katsari (eds.), Swansea 2005.

⁶³ Burke 1990, 33; Nixon 2002, 195.

own speed: first, “the almost stationary time of the Mediterranean as a geographic space (*longue durée*), secondly the slow time of changes in the social and economic structures (conjunctures), and thirdly the fast time of political events (*événements*).”⁶⁴ While the *Annales*’ historians preferred to stress stagnancy and the *longue durée*, (the continuities of the deepest structures of society), Braudel interprets the *longue durée* as “slow and often imperceptible effects of space, climate and technology on the actions of human beings in the past.”⁶⁵ In the *longue durée* of economic history, “the cycles and structural crises lay old attitudes of thought and action, resistant frameworks dying hard, at times against all logic.”⁶⁶

Braudel perceived the effects of climatic, geomorphologic and spatial phenomena over the *longue durée*, since these effects were slow and inconspicuous in the human actions while frameworks and patterns persisted staying similar. In this approach, it can be said that the same patterns and structures could be derived throughout history. Consequently, if structure and framework do persist, it would be expected that conditions in antiquity and 19th century would be similar regarding climate, geography, and space.

Before moving on other new theories, it is worth examining the relevance and application of the *longue durée* idea for Nicomedia and the Bithynia region in order to assess whether the *longue durée* approach can be used. L. Robert’s works about Nicomedia and Bithynia are especially important for this research. His works involve a tacit assumption of the validity of the *longue durée* approach; there is no explanation about his methodology related to his conscious approach to *longue durée*. However, it can clearly be seen that he evaluates the sources by using a *long term* approach.⁶⁷ It should be noted that some decades before Robert and even Braudel, the British scholar F. W. Hasluck presents a similar approach in his works on Cyzicus (1910) and Smyrna (1913-14; 1918-19) which can be considered within the *longue durée*.⁶⁸

Robert however profoundly and qualitatively assesses the 18th and 19th century travellers’ notes and makes an analysis and synthesis of them. In his method, while examining the sources, he also supports the evidence of inscriptions, written sources, and coins by the testimony of travellers’ notes, which allows a better comprehension of social and economic conditions in Asia Minor. He arguably exemplifies what needs to

⁶⁴ Iggers 1995, 56-57; see also Harris 2004, 161-174.

⁶⁵ Lechte 1994, 102.

⁶⁶ Braudel 1958, 733.

⁶⁷ Robert 1978, 408-428 and 1980.

⁶⁸ Salmeri 2004, 96-97. Salmeri questions whether French geographer Vidal de la Blache, founder of modern French geography and human geography in the late 19th century, affected Hasluck’s works.

be done in terms of using sources since there is an inevitable need to use a combination of sources in the economic studies of Roman Asia Minor. Ancient economic historians have access to data, but not much that is comparable with equivalent data for the modern and early modern world.⁶⁹

Nevertheless, it is possible to define the sources of production and patterns of distribution of durable products, such as marble or pottery giving a picture of ancient commercial activity. For example, the distribution of a certain type of amphora outside of its provenance, and the circulation of coins issued by a certain city can demonstrate trade and exchange in antiquity.⁷⁰ Yet, it is important to take account of the nature of these commodities. Marble, pottery, and coinage are archaeologically ‘visible’ and can provide direct information about the economy in terms of distribution and quantity. In contrast to visible materials such as stone and pottery, invisible commodities (food products, all cloth, e.g. wool, linen; and also wood, leather, wax, furs and slaves, although all of these items can be visible if they are preserved in the right conditions) are much more difficult to define and it is much harder to quantify their role in ancient trade networks as they are perishable and do not survive.⁷¹ However, a study based on fish remains from archaeological sites as indicators of earlier trade connections in the Eastern Mediterranean has suggested tracing indirectly the distribution of perishable commodities.⁷²

In the current state of archaeological research and reporting in Anatolia, even visible commodities have not been published to provide sufficient, reliable, and well-defined material. Pottery is often omitted in the excavation reports and reliable publications of well-dated material are uncommon. Coin-finds from hoards and excavations have been scattered and poorly described. Accordingly, the comparative approach, based on analogies between the Ottoman times and Roman times, has been more widely used than other methods to reconstruct the regional economy.⁷³ Archaeological and numismatic evidence can be supported by observing and examining situations in the modern or pre-modern (pre-mechanized) times. The structure of the regional economy can be derived from this comparison, taking into consideration the factors that are applicable to antiquity. More importantly, the application of Robert’s method and drawing analogies with other cities, which are archaeologically studied in

⁶⁹ Finley 1999, 23-26.

⁷⁰ See, Greene’s chapter on “Metal, Stone and Pottery in the Roman Empire”, Greene 1990, 142-168.

⁷¹ Greaves 2007, 12.

⁷² Van Neer et al. 2004, 101-147.

⁷³ Mitchell 1993, 242; Mitchell-Katsari 2005, xviii.

Asia Minor is essential, since except for a few rescue excavations, there has been no systematic archaeological excavation conducted in Nicomedia.

Robert's method assumes that the observations of European travellers of the 18th and 19th centuries correspond to conditions in antiquity, and that the same products were cultivated and methods of exploitation were quite similar in the Roman and late Ottoman Periods. Therefore, the analogy allows for evaluating the place in the economy of some commercial products such as timber and olive oil. The testimony of travellers and geographers also gives an idea of the economic basis of the city and even of the scale of economic activity. Robert's work on the travellers gives a better understanding of Bithynia by observing practices, which have existed since antiquity. Many economic activities can be seen through the travellers' eyes. Robert combined the available ancient sources with detailed descriptions of travellers to understand the exploitation and resources of Prusias ad Hypium, a middle-ranking city in Bithynia, which is located on the main land route passing through northern Anatolia.⁷⁴ He presents a geographical reconstruction of the constant economic background of the history of the city of Prusias ad Hypium during Hellenistic and Roman times.⁷⁵ Robert points out the increasing wealth and economic importance of Prusias, though there is no mention of this in the literary sources.⁷⁶

In the chapters of *Documents d'Asie Mineure* related to Nicomedia, Robert begins with ancient materials and proceeds to evaluating travellers' accounts. For example, he starts by talking about an epitaph of a wood carver found in Nicomedia and then enriches his discussion of woodwork at Nicomedia by using travellers' notes and also other ancient sources as far as they exist.⁷⁷ In another example, he not only links the existence of a wood carver in Nicomedia to the vast timber resources and trade, but also makes another connection. He interprets the epitaph of a *schedionautes* (rafts-man) found in Nicomedia and emphasises the navigability of the River Sangarius; Robert concludes that there was transportation link from Sangarius River to Sapanca Lake, then to the Gulf of İzmit and the Propontis.⁷⁸

⁷⁴ Robert 1980, Chapter II, 11-106. He shows forests, which surrounds the city, as a main source of the city and supports this view by using rich descriptions of travellers' notes who passed through Prusias in the 18th and 19th century. He proposed that timber could be transported down the river Hypius to the Black Sea emporium of Dia, which belonged to the city, and then reached to the Black Sea market. He then proves the navigability of River Hypius by evaluating river typology on coins of Prusias and other cities. Accordingly, Robert presents epigraphic evidence regarding trading activities of Prusian traders in the Black Sea.

⁷⁵ Robert 1980, 52.

⁷⁶ Mitchell-Katsari 2005, xix.

⁷⁷ Robert 1978, 412-413.

⁷⁸ Robert 1978, 427.

Robert successfully grips one's imagination and the method is convincing with reasonable explanations and links. However, few methodological weaknesses deserve further attention.⁷⁹

First, the approach corresponds to the Braudelian *longue durée* whose main essence is to emphasise the persistent patterns in history. However, there is a change in the objects of production, (corn, rice, and tobacco were not produced or consumed in antiquity), the transportation system and finally the use and exploitation of land differed from antiquity to the 19th century.⁸⁰ In other words, the same climate and environment are capable of being exploited in different ways.

An example has been pointed out by Mitchell who draws attention the fact that Robert has shown the same approach in his work on olive cultivation in antiquity. Robert accepts that the exploitation of natural resources in Anatolia had changed little since antiquity. Furthermore, accounts of travellers could be used as 'a reliable guide' to lead what had been produced in antiquity. However, there are changes in cultural structure and the nature of the cultivated landscape. For instance, while olive oil was widely consumed and produced by the Greeks and the Romans in antiquity, there was less interest consuming olive oil by Turks in Turkish Anatolia since they alternatively used tallow, tail fat, and butter. The average annual consumption of olive oil in Turkey in comparison to Greece still dramatically shows this phenomenon. Therefore, it can be suggested that cultural difference in the consumption of olive oil influenced olive cultivation, and olive was more extensively cultivated in Hellenistic and Roman Asia Minor than it is today.⁸¹ (For this issue, see discussion in p.120-122)

Secondly, one of the methodological failings in Robert's approach to the resources of Bithynia is that he is more interested in products, crafts, trade, and professions than in structures and patterns of exploitation. This incompleteness was evaluated in the case of Central Anatolia by S. Mitchell. Though his attempt was limited to one chapter, it is essential to understand the economic patterns of Asia Minor in the context of broader theories that have been proposed for general understanding of ancient economy.⁸² For example, one point made by Mitchell is the differentiation of land use for growing cereals from antiquity to Ottoman times and even today. Land for growing

⁷⁹ For the review of *A travers l'Asie Mineure*, see Mitchell 1983a, 211-212; and reviews of *Documents d'Asie Mineure*, see Rouche 1990, 102-103; Herrmann 1990, 383-384. The present author, however, has not observed any substantial review on Robert's works, dealing with methodological point of view.

⁸⁰ Mitchell 1993, 245.

⁸¹ Mitchell 2005, 89-93. For example, there is evidence for cultivation in Pamphylia, Cilicia, Pisidia, Phrygia, and even in both western and eastern Cappadocia.

⁸² Mitchell 1993. 241-259.

cereals was scarce in Roman times, in contrast to today's Anatolia in which there is a majority of cereal growing area. As demonstrated in his discussion, changes in the land use of the arable area between Kadınhan (near Catacecaumene) and Polatlı (near Gordium) clearly show that modern mechanized transport and also technology made the land more effective and productive today. Before the end of 19th century, the area was used for animal husbandry. Taking point further, it can be suggested that before Roman rule there was a similar land use that the same area devoted to pastoralism. Roman Asia Minor provides a historical analogy, thus it needs to be defined what sort of economic and political concerns favour the use of the land for cereal cultivation. As was seen, sometimes there is a repetition of patterns, but there are not the same patterns throughout history.⁸³ Yet another example from Nicomedia demonstrates a similar case to the one that has been seen in Central Anatolia. According to Cuinet's figures from the late 19th century, sheep raising was a relatively important proportion of animal husbandry.⁸⁴ In 2002 in the Kocaeli Province, the figures tell a different story.⁸⁵ The conspicuous difference between 1893 and 2002 might have been connected to changes in the land exploitation. It seems that in the 19th century the proportion of animal husbandry was higher than 2002, thus, it is likely that the area under pastoral use in 1893 started to be used for growing cereals by the 1950s. Eventually, while pastoralism decreased, agricultural areas increased.⁸⁶ With the establishment of central governments, e.g. the Roman Empire, and the Turkish Republic, agricultural land must have increased. Taking into consideration this trend, agricultural land of Nicomedia can be estimated.

As mentioned above, Robert's method is little concerned with patterns of settlements and land use in antiquity. The recent technological advances in archaeology show that there are differences in patterns of settlement and land exploitation between antiquity and later periods. Survey archaeology has changed the understanding of rural settlements and rural economies in the ancient Mediterranean world, for example as seen in Greece, Italy, Tripolitania, and Tunisia.⁸⁷ Survey research demonstrates that there were many rural settlements as well as cities in the Late Roman Empire. A. H. M. Jones argued that there was decline between the third and sixth centuries, and suggested systematic abandonment and impoverishment of the land triggered an overall decline of

⁸³ Mitchell 1993, 245.

⁸⁴ Cuinet 1895, 327-8.

⁸⁵ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 286-7. In Kocaeli District, 57482 cattle-buffalo, 40275 sheep, 13245 goats were counted in 2002.

⁸⁶ See for the explanation of the major shift in pasture and agriculture in Horden-Purcell 2000, 80-87.

⁸⁷ Mitchell-Katsari 2005, xx; Buck-Mattingly 1985; Mattingly 2010; Hayes-Martini 1994.

the empire.⁸⁸ However, it can be said that there was continuity between the thriving economic conditions of the cities in the high Roman Empire, which is epigraphically attested, into the later Roman period, which is archaeologically supported.⁸⁹ This shows that how survey research is important for understanding the nature of land, settlements, and patterns of economic development of Nicomedia in this context. Thus, ‘Surveys of Kocaeli and its Districts’ which have been conducted by Kocaeli University since 2005, carry extreme importance in revealing the economy of Nicomedia. Careful analysis of increasing settlements in Nicomedia and its hinterland could be a proxy indicator for economic development. For revealing the importance of settlements, there is a particular focus on settlers and settlement growth in Nicomedian territory from archaic period to Roman times in the second chapter of the thesis. It is important to consider how settlement patterns changed in Nicomedia and its territory between the Hellenistic period, when the city was founded, and Roman times. Nevertheless, the current state of survey archaeology in Nicomedia/İzmit is not able to define exact use and exploitation of land in the city. The travellers’ accounts also contribute to the economic structure of the city providing observations on the moments of the change and transformation in the production and consumption patterns over time. Therefore, this archaeological incompleteness can be compensated observing the trends, attesting the changes and defining the cycle on the production patterns in the long term as has been examined for the case of Italy by Lo Cascio and Malanima.⁹⁰

The third point of the weakness in Robert’s method is linked to the limitations of the travellers’ accounts. They provide a more or less accurate picture of rural areas, but they do not describe the exact operations and methods established by certain ‘actors’ such as the Roman state, local communities or traders. Here, archaeological evidence, especially inscriptions, can help to identify agents in the ancient economy and its mechanisms.⁹¹ Therefore, the travellers’ works indicate what products were produced in the land, but do not identify who traded or profited in antiquity, and what economic patterns of land exploitation existed and what their role was in the regional economy and Roman Empire as a whole. For that reason, travellers’ accounts need to be supported by ancient materials, especially inscriptions, at least to identify the traders.⁹²

⁸⁸ A.H.M. Jones, *The Later Roman Empire*. Vols. I-II, Oxford 1964.

⁸⁹ Mitchell-Katsari 2005, xx-xxi.

⁹⁰ Lo Cascio-Malanima 2005, 197-232.

⁹¹ Mitchell 1993, 243.

⁹² Ruge 1936, 473 and 481; Robert 1978, 422-3. For example, inscriptions found in Nicomedia related to commercial associations such as collegia of *naukleroi* help understanding who the actors of the economy of Nicomedia were.

Robert assessed epigraphic evidence regarding Nicomedian shippers and showed their trade links. However, he draws little attention to the social status of shippers and most importantly to the significance of trade in the Roman Empire.⁹³ Who profited from the exploitation, and the status of ship-owners and traders need to be examined in the case of Nicomedia in the light of available sources. These points are also discussed in the third section of this chapter dealing with the Weberian producer and consumer city types.

Robert's method demonstrates history in the long term, although weaknesses of method have been shown above. When Robert was writing in the late 70s and early 80s, this approach was well-known and accepted by many scholars studying the ancient economy.⁹⁴ However, in the past thirty years, new technologies applied in archaeology and new findings have helped to change the picture of the ancient economy, e.g. climatic and environmental changes revealed through environmental archaeology.⁹⁵ As for the case of Nicomedia, however, archaeological studies showing environmental and climatic changes are still wanting.

To conclude, it is risky to try to understand the ancient economy by looking uncritically at observations from the 18th-19th centuries. For that reason, Robert's method needs a careful interrogation, fully supported by ancient materials i.e. inscriptions, coins, and knowledge of which has changed in the passing thirty years. In spite of all their weaknesses, the 18th and 19th century's travellers still can be used in order to support ancient evidence.

These methodological considerations are relevant to the third chapter, which is on the production and consumption patterns of the city and the fourth chapter that deals with the commercial commodities of Nicomedia. By taking Robert's method further, the third chapter questions the extent to which figures from the pre-industrial period can be used for the calculation of carrying capacity and consumption. Estimates of production and consumption figures provide a possible glimpse of civic income and expenses, which has further implications in the following chapters.

Nevertheless, the results derived from the 19th century may not be suitable to use against the situation in antiquity and one has to be cautious while making conclusions. As Gallant pointed out about the nineteenth century data when he examined agricultural productivity and risk management in the case of Greece, the absence of mechanization

⁹³ Pleket 1983, 134-137.

⁹⁴ Lechte 1994, 102. Lechte points out that "Braudel and the Annales School of historians reached the height of their influence in the 1960s and 1970s."

⁹⁵ Mitchell-Katsari 2005, xx-xxi.

does not demonstrate that ancient agriculture was ‘traditional’, and it is not necessarily retrodictable. Thus, it would be misleading to take account of crop yields during the late nineteenth century and early twentieth century in order to apply directly to the antiquity just because they were produced with pre-modern technology. It needs more precise data that should be proved within a social, economic, and political context.⁹⁶ For that reason, it should be asked the production, consumption, and distribution patterns of the city were in a broader context and the modes of the transformation and change on these patterns over time e.g. which techniques applied in agriculture, and how the land was used by inhabitants. As a result, statistical accounts from the 19th century cannot apply directly to antiquity, but give a sense of scale of what was possible in antiquity by focusing on the changes over time.

Travellers’ Accounts

Before moving on to other approaches, it is significant to define which of the accounts of travellers who passed through Nicomedia are valuable, reliable, and comprehensive to take into account for the economy of Nicomedia.

Charles de Peyssonel, French Consul in İzmir, mentions the city, which he visited in 1745.⁹⁷ He gives more information about the economic basis of the city. One important paragraph in particular is related to the Kandıra region drawing attention to the exploitation and transportation mechanisms of timber -even giving the price paid per tree- in the northern part of the city at the end of the 18th century. This statement is also significant in terms of confirming the use of river transportation along the tributary of the Sakarya River (Sangarius).⁹⁸

The Scottish traveller John Galt, who visited the province of İzmit in 1810, gives another account.⁹⁹ As seen in Boré’s and Hommaire de Hell’s accounts, he describes -seemingly unintentionally- the resources of the province of İzmit and socio-economic impressions of the people especially in Kandıra-Kerpe (Calpe). One paragraph from Galt’s account reveals the situation at Kerpe (Calpe) which had many villages and vast, fertile, and cultivated areas reflecting the wealth of the settlement.¹⁰⁰ In contrast to

⁹⁶ Gallant 1991, 76.

⁹⁷ Ulugün 2008, 72-78. Charles de Peyssonel, *Relation d’un Voyage fait a Nicomedie et a Nicée en 1745*, trans. Y. Ulugün, İzmit 2005. Peyssonel observed Üsküdar, Kadıköy, Maltepe, Tuzla, Gebze, Philokrene, Darica, Eskihisar, and Hereke before arriving at İzmit.

⁹⁸ Robert 1978, 427.

⁹⁹ J. Galt, *Voyages and Travels in the years 1809, 1810 and 1811*, London 1812. 292-299.

¹⁰⁰ Ulugün 2008, 11-112.

Boré's account about Kerpe in 1837, Galt's observations are similar to what Xenophon said in 400 BC when he arrived at Calpe with his troops from Heracleia.¹⁰¹

The French historian, archaeologist, and architect Charles Texier wrote another important travel book for Bithynia. He followed a route commencing from İstanbul by land in 1834. Having given a brief history of Bithynia, he starts to mention his trip in the book published in 1862.¹⁰² He mentions salt produced from vast marshes and timber as the main commercial commodities of İzmit. Additionally he gives maps and drawings of ancient remains.¹⁰³

One important source is the correspondence and memoirs of the French missionary and linguist Eugene Boré published in 1848. This is not a book but a series of letters addressed to friends, especially his brother, all printed by a friend while the traveller was away. His letters and his diaries offer a variety of information about Persia and especially about the north and east of Asia Minor. Boré's work was assessed as quite short but reliable by the geologist Leonhardt.¹⁰⁴ He arrived in Bithynia in 1837. On the 2nd of May 1838, his journey started from Kadıköy-Dudullu-Ömerli and then he passed through Şile, Kerpe and Kandıra, which are well known as timber sources in the territory of Nicomedia throughout history.¹⁰⁵ Having passed from the northern part of İzmit (Nicomedia) he arrived at Konuralp (Prusias ad Hypium), which was examined in terms of its resources and economy by L. Robert.¹⁰⁶ The physical resources of Bithynia such as the kinds of trees or sorts of agricultural products can clearly be found in Boré's careful observations on the landscape, as well as in the economic basis of inhabitants, e.g. villagers who are occupied in producing firewood in the northeastern part of İzmit, or in animal husbandry in Kulaklı village located on the mouth of Sakarya (Sangarius). He emphasises the socio-economic structure of the villages through the Black Sea coast of Bithynia. Boré's interest in antiquities is shown by his observations on ancient remains, and he gives conditions and details of remains such as the remnants of towers, aqueducts, and even the probable location of an ancient settlement. In his account of Kerpe (Calpe) he makes a comparison with what Xenophon reported more than two

¹⁰¹ Xenophon, *Anabasis* VI 4, 1-6.

¹⁰² Texier 2002, xv. C. Texier, *Asie mineure: description géographique, historique et archéologique des provinces et des villes de la Chersonnèse d'Asie*, 1862. He also published other books and articles on his travels through Asia Minor and the Middle East.

¹⁰³ Robert 1978, 417-419.

¹⁰⁴ Robert 1980, 42. It should be noted that E. Boré had studied Syrian and Armenian and he spent most of his life in the East.

¹⁰⁵ Ulugün 2008, 169.

¹⁰⁶ Robert 1980.

thousand years ago.¹⁰⁷ His impression of Calpe includes a claim that he had seen three small wooden sheds at the point where Xenophon reached from Heracleia with his troops in 400 BC. It is interesting that he says that he saw what Xenophon had seen, but with some differences: “There were no vineyards producing tasty wines on the slopes, there were no fig trees, but the spring was flowing into the sea and remains of a tower were visible.”¹⁰⁸ Based on Boré’s account, vineyards and orchards in Calpe seem to have been desolated in the nineteenth century.

Moreover, Boré describes the Sakarya River (Sangarius) and its navigability.¹⁰⁹ All these accounts are invaluable for understanding the economic basis of the region, which is the backyard of İzmit (Nicomedia) in terms of agricultural products and animal husbandry, and provided many products for local consumption and trade. Today, the Kandira region in İzmit is still a source of timber and the Kandira and Kefken districts on the north have the biggest cultivated area producing vegetables, fruits, and cereals in the province of Kocaeli.¹¹⁰

Boré’s accounts and those of other travellers such as Peyssonel (1745) and Texier (1834), give a picture of the province of İzmit in the early 19th century, before the Treaty of Balta Limani which was a commercial agreement signed in 1838 between the Ottoman Empire and the United Kingdom of Great Britain and Ireland, regulating international trade.¹¹¹ The treaty made Ottoman land an open market for British businessmen since import duty was half the export duty. Moreover, abolishing state monopolies had a significant effect by allowing Ottoman citizens to produce and sell their own products in order to pay taxes, which led to advances in the quality and quantity of production.¹¹²

Nine years after Boré’s journey, the geographer, geologist and engineer Xavier Hommaire de Hell, entered Bithynia on the 6th of May, the same season as Boré. He was

¹⁰⁷ Xenophon, *Anabasis* VI 4, 4-6. “...At the very foot of the rock there is a harbour whose beach faces toward the west and abundantly flowing spring of fresh water close to the shore of the sea and commanded by the headland. There is also great deal of timber of various sorts, but an especially large amount of fine ship-timber, on the very shore of the sea. The ridge extends back into the interior for about twenty stadia, and this stretch is deep soiled and free from stones, while the land bordering the coast is thickly covered for a distance of more than twenty stadia with an abundance of heavy timber of all sorts. The rest of the region is fair and extensive, and contains many inhabited villages; for the land produces barley, wheat, beans of all kinds, millet and sesame, a sufficient quantity of figs, an abundance of grapes which yield a good sweet wine, and in fact everything except olives.” Also *Anabasis* VI 6, 1-2.

¹⁰⁸ Ulugün 2008, 170.

¹⁰⁹ Robert 1978, 427; Ulugün 2008, 171.

¹¹⁰ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 76, 274 and 282.

¹¹¹ Gelvin 2005, 77. In this treaty duties were set at 7 % on imports, 16 % on exports, and 8 % on transiting goods; the Ottomans also abolished all monopolies.

¹¹² İpekoğlu 1996, 72-74.

appointed by the French government in 1846 and his observations about Kandıra, İzmit, Bolu, especially the inscriptions of Prusias ad Hypium, are important in terms of presenting the archaeological remains. His route starts in İzmit, and then follows the area around Sophon/Sapanca Lake. It appears from his notes that having examined the lake and surroundings, he continued north, and arrived at Şile and Kandıra.¹¹³ Hommaire de Hell carefully reports his observations about the physical resources and environment, for example, the marshes after passing İzmit towards the east and salt transportation to İzmit are important details for the city. He mentions the canal scheme, which was supposed to join Sapanca Lake to the Gulf of İzmit, and he recalls the ongoing importance of the city from antiquity to Ottoman times.¹¹⁴ Therefore, Hommaire de Hell is one of the important sources within the *longue durée* model as these observations can support the picture in antiquity if there is any evidence revealed from ancient sources that reflect similar conditions.

The professional archaeologist Georges Perrot was commissioned by Napoleon III to explore a part of northern and central Asia Minor. He left İstanbul by ferry and stopped at Darıca (Ariçü), and then passed to the southern part of the gulf, which has been called the Bithynian Riviera because of its rich forest vegetation and the distribution of hazelnut, olive oil, and grape growing.¹¹⁵ After four hours by ferry, he arrived at Nicomedia, and then continued through Lake Sapanca, Prusias ad Hypium and Heracleia. His accounts are significant in terms of archaeological remains observed in the city in the time of his visit.¹¹⁶

Another French Consul, Vital Cuinet, provided one of the most important works for the economic resources and commercial activity of İzmit in 1893. His work is a comprehensive geographical handbook of the late Ottoman Empire, containing, for the first time, important statistical material.¹¹⁷ He successfully presents a picture of the resources and economic activity and statistical data not only for central İzmit but also for every single county of the district known as ‘İzmit Mutasarrıflığı’.¹¹⁸ First, he gives

¹¹³ Robert 1980, 52.

¹¹⁴ Robert 1978, 417; Ulugün 2008, 188-190.

¹¹⁵ He published the results of his mission in the folio entitled *Exploration archéologique de la Galatie et de la Bithynie* (1862-72) and also a book of memoirs which contains many statements on geography and landscape. Lindner 2007, 114.

¹¹⁶ Perrot 1867; Robert 1980, 47-49. G. Perrot reports of the situation of the city walls from Roman and Byzantine times, gives transcriptions of Greek inscriptions found in the city, and finally, describes roads passing from the region within the land routes in the 19th century.

¹¹⁷ V. Cuinet, “Vilayet de Constantinople et Mutessarrıflık d’İsmid”, in *La Turquie d’Asie. Géographie, Administrative, Statistique, Descriptive et raisonnée de chaque province de l’Asie Mineure*, vol. IV. Paris 1895. 301-400.

¹¹⁸ Cuinet 1895, 301-400.

a detailed picture of the borders of the counties, detailed population figures (by existing communities), and the administrative structure of schools and public buildings. He then reports on agriculture and animal husbandry and the products of the county with figures of what was produced. He also lists saltpans, beekeeping, viticulture, silk culture, poultry raising, mineral waters, tobacco, mines, and quarries. Moreover, he includes rich information about the climate and vegetation of the city, accounting for forested areas, rivers, streams, marshes, mountains, and lakes. Cuinet also talks about trade, and his figures for İzmit Harbour illustrate the movement of goods in quantity. Within the trade context, he mentions roads, harbours, and railways as making up the transportation system of the city.¹¹⁹ Within the *longue durée* context, his accounts are invaluable, and economy of the 19th century in the city can be derived from these figures and information. By using his population figures and production figures it can be calculated how much was produced, consumed, and traded in the 19th century. However, one must be cautious about directly using this for ancient times since the exploitation of the land, the distribution of settlements, climate, and vegetation might have been different. Therefore, while the results that can be deduced reveal the economy of the city in the 19th century, it may be illusory for the economy of the ancient city. As mentioned above, the change on the production and consumption patterns over time needs to be defined assessing present primary and secondary sources. All aforementioned travellers' accounts are helpful sources in determining production and consumption patterns of Nicomedia, which are evaluated in the third chapter of this study.

III. Re-interpretation of Braudelian Mediterranean and Connectivity of Micro-regions in the case of Nicomedia

Braudel's history and geography perception has been strongly criticized since his work was published. Geographers who focus on regional micro-studies have criticized Braudel's geography as being spatial rather than ecological.¹²⁰ There is no doubt that the most important work for the historical ecology and micro regional studies is *The Corrupting Sea* by Horden and Purcell who present a refined Braudelian perspective. *The Corrupting Sea* concentrates on the earlier periods of the Medieval and Ancient Mediterranean and places a special emphasis on the ecology and interconnectivity between the micro-regions of the Mediterranean. Thus, it breaks the

¹¹⁹ Robert 1978, 418.

¹²⁰ Glick 1976, 308. A micro-regional approach is implicit in Braudel's work, and he does not give details since he supposed a familiarity with the regional geography. Glick 2002, 555.

“academic division of antiquity from the medieval period”.¹²¹ While Braudel accepts that the Mediterranean region provided “a commercial unity”, Horden and Purcell propose that the intense regional variety of Mediterranean lands provided a vital stimulus for “lasting exchange networks”.¹²²

Horden and Purcell criticized the idea of a homogenous Mediterranean environment and climate and developed a new approach in the light of recent accounts which show Mediterranean homogeneity dissolving into an extraordinary degree of variation in environment and climate, so, the point is “at the micro-regional level: the Mediterranean evinces unity in diversity”.¹²³ Consequently, they refrain from making “misleading generalizations based on false impressions of uniformity”.¹²⁴

Horden and Purcell examine four case studies in the Mediterranean world.¹²⁵ For example, they concluded that the Biqa valley in Lebanon, one of the case studies, is a collection of micro-ecologies rather than a single micro-ecology, and there are no fixed points in it, but movement and connectivity. In their approach, the sea provides connectivity between micro-regions; it stimulates flexibility in produce (agricultural strategy and agrarian institutions) and institutions. There is also a diversity of cereals because of risky weather conditions of the Mediterranean.¹²⁶ They reduce the Braudelian view of the historical significance of towns and criticize Finley’s city-centred approach. Thus, they stress connectivity, which is constantly changing, and the interconnectivity of micro-regions as a larger phenomenon in the Mediterranean. In their thesis, there is a “history of connectivity and fluid joining of micro-regions” and the fluidity of the connection between places made Mediterranean history unique.¹²⁷

Horden and Purcell replied to reviewers’ criticisms especially in *Rethinking the Mediterranean* (2005) and *Mediterranean Paradigms and Classical Antiquity* (2005). Purcell stressed the aim of their work, which attempted to explore common denominators in the Mediterranean past and to investigate whether there was a history

¹²¹ Laurence 2001, 99.

¹²² Allison 2009, 461.

¹²³ Morley 2007b, 571; Horden-Purcell 2000, 10-25.

¹²⁴ Molho 2002, 488.

¹²⁵ Horden-Purcell 2000, 54; Hodges 2001, 377-379. They are the Biqa valley in Lebanon, south Etruria in central Italy, Cyrenaica in the North Africa and the island of Melos in the Aegean Sea. Molho states that “To understand the history of a region one has to insert it within a network of regions to trace the ebb and flow of exchanges (material, human, cultural) between it and other points in the surrounding (near or not so near) territories.” Molho 2002, 489-490.

¹²⁶ Horden-Purcell 2000, 80; Glick 2002, 555.

¹²⁷ Laurence 2001, 100.

of the Mediterranean as opposed to the numerous histories taken place in the same environment.¹²⁸

As for the situation in Asia Minor, there were smaller economic micro-systems containing local differences within the region. The testimony of discoveries of coins and of coin-hoards demonstrates that Asia Minor seems self-sufficient, but many regions conducted trade with the provinces accessible to them. Northern and north-western Asia Minor was in close commercial connection with the opposite coast of the Black Sea, with the provinces on the lower Danube, and with Thrace and Macedonia. The Ionian coast and Lycia shared in the north Aegean trade but also looked westward to Greece, and southward to Egypt. Eastern Asia Minor was interested rather in Syria.¹²⁹ As seen in Braund's article, the Black Sea trade created geographical unity not only within the Pontic region but also between northern and Central Anatolia in trading commodities.¹³⁰ Today's Marmara region (the ancient Propontis) which corresponds to Thrace, Bithynia, Mysia and the Troas, can be examined as one micro-region.¹³¹ Thus, the concept of connectivity can be used for the Propontis as Horden-Purcell thought of the role of the Mediterranean. In this case, some questions are raised. What is the distinctiveness of Marmara region in antiquity? How does the sea of the Marmara/Propontis play a role in connecting among other micro-regions?

A recent interpretation of network theory introduced by I. Malkin is also worth mentioning. As exemplified by Malkin, the case of Herakleia and Schinoussa, which are two small islands facing each other in the Aegean, shows that no port can be clearly examined without at least another port which reflects essential relationship between them. Thus, the villages of Herakleia and Schinoussa, their ports and the exchange between them fulfil an important role not only in the Aegean, but also in the Mediterranean.¹³² The situation of these small places and their effects can be considered for the entire Mediterranean. What flows from the nodes of Mediterranean networks is variable, e.g. the movement of goods and people, of ideas and armies, of cults and languages. It is questioned how ancient networks can be identified, the forms they took, the scale in which they existed and how they were structured and maintained. Malkin

¹²⁸ Purcell 2005, 9-29. Purcell introduces a fourfold description of primary production as "a distinctive regime of risk", "a distinctive logic of production coping with this distinctive pattern of risk", "an extreme topographical fragmentation through the terminology of micro-regions", and finally "the distinctive regime of communities" rendering a land-locked sea which is interconnected via navigable rivers, lagoons and coastline. Purcell 2005, 10.

¹²⁹ Broughton 1938, 873-874.

¹³⁰ Braund 2005, 115-138; Katsari-Mitchell 2005, xxiii.

¹³¹ Çalık-Ross 2007, 9.

¹³² Malkin-Constantakopoulou-Panagopoulou 2009, 1.

takes the point further and questions whether there is any common pattern in their structure and whether proximity/distance affected their development. More importantly, he interrogates the elements of network change/of network continuity, and how networks affected individuals and societies.¹³³ Consequently, as the city of Nicomedia cannot be considered as an isolated port in the Propontis, its commercial relations with other cities on the coast, e.g. Cyzicus, Perinthus, Byzantium, and in the Mediterranean in the broader context, must be evaluated.

Malkin suggests the Social Network Analysis in order to explore the levels of interaction.¹³⁴ Not only social networks, but also physical networks, maritime or land networks and communication networks also affected societies.¹³⁵ A. Wilson evaluates Malkin's diagram of network connectivity for the case of ancient trading and suggests that the neighbour-to-neighbour connections around the circumference of Malkin's diagram indicate the coastal tramping of Mediterranean cabotage as introduced by Horden and Purcell. The direct point-to-point connections, however, established the system of the major Mediterranean maritime routes, which was presented in P. Arnaud's study of ancient routes and navigation.¹³⁶ As seen in the case of port cities, the system of trade in the Roman world mostly relied on the direct preferential links between emporium ports rather than random coastal tramping or cabotage.¹³⁷ Thus, it can be said that the function of the agents in connectivity was less varied, and trading agents focused on the routes where they conducted their activities. Eventually the scale and reach of the network triggered an increase of goods exchanged.¹³⁸ Rice's study on commercial networks of port cities specifically moves from North Africa and presents how this region was affected by overall networking and vice versa in the light of archaeological evidence. Nicomedia as a port city can be evaluated in this context. It is worth examining in which routes Nicomedian merchants specialised and how this physical network made an impact on socio-economic life in Nicomedia.

Since the city possessed a harbour and was placed on land routes, which are important for connectivity, it is essential to examine how much is known about regional and inter-regional trade and transport system to reveal the connectivity of the city and

¹³³ Malkin-Constantakopoulou-Panagopoulou 2009, 1-6.

¹³⁴ Malkin 2005, 56-74. In his article, he explores how philosophical and religious ideas spread along with the communication in the case of cults in Archaic Mediterranean in terms of cross-cultural connections. See review by Petropoulos 2006.

¹³⁵ Malkin-Constantakopoulou-Panagopoulou 2009, 1-6.

¹³⁶ Wilson 2010, 68-70; Arnaud 2007, 321-336.

¹³⁷ Wilson 2010, 68-70; Rice 2010, 1-10.

¹³⁸ Wilson 2010, 68-70.

Bithynia. Both Horden-Purcell¹³⁹, and Mitchell¹⁴⁰ highlighted that sea transport created more trade incentives and that Nicomedia as a harbour city held an important advantage in terms of its location. In this context, routes and roads passing through the city will be examined in a separate section in the fourth chapter, and Horden and Purcell's proposition relativising transportation costs as a difficult and expensive element in trade, and on the other side Mitchell's approach, need assessing in the case of Nicomedia.

To conclude, the connectivity of micro-regions and network theory can be considered for the Marmara region in order to understand its nature and function as a connector in antiquity and to explain Nicomedia's position as a trade centre and its economic behaviour. The next section about the geopolitics of Marmara region and Nicomedia sheds more light on the civic and regional distinctiveness.

The Geopolitics of the Marmara Region and Nicomedia

The Propontis (the Sea of Marmara) is an inland sea in the north-west of Turkey, which separates the Asian and European parts of Turkey between the Bosphorus and the Hellespont (Dardanelles). It is connected with the Black Sea through the Bosphorus, and with the Aegean Sea through the Hellespont (Dardanelles).¹⁴¹ The sea forms as a bridge, a nodal sea lake, making an access to the Black Sea in the north-east, the Aegean Sea in the east, and indirectly the Mediterranean by the Aegean Sea.¹⁴² The chief harbours were positioned in the Aegean and the Propontis which entry to the interior from the west or from the east. The Propontis unifies lands and allows connectivity within its micro-region since the regions (Mysia, Bithynia, Thrace, Troas) in the Propontis are also penetrable from the sea, and are accessible between each other by land.¹⁴³ This unique geopolitical and strategic position, in which Asian and European parts meet by

¹³⁹ Horden-Purcell 2000, 377; Laurence 2001, 99. In the chapter on trade, Horden and Purcell argue against the perception that the high cost of transport was a major deterrent in inter-regional trade. Since this argument is based on prices given in Diocletian Price Edict, including the maximum permitted rates for transportation, for a wise trader or businessman, it does not make sense to calculate their transportation cost based on it. It is also difficult to evaluate real price of transportation, as the price edict does not indicate whether goods transported were in the form of tribute and rent or in the situation of military requisition, or food crisis speculation. Horden and Purcell also point out sea transport was always easier and safer than land since possible hazards of land transport such as gratuitous hindrance and unexpected violence are much rarer at sea.

¹⁴⁰ Mitchell 1993, 241-259. Mitchell assesses transport problem in Asia Minor. The results based on Diocletian Price list emphasises that the transport of low-cost goods for long distances overland as impossible, and sea transport always was more favourable because of its ease and affordability in comparison to land transport. He also supports the analysis exemplifying transportation figures in the 19th century in Anatolia. cf. Adams 2007.

¹⁴¹ Cramer 1832, 34.

¹⁴² Graham 1982, 118.

¹⁴³ Broughton 1938, 599-600.

land and also two important seas, the Black Sea and the Mediterranean, promoted connectivity between other micro-regions. The Propontis can be seen as micro-version of the Mediterranean itself in terms of connectivity between land and sea. The Marmara region also draws attention for its fertile lands, vast forests, various fish species, marble and good quality of grapes for wine, but among them, it is very likely that there was a trade in timber and marble from the region. Furthermore, one major characteristic of the region is to facilitate the transport of goods from other regions thanks to the existence of harbours and the connectivity of the Black Sea and the Mediterranean. However, resources such as fish, wine, timber, and marble are not uniquely distinctive for the Marmara region. For example, fishery and timber resources can be found in very good quality and quantity in the Black Sea. Thus, regional export goods might have been subjected to competition from other micro-regions such as the Aegean or the Black Sea. In the end, the distinctiveness of the Marmara region is mostly based on its location, which combines other micro-regions and their goods as a trade passage.

S. H. Allen evaluated the contested periphery, which is one of elements of Wallerstein's World Systems theory, for the Hellespont and Bosphorus in the light of many examples throughout history.¹⁴⁴ Contested peripheries are coveted for their strategic locations at major crossroads and on communication and commercial highways. For this reason, the Hellespont is one of these contested peripheries, with Troy and Ilion located near a chokepoint along geographical land and sea routes, a location which attracted commerce and conflict. Control of all approaches, the shores of the Straits itself, and passage through or across it, were of critical importance to Troy, its Classical and later successors in the region, and to the succeeding Persian, Athenian, Hellenistic, Roman, Byzantine and Ottoman Empires which encompassed it into their world-systems and exploited it.¹⁴⁵

When it comes to Nicomedia and its position in the contested periphery model, it can be seen that the city was also affected by its location on various land and sea routes. Its geopolitical importance was a disadvantage, as well as being advantage, since it rendered the Marmara region open to attacks of external powers.

The Asian side of the Straits has been important throughout history, and hegemony of Anatolia always was made possible by holding the Straits. The role of the

¹⁴⁴ Allen 2007, 159. S. H. Allen evaluates the Straits within the Immanuel Wallerstein's World Systems theory. According to Wallerstein's theory there were four elements between regions and each of them was a part of an integrated system. So, there was "1. a core which dominates and exploits the 2. periphery, 3. A semi-periphery that mediates between the two and 4. an external zone".

¹⁴⁵ Allen 2007, 161.

Bithynian region as a contested periphery can be seen in the Hellenistic period. Kings of the Hellenistic Bithynian Kingdom survived in the politically unstable region for more than 200 years by acting as balance between other kingdoms. Moreover, they sought to expand their territory so as not to limit it to one strategic point, Nicomedia and its territory. They campaigned to the east for the expansion, and there were always border disputes with the Pergamon Kingdom in the south-west.¹⁴⁶ Thus, they protected the kingdom by creating a buffer zone between other kingdoms. Bithynian Kings sometimes made agreements with neighbour kingdoms against more distant threats, for example, that of the Seleucids based in Antioch, who tried to expand in Anatolia, and later the threat of the Roman Empire, which aimed to penetrate into Asia Minor. For example, the Bithynian kings made agreements with the Macedonian Kingdom against the Seleucids, and later on against the Romans.¹⁴⁷ After the strong defence by Prusias I and II against the Roman rule, the dissolution of the kingdom started with Nicomedes II who was placed on the throne by Rome. Eventually Nicomedes IV, the last king, bequeathed the kingdom to Rome in 74 BC, and Bithynia became the second province of the Roman Empire in Asia Minor.¹⁴⁸ However, in this new era, Bithynia continued to play an important periphery role between core zones, one of which was the Roman Empire. According to Allen, once the Straits and the Marmara region were integrated into the Roman core, it was no longer a contested periphery, as the Straits incorporated it into the Aegean, Mediterranean, and Black Seas.¹⁴⁹ As Levick carefully determined, the Straits and Bithynia generally were a very significant part of the Roman Empire. Under the Principate, the balance of the empire was shifting towards the north, for many reasons. The primary reason was the advance of Roman power towards the Danube and establishment of a new province Dacia under the reign of Trajan. The secondary reason was that while the Euphrates was a barrier against the Parthians, there were also threatening tribes, e.g. the Sarmatians and Scythians who lived beyond the Caucasus in south Russia. In this situation, the increased importance of Bithynia was clear to Trajan, and Pliny the Younger was appointed to the province to provide a good standard of administration to make it superior in diplomacy, strategy, and communications for the current and future needs of the empire.¹⁵⁰ The administrative problems and economical weaknesses which existed before Pliny's appointment can be seen in the time of

¹⁴⁶ Harris 1980, 861-864; Radt 2001, 32-33.

¹⁴⁷ Braund 1984, 353-354; Strabo XII 4, 3; Harris 1980, 861-2.

¹⁴⁸ Jones 1998, 157; Harris 1980, 866.

¹⁴⁹ Allen 2007, 161-162.

¹⁵⁰ Levick 1979, 125-127.

Cicero.¹⁵¹ In this case, the definition of a chokepoint in the Allen's article also suits Nicomedia as a provincial capital of Bithynia, and Bithynia itself was a contested periphery, which lay along the land and sea routes and separating two worlds, the Roman Empire and Parthia with the other Caucasian tribes.

The geopolitics of Nicomedia-İzmit clearly enables one to understand the influence of political and economic geography on its foreign policy, as well as the other socio-political aspects of the city.¹⁵² Nicomedia's geographical location, geological-geomorphological features, including the regional landscape, climate, flora-fauna and extractive potential are the basis of its geopolitics.¹⁵³ When these elements are examined they show the geopolitical importance of ancient İzmit-Nicomedia, which was the most important city of the Bithynian region throughout antiquity. In fact, İzmit's geopolitical importance continues today, with the area around İzmit being one of Turkey's most crucial industrial centres.

Take the geographical location first. Located between 29° 22' and 30° 21' longitudes east, and 40° 31' and 41° 13' latitudes north, the city and its province were at the crossroads of major routes connecting Mesopotamia, Egypt and Asia Minor with Europe. In addition, it was very close to the route that connected the Black Sea to the Mediterranean. Nicomedia had an excellent protected harbour that facilitated the safe exchange of goods between land and sea. The location of Nicomedia amongst the hills and the actual construction of the city on four peaks, with the side of one of these hills sloping down towards the coast, meant that the city could benefit from a natural defence system.¹⁵⁴

The second element for geopolitics is connected to the geological and geomorphological features of the city. The fact that Nicomedia rests on one of the most active and dangerous fault lines in the world, the North Anatolian fault line, ensures that it has consistently been prone to earthquakes. The fact that many destructive earthquakes devastated the main cities did not hinder settlement or prevent succeeding cultures from rebuilding these cities, as throughout all the periods examined here İzmit played an influential role in politics, religion, economics, and cultural development.¹⁵⁵ One point worth mentioning from Horden and Purcell's volume is their refutation of natural or environmental catastrophe as an explanation of historical change. Horden and

¹⁵¹ Levick 1979, 120.

¹⁵² Güney 2012.

¹⁵³ Uçarol 1978, 2; see also Koçak-Şahin 2003, 345; for geopolitical approaches in ancient written sources see Herodotus IV 1-2, 19; Aristotle VII 7, 10; Thucydides I 2.

¹⁵⁴ Ruge 1936, 490.

¹⁵⁵ Çalık-Ross 2007, 12.

Purcell encourage a more sophisticated way thinking about ancient people and catastrophes.¹⁵⁶ The Nicomedians were aware of the earthquake risk, and it is also well attested through the ancient sources that benefactor emperors who were completely aware of strategic function of the city helped to rebuild the city after earthquakes.¹⁵⁷ These considerations indicate that effects of the catastrophe caused by earthquakes had little influence on the economy of the city and the regional economy. Moreover, they had no economic effect on other neighbouring micro-regions.

The third element is related to the climate, fauna and flora which contributed to the resources of the city. The city benefits from a transition of the Mediterranean to the Black Sea climate which allows diversity in produce as well as appropriate locations to settle. Rainfall gradually lessens from north to south. There is a micro-climatic diversity as well as macro-climate transition in Bithynia.¹⁵⁸ Horden and Purcell's work on the Biqa valley demonstrates that a micro-region's distinctive internal features are also important as well as the interaction between them.¹⁵⁹ There is complex ecology in the Biqa valley which creates extremely local climatic conditions, generalisations about regional fertility underestimate particular conditions such as annual and seasonal variability in the weather. Baalbek was a fertile city in the valley in Biqa and was decisive through social and economic patters of the valley's history. As a result, Biqa had a collection of micro-ecologies rather than one micro-ecology.¹⁶⁰ It is not expected to see such diversity in the Marmara region in terms of climate and vegetation, but one should be aware of the level of variety in the Marmara region. There were other Bithynian cities which were in good economic condition and possessing rich resources, e.g. Nicaea, Claudiopolis. Thus, Nicomedia, as a prosperous city, can not be judged as unique in Bithynia as in the case of Baalbek. Eventually, there are very small differences in the Bithynian region and overall picture of the region reflects more or less the same in terms of diverse ecologies.

The topography of fertile flat plains located nearer to the sea, and hill slopes, valleys, mountains and forests lying further inland provide plenty of natural resources.¹⁶¹ Sizeable forests of fir, beech and oak trees enabled the establishment of shipbuilding and furnished an important trade commodity. Nicomedia has also always been a centre for intensive fishing activity since it is located on the Kocaeli

¹⁵⁶ Horden-Purcell 2000, 306.

¹⁵⁷ Ruge 1936, 474; Vollkommer 1992, 905-6.

¹⁵⁸ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 232.

¹⁵⁹ Horden-Purcell 2000, 58.

¹⁶⁰ Horden-Purcell 2000, 56-57.

¹⁶¹ Lindner 2007, 114.

Peninsula.¹⁶² Another important asset is that the fertile flat plains around Nicomedia, stretching east towards the Adapazarı Plain, provide an environment that is suitable for intensive fruit production and agriculture.¹⁶³ It is important to note here that Horden and Purcell argue against drawing divisions between arable and pastoral, and plain and hill. They replace these simple divisions; for example, wetlands are exploited for various produce, animal husbandry, and cereals. Wetlands are easily neglected in the written sources and simply dismissed as source of malaria. The marshes east of Nicomedia in the lower Sangarius Valley are well attested in the 18th-19th century's travellers for the raising of water buffalo.¹⁶⁴ Although water buffalo are not mentioned in the ancient sources, existence of marshes exactly in the same area (Astakos/Baş Iskele, east of Nicomedia) is mentioned by Polyaeus in the second century AD.¹⁶⁵ Horden and Purcell in fact draw attention to the economic importance of water meadows without making special mention of Nicomedia.¹⁶⁶

Another important asset of Nicomedia was its freshwater sources. The oldest known sources of freshwater are 20km to the north east of İzmit. Among them the name Paşasu (General's Water) derives from the quality of the water. To bring this freshwater to the city many aqueducts were built in Paşasuyu village, and they still can clearly be seen today.¹⁶⁷

The final and the fourth element are the subterranean resources of the city: its metals and minerals. Stone quarries belonging to the city, for example a stone quarry located in the Kandıra region to the north of İzmit and another in Kutluca has functioned since antiquity.¹⁶⁸ These strategic and economic advantages were major reasons why Nicomedia served as a capital city of Hellenistic Kingdom of Bithynia and Roman Empire (AD 284-330).

To understand Nicomedia's distinctiveness in terms of location in the Marmara region, one can make a comparison between three rival cities of Nicomedia, Constantinople and Nicaea. As Mango has pointed out, Constantinople was not in all respects an appropriate choice for a capital and Constantine's decision to make

¹⁶² Pliny the Elder, *Naturalis Historia* XVI 197; Libanius, *Orationes* LXI 7-10.

¹⁶³ Çalık-Ross 2007, 17-19.

¹⁶⁴ Lindner 2007, 117. Lower Sangarios was appropriate neither for agriculture nor for pastoralism except raising water buffalo.

¹⁶⁵ Polyaeus II 30, 3.

¹⁶⁶ Horden-Purcell 2000, 186-190.

¹⁶⁷ Aksoy 2000, 5; Ünal 2001; 15-19; Galitekin 2006, 19. The water of the springs known in ancient times as Kertil and Acısu that flow into the city is brackish.

¹⁶⁸ Çalık-Ross 2007; 121; Altınlı 1968, 19; Ward-Perkins 1980a, 23-69; 1980b, 325-338. A research done by İ. Altınlı in 1960s in İzmit-Hereke-Kurucadağ area shows that there were barite, lignite, copper, iron, kiln, limestone, and mineral springs.

Constantinople capital of the empire was a ‘gamble’. He examines the distinctive and unique location of Constantinople by asking if the city was unique why it was not chosen as capital in the tetrarchy (Heracleia and Nicomedia were considered).¹⁶⁹ There is a widely accepted approach about Constantinople’s position in the region since an existence of famous quotation from Megabazus, which was narrated by Herodotus. According to Herodotus, the Persian general Megabazus is said that have emphasised that Chalcedon’s founders must have been blind since they founded the city in Chalcedon rather than Byzantium, which is just opposite Chalcedon.¹⁷⁰ However, Constantinople had disadvantages as well as advantages. The first disadvantage was related to its geographical position, which made it open to attacks since the mountains ranges run from east to west parallel to the city, and it was exposed to attacks from barbarians. The city was isolated on the European side. The Black Sea coast was also inhospitable and there was no natural harbour until reaching Sozopolis in Bulgaria. Moreover, there were three significant Thracian cities, Heracleia, Selymbria, and Hadrianopolis located nearby. Another important problem was the difficulty of providing a water supply, which even today is an important problem. This made necessary the construction of huge aqueducts over a distance of 100 km from the Istranca Mountains.¹⁷¹

When it comes to Nicaea (today İzmit, a town near Bursa) the rival of Nicomedia, Nicomedia’s position became evident. Nicomedia is more advantageous than Nicaea in two respects: the first one is that Nicomedia is closer to Europe and separates Asia from Europe; the second is that Nicomedia lies on the coast and has direct access to the sea. The narrowness of the Gulf of İzmit protects the city against attacks from the sea.¹⁷² Moreover, since the city is located at the end of a long gulf, it enables ships to penetrate into the Bithynia.¹⁷³

IV. Limits of the ‘ideal type’, and the impact of the Roman State and Army in Nicomedia

Rostovtzeff evaluated the ancient economy in his volumes on *The Social and Economic History of the Roman Empire* (1926) and *The Social and Economic History of*

¹⁶⁹ Mango 1995, 1-6.

¹⁷⁰ Herodotus IV 144. An oracle of Apollo had told the Athenians and Megarians who founded Byzantium to build their city opposite to the blind. The story was interpreted to mean Calchedon, “the city of the Blind”. See also Pliny the Elder, *Naturalis Historia* V 43.

¹⁷¹ Mango 1995, 1-6.

¹⁷² Ruge 1936, 486-488.

¹⁷³ Foss 1996, 1; also 1995, 181.

the Hellenistic World (1941) from the capitalist point of view, which was shaped by his experience in Russia during the early twentieth century. He introduced a modernist approach to the ancient economy and claimed that ancient economy was only quantitatively different from modern economies.¹⁷⁴ This approach was especially criticized by K. Polanyi in *Trade and Market in the Early Empires* (1957). Polanyi introduced reciprocity, redistribution, and market exchange as three forms of economic behaviour. According to his approach, reciprocity and redistribution were appropriate to thinking about pre-industrial economies and these behaviours were integrated with each other by relying on political and social structures.¹⁷⁵ As Levick stressed “economic history is not merely about the movement of goods and money; it is about the attitudes of peoples and individuals.”¹⁷⁶ Thus, not only trading activities, but also economic behaviours of ancient cities need to be examined. In an article, which examines the existence of Roman market economy, P. Temin adopts Polanyi’s taxonomy, which clearly defines three types of economic behaviour: reciprocity, redistribution, and exchange are the basic elements in the economy and their functions worked differently in the each society. Temin also mentions Pryor’s divisions of centric and non-centric transfers. He explains that centric transfers occur between individuals in a society, an institution, or an individual. In the Roman context, large-scale centric transfers would be those with the imperial authorities. If the grain for supply of Rome were provided by taxes or tribute, this would be a centric transfer. If the grain were acquired by purchasing it with money, then this would refer to a market exchange.¹⁷⁷ He then elucidates that these can be seen in Polanyi’s economic integration forms. Temin says that Polanyi’s first form, reciprocity, is appropriate to Pryor’s non-centric transfers and reciprocal exchanges, redistribution, is done by centric transfers. The third form, exchange, is relevant to Pryor’s market exchange.¹⁷⁸ Temin concludes that the Roman economy was a market economy and there was an organization of an “enormous

¹⁷⁴ Rostovtzeff 1926, 10.

¹⁷⁵ Polanyi 1957, 243-269; Mitchell-Katsari 2005, xiii-xiv; Bang 2008, 17-25.

¹⁷⁶ Levick 2004, 182.

¹⁷⁷ Temin 2001, 171.

¹⁷⁸ Temin 2001, 171-172. Temin explains that “this tri-part schema corresponds also to a division of individual behaviour. When people are less autonomous and change is slow, they typically utilize customary behaviour. When change is rapid and personal autonomy is neither very high nor very low, then people use command behaviour. When personal autonomy is high and the pace of change is moderate, people employ instrumental behaviour, that is, they have explicit goals in mind and choose actions that advance their plans. These different modes of behaviour correspond to the three types of organization used in economic life. Customary behaviour generally is used for non-centric transfers and reciprocal exchanges, that is, reciprocity. Command behaviour is typical of centric transfers, that is, redistribution. And instrumental behaviour is used in market exchanges”.

conglomeration of independent markets” as opposed to Finley’s argument.¹⁷⁹ Bang, however, criticized Temin’s argument that the market played a subsidiary role for most peasants whose production was not formed by the market. Moreover, he argued that a peasant household was far from being considered within a model of “profit-orientated firm”.¹⁸⁰ Although Temin’s proposal is controversial, his “tri-part schema” is useful to consider for the economic behaviour of Nicomedia. Therefore, it is important to ask which types of economic behaviour had been followed in the economy of Nicomedia. Were the goods that flowed from Nicomedia part of the tax/tribute, redistribution-command behaviour-centric transfers, or reciprocal items (customary behaviour-non-centric transfer), or commercial goods (market exchange-centric transfers-instrumental behaviour)?

In 1964, A. H. M. Jones published *The Later Roman Empire* and he criticised Rostovtzeff’s interpretation. According to Jones, the ancient economy was highly agrarian and the role of trade was very limited.¹⁸¹ The agrarian character of the ancient economy was later emphasised by M. Finley who was a prominent follower of Polanyi’s views. When Finley published *The Ancient Economy* (1973), he stressed that the ancient economy should be studied in relation to order and status, e.g. town-country, landlords-peasants relationships. Not only Polanyi but also Weber’s view highly influenced Finley’s approach, which has led to one of the main debates in the ancient economy. Finley asked whether the ancient city was a consumer city as defined by Weber.¹⁸² Moreover, he posed the question of how the city paid for its food, imports of slaves, metals and other needs in antiquity, and gave the answer that it used its income from rent on agricultural land, rather than the export of manufactured products. His approach is best characterised as the Weberian ideal-type of the consumer city¹⁸³ in which there was a dominance of the elite making income mostly from agricultural property in the countryside, and spending that income on food, services and other needs. Manufacturing was not excluded in the consumer city; however, it was on a local scale and the city did not produce for external markets to make revenue for the elite in order to pay for essential non-urban products. On the other hand, the Weberian producer city contrasted with the consumer city in terms of dominance of a mercantile and

¹⁷⁹ Temin 2001, 181.

¹⁸⁰ Bang 2008, 31.

¹⁸¹ Jones 1964, chapter 21.

¹⁸² Finley 1999, 125.

¹⁸³ Pleket 1990, 25-160; Erdkamp 2001, 332-333. As recently evaluated by Erdkamp, it should be noted that Weber was not the first scholar who identified particular city types. In 1735, R. Cantillon mentioned city types and Weber’s views were also inspired by Bücher (1911) and Sombart’s works (1913).

manufacturing elite, which mostly provided its income from the export of manufactures, to the immediate countryside, and also to more distant markets. Finley claimed that the consumer city is the most suitable model to consider for the ancient city. The producer city, however, is much more relevant to later medieval and early modern Europe.¹⁸⁴ According to Finley, since the Mediterranean basin had the same climate, each region produced the same products, and the import needs of the regions were on a small scale.¹⁸⁵ In accordance with primitivist consumer type, agriculture remained the basis of the economy of the empire from the early period onwards. In this model, produce was for local consumption and inter-regional trade was very limited. Overland trade was limited to luxury goods because of the high transport costs, while sea trade was also restricted to certain goods.¹⁸⁶ Thus, Finley's model of self-sufficiency leads him to hypothesise a minimal economic structure in which there was a lack of trade, integrated markets, and commercial bourgeoisie in ancient economy, and this was the main difference between the European economy and ancient economy.¹⁸⁷ As a result, according to Finley and other primitivists, ancient economy both quantitatively and qualitatively was different from the modern economy.¹⁸⁸ Finley's arguments have been criticized by many scholars.¹⁸⁹ Pleket, for example, claimed that modest status of traders does not necessarily imply small-scale trade as land owning elite may have been involved in trade indirectly via their freedmen. Pleket also argues that there were many medieval and early modern cities, which were not interested in trade, and early modern traders like the fictional Roman freedman Trimalchio, preferred to invest in land.¹⁹⁰

Most importantly, Pleket compares the Roman economy with the medieval and early-modern economy. He demonstrates that there were many similarities between antiquity and pre-industrial Europe in terms of yield ratio, size of the cities, technology, and difficulty in transportation/communication. Pleket emphasises "the slowness of economic change in pre-industrial economies", and therefore "the dominance of the *longue durée*".¹⁹¹ Key economic variables such as agricultural technology, yields, and

¹⁸⁴ Jongman 1988, 29. For the criticisms of consumer city type see: Whittaker 1990, 110-118; Mattingly 1997, 210-218, 2001, 66-89; Mattingly-Salmon 2001, 3-14; Parkins 1997, 83-111; Erdkamp 2001, 332-356.

¹⁸⁵ Finley 1999, 177.

¹⁸⁶ Morris-Saller-Scheidel 2007, 4-5; Hopkins 1983a, xi.

¹⁸⁷ Finley 1999, xxxi.

¹⁸⁸ Morley 2007a, 4.

¹⁸⁹ Especially Frederiksen's review is a starting point for criticisms. Frederiksen 1975, 164-171. For the summary of criticisms on "New Orthodoxy" see Harris 2001; Bang 2008, 20-36.

¹⁹⁰ Jongman-Kleijwegt xvii; Finleyan minimalist approach has been criticized not only Pleket but also many other scholars. See Greene 1990; Rathbone 1991; D'Arms 1981; Martin 1985, Millett 1990, and Cohen 1992.

¹⁹¹ Jongman-Kleijwegt xix-xx.

per capita incomes did not change much until the Industrial Revolution.¹⁹² However, primitivists had suggested that ancient civic economy differed not because of the lack of trade but the ‘dominance’ of trading activities in the medieval times and later periods. For example, Finley accepted the existence of cities with a mixed economy.¹⁹³ Weber also had pointed out the existence of the merchant city or *entrepot*.¹⁹⁴ Again, not only Finley, but also Jones explained that there were important ports and large industrial towns, but they were rare.¹⁹⁵ According to Jones, trade and industry was confined to a small number city where the population density was high and large-scale commerce was probably limited to relatively few large towns in antiquity. Carthage, Aquileia, Ephesus, and Alexandria were exceptional cases where a large proportion of the population lived by trade and wealthy merchants were included in the local aristocracy. This was the case not only for port cities, since, for example, the wealth of the Palmyra was also based on trade. The magistrates and members of the city council of Palmyra were traders or concerned with providing insurance to merchants. In the exceptional circumstances prevailing at Ostia, the wealth accumulated in commerce and industry competed successfully with the wealth derived from land.¹⁹⁶ Ostia, the harbour city of Rome, became an entrepot and storage centre especially for grain supply to feed the populous imperial capital under the Principate. For that reason, the city grew rich in the imperial period and accommodated artisans, traders and ship-owners as well as a range of professional associations (guilds).¹⁹⁷

Consequently, another point of the Weberian ideal type that needs to be considered is that the role of the dominant local aristocracy in ancient towns, who obtained their wealth from trade and industry, which was maintained by guilds or small craftsmen, was often obscured. According to primitivists, trading activity was ignored by wealthy elite in the cities, as agriculture was the main basis of the economy and wealth was mostly acquired from the rents collected from the peasants by local aristocracy or landowners who constituted the upper class. For example, *decurions* in the late empire were mostly members of the elite who possessed estates in the city territories. The normal city was also a market for imported or locally produced items. This activity was conducted by people from modest classes, craftsmen or shopkeepers, on a small scale. *Decurions* are commonly attested as patrons of *collegia*, the guilds of

¹⁹² Jongman-Kleijwegt xix-xx.

¹⁹³ Finley 1999, 130-133.

¹⁹⁴ Wallbank 1991, 221.

¹⁹⁵ Jones 1974, 41, 43- 46.

¹⁹⁶ Jones 1974, 39, 55-57.

¹⁹⁷ Meiggs 1973; Heinzlmann 2010.

craftsmen, and traders in late empire. Nonetheless, they were rarely members or officers of a guild. In the socio-economic stratigraphy, traders and craftsmen who came below the landowning elite were organized in guilds. These guilds were private organisations under the Principate and they hold no place in the government of the city. In addition, there is no evidence that city governments were concerned with the maintenance of guilds.¹⁹⁸ However, this argument has been criticised by D'Arms and Pleket as well as many others. They have pointed out that the lack of merchant elite does not necessarily mean that they did not derive income from trade. The wealthy elite must have been involved in trade via freedmen whose names are attested in the inscriptions.¹⁹⁹

All these aforementioned points will be examined in the case of Nicomedia especially in the fourth chapter. It is worth asking how Nicomedia fits these models. Was the economy of city mostly reliant on trade as seen in the case of Ostia or Alexandria? Was it a commercial or an agricultural city, or both?²⁰⁰ To put it another way, was Nicomedia an ideal Weberian consumer city or a producer city?²⁰¹

Furthermore, Engels introduces service city type and makes a definition in the case of Corinth: "The city of Corinth provided many services which were unavailable in the towns, villas, and villages of the countryside. These services may be divided into two types, primary or attractive services, and secondary services. Primary services would include religious, educational, cultural, and judicial activities that brought rural residents into the city. While in the city, these individuals would need secondary services such as food, temporary lodging, or the use of a public bath or latrine. Secondary services would not attract the rural resident to the city." As suggested by D. Engels in the case of Roman Corinth, Nicomedia may fit well with the model of the service city.²⁰²

¹⁹⁸ Jones 1974, 41, 43- 46.

¹⁹⁹ D'Arms 1977, 159-171; 1981; Pleket 1983, 131-144; 1984, 18-9; Pleket 1990, 25-160; Bang 2008, 33-34. For the evaluation of 'great debate' on the ancient economy, see Morley 2007a, 1-16.

²⁰⁰ Engels 1990, 126. Engels defines commercial city: "Commercial cities located on major trade routes would also derive much income providing goods and services to long distance traders, travellers, and tourists. These functions enabled many cities providing these services to grow larger than cities providing services only to their local hinterlands."

²⁰¹ Jongman 1988, 29.

²⁰² Engels 1990, 43. Engels introduces service city type and makes a definition in the case of Corinth: "The city of Corinth provided many services which were unavailable in the towns, villas, and villages of the countryside. These services may be divided into two types, primary or attractive services, and secondary services. Primary services would include religious, educational, cultural, and judicial activities that brought rural residents into the city. While in the city, these individuals would need secondary services such as food, temporary lodging, or the use of a public bath or latrine. Secondary services would not attract the rural resident to the city."

As Broughton emphasised “a few great ports like Nicomedia sent their merchants over wider areas”²⁰³, and it is known that there were guild organisations in Nicomedia. The points to examine are who the traders were, what the status of traders was, and how much did their status reflect, or affect the scale of trade or the size of the trading units involved (e.g. junior and senior associations of *naukleroi*). It is worth asking what the motivations to trade, and, what institutions, including *euergetism*, *proxenia*, sanctuaries, and associations stimulated the economy in the city.²⁰⁴ Consequently, how far did the local aristocracy or members of city council derive their wealth from trade in Nicomedia? To what extent were they involved in *collegia* or were traders holding a civic office? In this case, which city type can be suggested for the case of Nicomedia? If the civic economy relied on overseas trading activities around merchant elite, then Nicomedia could be considered as a Weberian producer city. Alternatively, as Finley, and later Mattingly in the case of Leptiminus, pointed out, it is not necessary to be fitted into a single type. On the contrary, an ancient city can be a combination of agrarian, commercial, or a producer-consumer city type, that is it can have a mixed economy.²⁰⁵ It should be noted here that there was no specific study claiming the city of Nicomedia as a consumer city or an agro-town. As a port city, one can easily think of civic revenues derived from trade in Nicomedia. The question is the scale and importance of involvement in trade in Nicomedia, which also answers ‘the ideal type’. The city of Nicomedia alone cannot help to change prevailing conception of ancient trade; however, it would be a good starting point and a model for other cities, especially inland cities.²⁰⁶ It is likely that the most important contribution made by Horden-Purcell’s connectivity approach and Malkin’s network theory is breaking the old conception of isolated and self-sufficient cities of the Mediterranean. In this regard, connectivity and network located on/around the roads, sea routes, lakes, rivers; provided exchange of everything to the cities. This also must be thought as a stimulus in ancient trade. The more the cities established connectivity and network, economic activities, and consequently civic revenues increased.

M. I. Finley’s minimalist model of the economy, which was based on the self-sufficiency of ancient society and the absence of empire-wide integration in the ancient economy, was strongly challenged by Keith Hopkins.²⁰⁷ In *Conquerors and Slaves*

²⁰³ Broughton 1938, 875-6.

²⁰⁴ Reger 2007, 472-478.

²⁰⁵ Finley 1999, 130-2; Mattingly 2001, 82-83; Mattingly 1997, 206.

²⁰⁶ Jones 1974, 30-31.

²⁰⁷ Saller 2002, 253-254.

(1978) Hopkins examines the influence of conquest within the context of land and labour, for example the acquisition of large estates by wealthy Romans and the large scale of imported slaves.²⁰⁸ According to his explanation, the Roman economy was transformed by the increasing wealth of the Roman elite and available slave sources.²⁰⁹ The growth of the urban economy was closely linked to agricultural production, and Roman imperial peace, and finally the spread of technical and social innovations.²¹⁰ Thus, the urban economy in the Roman Empire in general developed by a transfer of wealth from the countryside, especially in the form of rents exacted by landowning elite. As the elite's share increased throughout the course of the early empire, estates increased in the third and fourth centuries (as also may be observed in Asia Minor).²¹¹ Moreover, Crawford also suggests that the wealth gained by the Romans and Italians was being spent in the form of works of art, land acquisition, and slaves, and consequently a certain amount of cash was being re-turned to the provinces. By the late Republic, discharged soldiers had acquired land in the east and also wealthy Romans wanted to invest in land in the eastern provinces.²¹² It is still worth asking whether the city of Nicomedia exported a greater number of works of art and slaves in this period. The extent of the increase of Roman landownership to be observed in the city and its territory will also be dealt with in the third chapter. To what extent did Nicomedian exports spread in the Mediterranean? Marble and marble workers of Nicomedia will be considered as part of a discussion of artistic products and slavery in the fourth chapter. At Nicomedia, such artistic products can lead one to the material itself, e.g. marble and timber.

In 1980, with the article titled "Taxes and Trade in the Roman Empire (200 B.C.-A.D. 400)" Hopkins introduced his tax and trade model. According to Hopkins, production and consumption are the main elements of the economic analysis and trade acts an essential link between consumption and production. Two main consumer groups essentially needed to be supplied by food: the army and the urban population.²¹³ Hopkins asked whether trade was stimulated consciously or unintentionally by policies pursued by ancient states, creating motivations which incentivised trade, and whether all efforts for transporting goods in the economic context were linked to supplying the

²⁰⁸ K. Hopkins, *Conquerors and Slaves*, Cambridge 1978.

²⁰⁹ Hopkins 2004, 111-112.

²¹⁰ Hopkins 1983a, xiv.

²¹¹ Kehoe 2007, 546-548.

²¹² Crawford 2004, 100.

²¹³ Hopkins 1980, 101-125.

needs of the Roman army.²¹⁴ Since the priority of Roman emperors was the food supply of the Roman army and Rome's populace, in this picture it is difficult to see the role of the state in stimulating trade and it can be said that trade and commerce were in the secondary activities in antiquity. Hopkins argued that because of the unpredictability of the Mediterranean climate, a significant volume of grain was traded or redistributed every year. N. Morley supports Hopkins' approach by explaining that fluctuation in climate made distribution essential and as some crops were not cultivated, distribution of these products was necessary.²¹⁵ As Morley rightly pointed out "...no part of the Roman Empire was ever an isolated, self-sufficient cell..."²¹⁶

Contrary to Finley's model, Hopkins proposes that the size of the surplus produced in the Mediterranean during the last millennium BC and the first two centuries AD gradually increased.²¹⁷ While money taxes were obtained from occupied provinces, it was spent in other provinces or in Italy. In this cycle, tax-exporting provinces had to make a balance by exporting goods to pay their taxes in cash. In the end, tax-importing provinces exported goods that were equal in value to their tax burden.²¹⁸ He concludes the point by emphasizing that the economy of the Roman Empire was a subsistence economy linked to the liens of taxes, trade, and rent. Thus, he examines again the stimulus role of rents in the economy based on the situation of rent-paying farmers. They had to earn money to pay their rents, by selling crops or labour, equal to the value of the rent. The imposition of money rents implied an expansion of the market for peasants' crops, locally as well as inter-regionally.²¹⁹

Hopkins stressed how the change influenced economically primitive regions before the Roman rule, and exceptionally, he accepts that there was an established system in Syria and Asia Minor, in which they paid money taxes to local rulers before the Roman conquest.²²⁰ Thus, these regions already had well-established networks of

²¹⁴ Morley 2007b, 590.

²¹⁵ Morley 2007b, 571.

²¹⁶ Morley 2007b, 580-581, 2007, 17-34; Glick 2002, 555; Allison 2009, 461. Thus, it can be clearly seen that Hopkins' analysis supports Horden-Purcell's approach in many respects since they emphasise the distinctiveness of micro-regions and continuity and fluidity among micro-regions.

²¹⁷ Finley 1999, xxxii.

²¹⁸ Hopkins 1980, 101-102. His analysis was based on three spheres:

(A) "an outer ring of frontier provinces in which defensive armies were stationed,

(B) an inner ring of relatively rich tax-exporting provinces, such as Spain, southern Gaul, northern Africa, Asia Minor, Syria and Egypt,

(C) the centre, comprising Italy and the city of Rome, the seat of the Court and of the central government, which, like the armies on the frontiers, consumed a large volume of taxes. The armies on the frontiers (A) and the city of Rome, the Court and the central government (C) consumed more taxes than were produced locally."

²¹⁹ Hopkins 1980, 104-5.

²²⁰ Hopkins 1980, 102.

intra-regional and inter-regional trade. In this case, Asia Minor as one of the tax-exporting provinces, must have exported goods and products to Italy and frontier provinces in order to earn money to pay their tax. If the taxes were required in kind, there would be little incentive for provincials to change their farming practices and small scope for trading; if peasant producers had to sell produce to obtain cash to pay taxes, they might tend to increase their marketable surplus or the cultivation of different crops.²²¹

The model seems convincing; however, Hopkins ignores the amount of tax levied in kind under the Principate in Asia Minor and probably in Bithynia.²²² For example, Dio Chrysostom's account from the 1st century AD, reports that the Nicaean levy was a tithe collected by the *publicani* under the Principate²²³, and as is known large parts of Asia Minor and Bithynia paid tax in kind such as grain, wool, hides, raw salt and salt meat.²²⁴ The Sempronian law continued in Asia when Bithynia was annexed to the empire. In 74, publicans²²⁵ immediately started to collect taxes and to exploit public lands in Bithynia.²²⁶ The *Lex portorii Asiae*²²⁷ (The Customs Law of Asia) also shows tithe on agricultural produce in the first century of the High Empire. Even in AD 138, similar taxation term is presented.²²⁸ However there is an ongoing debate and there is no consensus whether the law covered the neighbours of the province of Asia which were Bithynia, Cappadocia, Pamphylia and Galatia.²²⁹ Nevertheless, overall picture seems to have been that there was taxation in kind (tithe) on agricultural produce, from the first century BC to the High Empire in Asia Minor. Contrary to Hopkins' analysis, in the light of this evidence, it cannot be said that the tax was totally paid in cash.

Pleket's criticism of Hopkins' model shows "the lack of utility and erroneous

²²¹ Morley 2007b, 581.

²²² Pleket 1983, 132; see also Alcock 2007, 676: "tax in kind and money are both attested in the east."

²²³ Dio Chrysostom, *Orationes* XXXVIII 26. "But if we recover the primacy, the Nicaeans relinquishing it without a fight, shall we receive the tribute they get now? Shall we summon for trial here the cities, which now are subject to their jurisdiction? Shall we send them military governors? Shall we any the less permit them to have the tithes from Bithynia? Or what will be the situation? And what benefit will accrue to us? For I believe that in all their undertakings men do not exert them idly or at random, but that their struggle is always for some end."

²²⁴ Mitchell 1993, 249-250; Duncan-Jones 1990, 197.

²²⁵ Mitchell 1993, 250. *Publicani* were responsible for collecting Asian produce for the state by late Republic. The duty of collecting produce was shared between *publicani* and managers of imperial estates, mostly slave or freedmen procurators, under the empire.

²²⁶ Broughton 1938, 537.

²²⁷ Mitchell 2008, 165. Partly preserved inscription of the customs law of Asia was reformed to function as part of the socle of the ambo in the Basilica of St. John at Ephesus. The inscription was dated to AD 62. For the first inscribed version of the law is suggested to date to 75 BC.

²²⁸ Corbier 2008, 218.

²²⁹ Mitchell 2008, 168. Extension of the law is controversial. While some scholars (M. Heil) extended the border of the law beyond the Bosphoran part of Bithynia and Pamphylia, the others (C. Nicolet, G.D. Merola) have disputed this argument.

conclusions in its strict application.”²³⁰ According to Pleket, “regular interregional long distance export developed not because from the tax and trade model, but from a combination of the availability of raw materials, craftsmen, entrepreneurs, merchants, a strong demand of members of the elite” and transport facilities across the Mediterranean on rivers and roads.²³¹ He argues that tax in money does not necessarily lead to a high degree of rural monetization as the peasants were paying the *decuma* in grain, which was sold by local tax-farmers to local merchants or artisans. Then the money was transferred to the *publicani* and exported to Rome or the frontiers.²³² S. Mitchell in examining Central Anatolia argues that tax in kind was a common practice. He stresses that taxes in kind were transported to the southern coast of Asia Minor by the taxpayers in a *corvée* system. However, it is still not clear whether taxes were collected in kind or in money in the province as a whole. This reduced the need for Asia Minor to export products in order to earn back coinage, though the validity of the tax and trade model remains.²³³ In the conclusion, Pleket clarifies that for Asia Minor, it is not necessary to argue a model in order to show existence of regular export of manufactured goods to distant markets.²³⁴

Levick’s approach also reinforces the case of Asia Minor. She criticizes the assumption that there was “a rise in tax level under the Romans, and this rise stimulated production” and explains that the movement of goods for tax purposes stimulated trade.²³⁵ Since the contractors who transported state-owned marble would have to be paid, when the marble reached Rome private dealers like the Nicomedian *lithemporos*, a dealer in Proconnesian or Nicomedian marble who possessed an office near the Aventine could arrange private orders.²³⁶ Even the movement of tax in kind may itself have acted an indirect part in stimulating trade. In the section on the stigma of trade, she mentions Pleket’s explanation that the elite perceived trade to be as a risky area. Again, the example of Nicomedia shows that traders who belonged to the high class benefitted from their profit making by holding double citizenships.²³⁷

²³⁰ Pleket 1998, 128.

²³¹ Pleket 1998, 128.

²³² Pleket 1998, 120. Alternatively, if one insists the peasants paying taxes in money, then they had to sell themselves in the markets where located neighbouring area or farther away, then they had to deliver the cash to the tax collectors.

²³³ Pleket 1998, 120; Mitchell 1993, 245.

²³⁴ Pleket 1998, 127-128.

²³⁵ Levick 2004, 188.

²³⁶ Levick 2004, 188; *lithemporos* in *SEG IV 106*; cf. *IG XIV 2247* (Interamna).

²³⁷ Levick 2004, 189. For example, a grave monument found in Tomis carries the name of *emporoi*, citizens of Nicomedia and Aezani in north-west Asia Minor. Their names indicate a high-class Aezanitan name, Menophilus, and the other the Roman cognomen of Bassus. For the attitudes of the ancients about

In the aforementioned model, Hopkins argues that there was a very considerable rise in inter-regional trade in the period 200 BC-AD 200. He deduces from shipwrecks dated to the period of Roman imperial expansion and in the High Empire (200 BC-AD 200), that there was more sea-borne trade in the Mediterranean than before, and more than there was for the next thousand years.²³⁸ It should be noted that the recent debate introduced by W. Scheidel and A. Wilson questions economic growth in the early Roman Empire. Wilson suggests that there was an economic growth in the early empire based on the chronological distribution of dated Roman shipwrecks from the Mediterranean since shipwrecks tend to have peaked in the first centuries BC and AD, and continue in the second century, and dramatically decrease in the third century.²³⁹ Scheidel interrogates archaeological and income proxies of economic growth and takes the point of constrained economic growth in the early empire and rather suggest looking for economic growth in the preceding centuries. He proposes that even if the chronological distribution of shipwrecks refers an increase in trading activities, it would stress stagnation in the early empire, rather than a peak.²⁴⁰ From this point of view, it is worth questioning available sources to which period (Republican, High Empire or later periods) the commercial activities of Nicomedia were weighted. The second chapter of this study throws more light on this debate.

Hopkins points out further that there should have been an increase in the volume of money to finance the activities of traders and their customers. He accepts that silver coins were the dominant currency, and the most important element in financing long-distance trade in the Roman world.²⁴¹ R. Duncan-Jones, however, shows regional differences and mixed coins in the circulation.²⁴² Thus, Duncan-Jones refuted the integrated economy phenomenon by demonstrating a lack of complete homogeneity in

trading, see Morley 2007a, 82-85; D'Arms 1981; see also Roman government and trade Harris 2003, 275-305.

²³⁸ Hopkins 1980, 105-6. See also recent interpretations Meijer 2002, 135-155; Morley 2007b, 590; Lo Cascio 2007, 621; Wilson 2009a 213-249. For example, Lo Cascio suggests that there was an increased export trade in the 2nd and 1st centuries BC from Italia to the provinces before defining certain lines between tax exporters and consumer provinces. Trade was based on export goods transported from Italia especially to the western provinces and this cannot be explained by Hopkins' trade model. According to Lo Cascio, economic power balances changed and it moved from Rome to the provinces by the Roman Imperial Period. Therefore, the export volume of Rome decreased while that of the provinces increased, eventually making them more prosperous. Lo Cascio 2007, 646.

²³⁹ Wilson 2009a, 213-249.

²⁴⁰ Scheidel 2009, 46-70 and fig. 4; Wilson 2009b, 71-82.

²⁴¹ Hopkins 1980, 106-112. There was a real increase in the money supply in the Republican period of imperial expansion in the western Mediterranean. Thus, there was a huge increasing in the volume of new silver coinage since coinage and military expenditure increased because of imperial expansion.

²⁴² Duncan-Jones 1990, chapter II.

the coin circulation.²⁴³ Indeed, it was the case in Asia Minor that there was no single currency. Besides gold, silver and bronze imperial coins there were also civic coins, coins of provincial leagues (*koina*), provincial issues, and coinage of client kings in Asia Minor.²⁴⁴ Cities produced bronze coins, which were taken for granted that they would circulate locally and provide the majority of small change in Asia Minor as in the eastern half of the Roman Empire.²⁴⁵ In her recent volume, Katsari examined economic integration under the Roman Empire and classified types of integration as monetary, numismatic, financial, and economic. She concluded that there was no numismatic integration, but there was monetary and financial integration in the empire. She stressed that ‘numismatic non-integration’ does not confirm ‘economic non-integration’,²⁴⁶ as suggested by Temin that there was the existence of an integrated economy to a certain degree.²⁴⁷

In the tax and trade model, Hopkins stresses the stimulus role of tax paid in money in the Roman integrated single system by supporting numismatic evidence.²⁴⁸ If the analysis of coin finds shows that fluctuations were similar from one area to the other, it would allow the inference that the rise or fall in the money supply was reflected throughout whole empire.²⁴⁹ Since Hopkins only relied on evidence from the western part of the empire these general points may not be valid for the east. A study of the coin hoards and excavation finds from the provinces of Asia Minor has shown that the accepted view of an increasing mint output in the Roman world may be misleading. In the light of this evidence, C. Katsari reached a conclusion that the monetization of Roman Asia Minor (also probably in the rest of the Empire) decreased rather than increased.²⁵⁰

Before concluding Hopkins’ approaches, there is another argument, which anticipated Hopkins’s analysis on the inter-relationship of taxes and trade in the Roman Empire. In the imperial era, Rome itself, the army and urban populations appeared as

²⁴³ Howgego 1994, 20-21, see also p. 11-12; Howgego criticized Duncan-Jones and he argues the lack of homogeneity does not mean that there was no integration in economy.

²⁴⁴ Burnett-Amandry-Carradice 1999, 12. In the province of Asia, mixed currency consisting of *denarii* and *cistophori* is attested.

²⁴⁵ Heuchert 2005, 29-30; Butcher 1988, 18; Woolf 1992, 289. During the Julio-Claudian period, civic bronze coins were also made in the West, in Spain, Gaul, Italy, Sardinia, Sicily, Africa Proconsularis, and Mauretania, However, civic coinage was an exclusively eastern phenomenon by the Antonine period till to the late third century AD.

²⁴⁶ Katsari 2011, 197-208.

²⁴⁷ Temin 2001, 169-181.

²⁴⁸ Hopkins 1980, 112-120. According to Hopkins, the impositions and flows of money taxes and money rents contributed to the integration of the economy of the whole empire. This explains how the monetary economy of the Roman Empire became integrated into a single system.

²⁴⁹ Mitchell 1983b, 136-137.

²⁵⁰ Katsari 2007, 288-289.

new centres of demands.²⁵¹ Among them, the need for Roman army supplies had an important effect in the economic life of cities. Some cities prospered because of their fortunate location linked to the major supply routes to the army and the capital, e.g. Ostia and Puteoli.²⁵² According to Broughton, this was the case for the north and north-western Asia Minor. The roads along which troops frequently travelled played a part in economic relations between the Eastern Balkan provinces and north and north-western Asia Minor. The cities on this route became important, and many harbour cities in the Aegean region lost their importance as a result of trade routes moving to the North West.²⁵³

In 1941, E. Gren interpreted the role of the Roman army as a stimulus for economic growth.²⁵⁴ According to Gren, deployment of Roman troops along the empire's eastern frontier created a large demand resulting in an imbalance of trade. Goods were imported to Asia Minor from the Balkans, and were paid for by Roman soldiers whose wages were obtained from Roman taxation. He also pointed out that there was a considerable volume of exports from Bithynia to the Danube area, and eventually, much economic interaction between the eastern Balkans and north-west Anatolia. The movement of goods between the two regions created a new network of development across Anatolia and promoted the growth of cities in the interior of Asia Minor. Thus, it changed the nature of regional development with this positive effect. As a result, the importance of the previously wealthy Western Asia Minor coast (Ionia, Caria), and its hinterland (Phrygia and Lydia) diminished while inland cities on the transit routes significantly prospered. Gren supports his theory with numismatic evidence, which shows a change in the density of troops along the eastern frontier. Therefore, the army had a stimulus effect on regional development especially in North-West Asia Minor and the Eastern Balkan provinces, Lower Moesia and Thrace, rather than having a parasitic effect on the economy of cities as mostly assumed before.²⁵⁵ Levick also explains that the provincial wealth of Bithynia was largely attributable to the army's role from the Balkans to North Western Anatolia, which became an

²⁵¹ Kehoe 2007, 549-550; Alcock 2007, 676.

²⁵² Morley 2007b, 579.

²⁵³ Broughton 1938, 860-862.

²⁵⁴ E. Gren, *Kleinasien und der Ostbalkan in der Wirtschaftlichen Entwicklung der Römischen Kaiserzeit*, Uppsala 1941. Especially, Ch. IV: Die Römische Armee als Wirtschaftsfaktor in Kleinasien und auf dem Balkan, 89-155; Katsari-Mitchell 2005, xxiii. Gray 1947, 212.

²⁵⁵ Gren 1941, 89-155; Katsari-Mitchell 2005, xvii-xix.

economic and military zone under the Principate in accordance with Gren's theory.²⁵⁶ Gren's approach gives a dynamic explanation for the economic growth of Nicomedia, which requires further examination. It is important to define within this theory what role Nicomedia played—since there is no specific mention for Nicomedia in the Gren's work—and how economic life was affected in a positive way or negative by troop movements, and how this might relate to economic growth in the city.

There are many weaknesses in this approach. Firstly, it should be noted here that army presence and the supplying of the army by and large were considered a parasitic burden in the Roman provinces.²⁵⁷ The issue of supplying the Roman army is discussed by many scholars and different arguments have come into existence. Whittaker, for instance, examines different cases in the frontiers in the western part of the Empire, and balances the methods of army supply considering long distance trading activities with the exploitation of local sources near legionary camps in response to Fulford's arguments. He stresses the role of the army as an agent of exchange, showing that the army can also be supplied by local sources.²⁵⁸

Secondly, inscriptions confirm that there were commercial relations between neighbours, such as Pontus-Mysia with Crimea, and the Balkan and Danube provinces. Therefore, Nicomedia naturally was in close commercial connection with the opposite coast of the Black Sea with the provinces on the lower Danube, and with Thrace and Macedonia.²⁵⁹ There was commercial activity between these regions before Roman rule, so it needs to be clarified how much the army played a role in economic development of the city, and whether this scenario is illusory or exaggerated. Because the theories or approaches on ancient economy are mostly general or more specific and it is difficult to use in the case of Nicomedia-Bithynia. When one starts to assume the similar picture looking at present methods and theories, hasty conclusions appear as a danger for the work. Therefore, Gren's theory demonstrating new economic zone between Balkans and North-Western Anatolia is a chance for this study.

Thirdly, in a review of Gren's book, E. W. Gray points out that present evidence does not support the idea that increased prosperity of North-West Asia Minor was at the

²⁵⁶ Levick 1979, 128; see also Sherwin-White 1966, 527. Levick pointed out appointment of Pliny with superior ranks was also related to treat bad economic situation such as lavish city expenditure caused by rapid growing in wealth in Bithynia.

²⁵⁷ There is a vast bibliography about army impact, especially for economic aspects see: Blois 2007, 497-507; Whittaker 1994, Chapter IV: Economy and Society of the Frontiers, 98-131. Also, see Lo Cascio-Blois (eds.) 2007; Thomas-Stallibras (eds.) 2008; Erdkamp (ed.) 2002.

²⁵⁸ Fulford 1989; 175-201; Whittaker 1994, 98-131, especially in notes Whittaker summarises Fulford's and his arguments. p. 289-290.

²⁵⁹ Broughton 1938, 873-874.

expense of the west coast.²⁶⁰ Gray criticizes the argument by saying that if the city was fostered by the passage of army in the time of Severus, why it did not benefit in the same way under Trajan. Hence, the question follows of how much of civic economic growth, as reflected in coin issues, is linked to the army passage and why can it not be related to the city's location on the main artery of trade and its resources under the umbrella of *Pax Romana* in the High Empire.²⁶¹

Fourthly, archaeologically it is well attested that there have been many export goods moved from Asia Minor to the Eastern Balkan provinces in the late antiquity. Gren's theory mostly focuses on goods being transported by road, and the road system features as a central part of his theory. He imagines that there was a large-scale inter-regional overland trade between the two provinces. He does not take into consideration that sea trade was much easier than transporting goods by land which was always difficult and expensive.²⁶² Therefore, it is likely that export goods were not all coming from North-Western Anatolia as in Gren's assumption, but western and southern Anatolian cities must have been contributed with their rich resources such as good quality of wine and olive oil by transporting on sea routes.²⁶³

Fifthly, the point is taken further, especially for the case of Nicomedia, by Mitchell in the light of epigraphic evidence, which may be relevant to Hopkins' and Gren's theories in Asia Minor. In his article, he carefully criticizes whether prosperity of North-Western Anatolian cities was at expense of other Asian cities and whether the role of the Roman Army in the Balkans was an economic stimulus in North-West Anatolia.²⁶⁴ He has argued that there is little evidence in the archaeological and epigraphic record demonstrating that the cities of Asia suffered a serious economic decline in the third and fourth centuries. According to Mitchell, increased prosperity of Nicomedia was connected to particular circumstances rather than at the expense of other

²⁶⁰ Levick 1979, 128. Gren's second hypothesis about economic decline in western Anatolia was exaggerated. The army's role in the growing importance of some cities of Asia Minor has been clarified as in the case of Juliopolis, which was a village (Gordioukome) in the south-eastern border of Bithynia before being made a city by Augustus. In accordance with Gren's theory, Juliopolis also flourished thanks to troop movements as seen in its fifty-two coin issues under Septimius Severus.

²⁶¹ Gray 1947, 214; Frank-Nolle-MK 1997, 117, no. 1152-58; 202-203, no. 2040-46. Numismatic evidence barely helps to answer part of the question. *Homonoia* agreements were made in the reigns of Commodus between Smyrna-Nicomedia and Laodiceia-Nicomedia; in the reign of Gordianus III, between Nicomedia-Pergamon, Nicomedia-Perinthos and Nicomedia-Smyrna; and during the reign of Marcus Aurelius between Smyrna-Nicomedia. However, there is no evidence to connect these *homonoia* minting to military activity. *Homonoia* agreements might have been linked to the commercial purposes.

²⁶² Mitchell 2005, 103. Thus, Mitchell questions why southern Asia Minor boomed by the late antiquity and suggests that many products were shipped from there, including olive oil.

²⁶³ Karagiorgou 2001, 129-166. The article presents amphorae found in North Balkans, which traded from Aegean during the Late Antiquity.

²⁶⁴ S. Mitchell, "The Balkans, Anatolia, and Roman Armies across Asia Minor" *Armies and Frontiers in Roman and Byzantine Anatolia*, BAR International Series 156, Oxford 1983. 131-150.

Asian cities. Sources of Nicomedia's wealth were not only based on the army's role since the city has a distinctive location and resources.²⁶⁵ For instance, the activities of the sailors and traders are the clearest evidence for commercial success. In many different parts of the Mediterranean, Nicomedian ship-owners and sailors are revealed on inscriptions found in Athens, Thasos, Phythiotic Thebes, Euboea, Cytheion in the Peloponnese, the bay of Naples, Smyrna, Aperlae in Lycia, Corycus in Cilicia and Tomis on the Black Sea.²⁶⁶ The variety of destinations clearly shows that the routes used by the sailors of Nicomedia were not limited to the Black Sea and the Balkans. Traders' routes were defined by profitable destinations and centres of demands for their goods rather than supplying needs of soldiers. The Price Edict of Diocletian also records the routes that from Nicomedia reached Alexandria, Rome, Ephesus, Thessalonica, Achaia, Salona, Pamhylia, and Phoenicia; and none of these destinations was a military supply station.²⁶⁷ There is no evidence that private merchants from Nicomedia or other cities holding advantageous position, did take over the task of supplying the armies with staples²⁶⁸, since food supplies were not something that could be entrusted to private enterprise in pursuit of profit.²⁶⁹ However, there was an association of ship-owners in Nicomedia whose role in maritime trade and transport in the eastern Mediterranean needs to be considered.²⁷⁰ Involvement in transportation of the *annona* and army supply must have provided some privileges and benefits to ship-owners in general. Moreover, the epitaph of the *annoarch* Glykon found in the territory of Nicomedia is important evidence showing army supply, although it was interpreted as a liturgic duty.²⁷¹ This

²⁶⁵ Mitchell 1983b, 137. Indeed, Nicomedia must have been a prosperous city in general, and the stimulus role of army in the economy may have been exaggerated. Holding the titles of *metropolis* and first city in the province, and also being provincial capital which is clearly seen on a coin issue, generated wealth for the city by attracting petitioners and foreigners for festivals, including those celebrating the imperial cult. *RG* 544; 218, 219; *SNGCop.* 582. For the compilation of typological evaluation of the civic coins, see Güney 2008, 41-51. Rivalry between Nicomedia and Nicaea shows that it was also based on economic reasons as it was implied in the speech of Dio Chrysostom. Robert 1978, 425; for the rivalry between two cities, Robert 1977, 1-39. Levick, also supports the view that there were special factors such as geographical position, sea, river, or road connections in Asia Minor and Gaul which help them to maintain their existence even in the economic difficulties of the third and later centuries. Levick 2004, 198.

²⁶⁶ Robert 1978, 424. Ruge 1936, 483.

²⁶⁷ Mitchell 1983b, 138.

²⁶⁸ Mitchell 1993, 251.

²⁶⁹ Mitchell 1983b, 138.

²⁷⁰ *SEG* XXXII 1256-7.

²⁷¹ *TAM* IV 189; *SEG* XXXIII 1085, 1558. The epitaph first it dated to Parthian Campaigns of Gordian III or Severus Alexander. It has been suggested to earlier date, as there is no pseudo-praenomen by Mitchell. Mitchell 1983b, 138. Recently, K. Buraselis supports Mitchell's argument and explains "legiones a and b" as Prima and Secunda Parthica which was established by Septimius Severus during the early Parthian expeditions. *SEG* XLV 1690.

epigraphic evidence along with other inscriptions needs to be examined to explain the army role in Nicomedia.

Sixthly, when considered as a whole in the light of the evidence especially from the eastern part of the Empire, providing transport, provisions, and hospitality to troops, officials, and perhaps emperors on the move were far from making profit for the cities. It may even have been a bigger imposition than paying tax in money. Mitchell's analysis clearly shows that the burden of supporting the emperor and his army while overwintering at Nicomedia was distributed among the neighbouring cities such as Nicaea, Prusias ad Hypium, which were not located on the main route to Syria. Furthermore, it is apparent from inscriptions that the military burden also affected Ephesus, and both the small Pisidian city, Pogle and Tarsus in Cilicia sent grain in the Parthian expeditions of Caracalla and Severus Alexander.²⁷² In this case, Mitchell cast doubt on accepting the passage of troops as a commercial opportunity rather than imposition, and on assuming that armies on the move were a source of profit to the cities in Asia Minor.²⁷³ As a *corvée*, army supply would not be a stimulus in the economy of any city. However, if food supply was organised separately by the government, presence of army in the city must have triggered temporary trading activities to meet the other needs of soldiers. On the other hand, not the passage of troops, but Nicomedia's strategic position between the northern and eastern frontiers needs to be evaluated in terms of trading activities.

Gren's and Hopkins' arguments are still very important with regard to the economic development of Nicomedia since the city is an excellent sample for testing related theories because of its location. As Mitchell highlighted, there was a flow of goods from internal provinces (Asia Minor) to the frontier areas (the Danube). However, Hopkins seeks to take the point further in showing that army pay itself was collected in cash from the prosperous areas and accordingly this demand forced cities to export their goods. Mitchell criticized this assumption by pointing out that the army was paid in bullion minted into coin, and that the metal came from mining. While accepting Gren's argument that the spending power of army pay acted as a powerful incentive to

²⁷² Mitchell 1983b, 140-142. The system differs from the one observed in second and third century Asia Minor as responsibility for organising the supplies were in the charge of Roman officials not to local liturgists as being before. However, providing for the troops is still a burden for the local community.

²⁷³ Mitchell 1983b, 143-145.

traders, Hopkins' further analysis that traders were encouraged to expand their activities in order to pay soldiers in the first place, still needs a careful approach.²⁷⁴

To summarise, these methodological approaches are discussed in the fourth chapter, which is about trade, traders, and overseas connection. At first glance, it seems that Nicomedian traders did not choose destinations because of army supply. However, this claim needs to be re-evaluated in the light of numismatic and epigraphic evidence and checked with material in the Balkans and eastern frontiers. In the fifth chapter, coin issues of Nicomedia are assessed to prove or disprove how much increasing coin issued were related to army passage or general economic development in the city in the Roman period. Additionally, circulation and typology of civic coins are analysed and discussed within these considerations in the same chapter.

²⁷⁴ Mitchell 1983b, 135. Researchers have revealed that the contribution of even a single rich source of precious metal from the Spanish gold and silver mines, could have an important effect and made created a source of money available to pay the armies, none of which was obtained from taxation. In this case, the role of provincial taxation may make only a partial contribution to the maintenance of Roman armies and Roman officials.

CHAPTER II

History of Settlers and Settlements in Bithynia from Archaic times to the Roman Empire

The main objective of this chapter is to set out the evidence for settlements and settlers of the Bithynian region with particular reference to Nicomedian territory, and indicate the framework of its political, economic, and social organization. This framework helps comprehension of the economic development of the city from archaic times to the Roman Empire.

Settlement growth, population increase, rural expansion, and imported goods are important elements for understanding of economic growth in general. Particularly, site numbers, which are determined in the unsettled or less utilized areas, are a reasonable proxy indicator of economic development. They show expansion of cultivated area, which usually implies an increase in production, and demographic growth.²⁷⁵ Therefore, this survey from the archaic period onwards includes rural settlements in the city and its territory to reveal the economic development of Nicomedia in this context.²⁷⁶ It is also important to study the nature of settlements and settlers from the archaic period to Roman times, in order to understand Nicomedia's economic background e.g. evolution of landownership, both before and after the city was founded. The settlers, their life forms, and customs played a role in the production and consumption patterns and influenced the settlements' economic basis.

I. Settlers and Settlements from the Archaic Period to the Foundation of the City

The Bithynian Thracians, Greek colonists, and Interrelationships

This section simply examines who the inhabitants of Bithynia were through these periods, what their origins were, what the political organization was, and finally how the relationship between local people and Greek colonists was formed. Before the foundation of Nicomedia, there was an existence of non-Greek population, whose lifestyle and customs affected economic life in the city from the archaic period onwards. As historical accounts are more available than archaeological records, they will primarily be evaluated, and archaeological findings will also be discussed in the context as far as they are attested in the city.

²⁷⁵ Alcock 2007, 679.

²⁷⁶ Mitchell-Katsari 2005, xx-xxi.

i. The Origins and Territory of the Bithynian Thracians

The Iron Age brought migration into Anatolia from Northern Europe, causing a significant change in the ethnic composition of Anatolia.²⁷⁷ It is widely accepted that settlers who chose the region in the pre-Hellenistic period were the Bithynians and Thyni who were Thracian tribes, and they started to move to the East due to the pressure of native peoples in Northern Europe at the beginning of Iron Age. In this period over about 200 years (1200-900 BC)²⁷⁸, Thracian people settled in northern and north-western Anatolia and named the region Bithynia.²⁷⁹ However, the issue of the inhabitants of the pre-Hellenistic period in Bithynia is still controversial in modern scholarship.

There is no detailed information about the name and people of 'Bithynia' concerning the pre-Iron Age period when Bithynia was under the Hittites. Hittitologists claim that the early peoples of Bithynia were the Kashka who spread throughout north-western Anatolia in the Hittite period. However, the lack of information about the political structures of the period does not allow one to say where the borders of the Kashka peoples were, even though it has been indicated that they lived in Bithynia. Despite the absence of any cultural remnants, the question of which peoples could have lived in this area of Hittite Anatolia prior to the Iron Age has long been a subject of scholarly debate.²⁸⁰

The Phrygians and the Thracian peoples, including the Bithynians and the Thyni, settled in the north and north-west, although it took some time for the region to acquire the name Bithynia. Ancient sources start referring to this area as the land of the Bithynian people, because the Bithynians settled heavily in north-western Anatolia. Homer, who provides a considerable amount of information on the early historical geography of Anatolia, refers not to Bithynia and the Bithynians but rather to Phrygia

²⁷⁷ Çapar 1987, 12-33.

²⁷⁸ Burstein 1976, 9; Çapar 1987, 12-33.

²⁷⁹ Özdoğan 1995, 349. Özdoğan's study shows that first settlements in the region are dated to Middle Pleistocene period. Özsait 2000, 349; Çalık-Ross 2007, 54-55.

²⁸⁰ Goetze 1930-32, 24. Goetze, a Hittitologist, was the first to propose that the Kashka should be placed in the north of Anatolia. This localisation met with general approval, and later on the Kashka were linked with the zone of Hittite expansion in north-western Anatolia. It is not clear where the borders of the Kashka peoples lay in the Bithynian region of Hittite Anatolia to which they have been assigned due to the difficulty pinpointing their status within the political situation of that time. Macqueen 1968, 175-177. Macqueen claims that the Kashkas settled near the shore of the Gulf of İzmit, while claiming that the Mesalis could be located in the area around Adapazarı. Ünal (2003) agreed that the Kaskas might have spread out in the direction of Bithynia and the Gulf of İzmit, while some researchers argue that traces of the Kashkas should be looked for not just in İzmit but also in the Trojan region. In subsequent work, Ünal claims that Kashkas tribes may have lived side by side with other peoples in the area between Kastamonu and Sinop, and as far as İzmit. He admits, however, that there is not enough evidence to prove this hypothesis beyond any doubt.

and the Phrygians.²⁸¹ The *Argonautica*, written by Apollonios in the 3rd century BC, mentions Bebrykes as inhabitants of the region in the twelfth century BC, which is even before Trojan War.²⁸² The Hellenistic scholar Apollodorus conjectured that the Bebrykes were Phrygians.²⁸³ However, there is no archaeological evidence supporting this mention. No matter who the inhabitants of the region were before the Bithynians, it is clear that after the Trojan War, numerous migrations are recorded from Europe to Asia Minor, and movements within Asia Minor. It can be said that there was a population of Thracian origin in the region after 1200 BC.²⁸⁴ According to Strabo's account from the 1st century BC, the Propontic coast, including the later Bithynia, was first occupied by Bebrykes and Dryopes. Strabo suggested that the Bebrykes, Mygdones, Bithynians, Maidobithynians, Mariandyni, and Caucones were all Thracian, but the last named tribe was also said to be Pelasgian.²⁸⁵ E. Bosch relying on Strabo's account claimed that there was an amalgamation of people of similar social and ethnic background in Bithynia or Phrygia although these regions were subsequently named after the Bithynians and Phrygians.²⁸⁶

The first writers to use 'Bithynia' in referring to a geographical domain were Herodotus and Pseudo-Scylax. Both of them called the area 'Bithynia', 'Asian Thrace' and 'Thracian Bithynia', using different names but referring to the same thing. From Appian it is learned that, many centuries before, the peoples of Bithynia had called themselves Bebrykes and that this people of Thracian origin started to call themselves the Bithynians only after arriving in the region of Bithynia.²⁸⁷ Strabo argues that in Homer's time either the Bithynians had not yet completely settled in the area or they existed in the midst of the more populous peoples of Phrygia and Mysia.²⁸⁸ It can be concluded that Phrygians first entered the area, then the Mysians followed them, and finally the Bithynians arrived. Thus, the Bithynians settled the area, which was already inhabited first by the Phrygians, and later the Mysians.

Ancient written sources give a helpful description of the territory of the Bithynians in the pre-Hellenistic period. The fourth century BC geographer Pseudo-Scylax claimed that the area between the territory of the Mariandyni and the Gulf of Olbia (Gulf of Astakos/İzmit) was the Bithynian Thrace; therefore, he roughly defines

²⁸¹ Homer *Iliad* II 862-863.

²⁸² Apollonios Rhodios, *Argonautica*, II, 1-10.

²⁸³ Apollodorus XIV 5, 23; C542.

²⁸⁴ Bosch 1942, 43.

²⁸⁵ Strabo VII 3, 2, 295; XII 3, 5; Carrington 1977, 119.

²⁸⁶ Bosch 1942, 36.

²⁸⁷ Appian II 12, 1; Umar 1993, 160.

²⁸⁸ Strabo XII 4, 1, 5-8; XII 3, 3.

territory of the Bithynians.²⁸⁹ Xenophon gives more exact boundaries in the *Anabasis* in 400 BC and indicates that the Bithynian Thracians lived in the area between Byzantium and Heraclea.²⁹⁰ In *Anabasis* which is a non-contemporaneous written source, Arrian narrates that the river Sangarius runs through Bithynian Thrace into the Black Sea.²⁹¹ Arrian however does not clearly define the eastern boundary of the region. In another statement, Scylax shows the Hypios River as the border between the territory of the Bithynians and the Mariandyni.²⁹²

In a point of fact, Strabo's non-contemporaneous account from the first century BC is the most extensive source giving a decisive description about the ethno-political organization of Anatolia relating to this region. Strabo states that the Bithynians settled in "the right-hand parts of the Pontus" neighbouring Chalcedon on the west and the Mariandyni on the east.²⁹³ When it comes to the southern border, Strabo expresses the difficulty of defining the borders between the Phrygians, Bithynians and Mysians, but he also points out that Prusa is located as a border between the Phrygians and Mysians, and Phrygia Epictetus reached the eastern part of Ascanian Lake.²⁹⁴

All these statements show that the territory of Bithynia was roughly equivalent to modern Kocaeli Peninsula, and it included Bolu, İznik, Bilecik, and Sakarya. The Bithynian tribes probably lived in this area starting roughly in the northern part of the Gulf of Astakos, along the Black Sea littoral extending to the Sangarius River. It was bounded roughly on the west by Chalcedon, on the east by Heraclea, on the north by the Black Sea and on the south by the Gulf of Astakos. The River Hypios (Melen Çayı) was the border between the territory of the Bithynians and the Mariandyni. Therefore, it makes the eastern border much clearer.²⁹⁵

Many ancient writers mention the Thracian origins of the Bithynian Thracians, including Herodotus, Pseudo-Scylax, and Xenophon. Firstly, Herodotus describes the name of the region as Bithynian Thrace²⁹⁶, and then Pseudo- Scylax in the *Periplus* denominated Bithynia as the "Bithynians' Thrace" and describes the inhabitants as the

²⁸⁹ Pseudo-Scylax 92.

²⁹⁰ Xenophon, *Anabasis* VI 4, 2. "It is a long day's journey for a trireme to row from Byzantium to Heraclea, and between the two places there is no other city, either friendly or Greek, only the Bithynian Thracians, and they are said to abuse outrageously any Greeks they may find shipwrecked or may capture in any other way."

²⁹¹ Arrian, *Anabasis* I 29, 5.

²⁹² Pseudo-Scylax 91: "*Post Paphlagoniam Mariandynorum est natio. Illic est Heraclea urbs Graeca et fluvius Lycus et alius fluvius Hypius*"; Robert 1980, 11; Fernoux 1999, 187.

²⁹³ Strabo XII 3, 2.

²⁹⁴ Strabo XII 4, 3-5.

²⁹⁵ Pseudo-Scylax 91.

²⁹⁶ Herodotus VII 75.

“Thracian Bithynians”.²⁹⁷ Xenophon also gives the name of the Bithynians as the “Bithynian Thracians”.²⁹⁸ Although, there is no direct evidence showing this emigration from Thrace to Bithynia, some archaeological findings shed some light on similarities between the Thracians and the Bithynians. The first one is the correlation between Thracian dome-shaped tombs and the tomb found in Kutluca (23 km north-west of İzmit). There is no evidence found in the tomb to give a date, but similarities with Thracian dome-shaped tombs examined by Mansel suggest the fourth century BC.²⁹⁹ There are other dome-shaped tombs found in İzmit as well, including İzmit Kanlıbağ Tumulus, which has a dome-shaped tomb dated in the 2nd century BC. Another dome-shaped tomb of the late Hellenistic period was found in the garden of a private house in İzmit in 1971.³⁰⁰ Finally, Artemis Bendis, a form of the war goddess Artemis who had a cult in Thrace, can be found on coins of Nicomedes I who was king of the Kingdom of Bithynia. This type is evidence of the connection between the Bithynians and Thrace. Therefore, they emphasise the Bithynians’ Thracian origin.³⁰¹ Besides archaeological and numismatic sources, the testimony of inscriptions supports this connection carrying Thracian names found in the region. According to Corsten’s work on inscriptions with Bithyno-Thracian names, especially epitaphs were found intensely in Nicomedia, Nikaia, Prusias, and Prusa dating from the 2nd century BC and later on. Inscriptions presented by Corsten also give an idea about dispersion of the Bithynian Thracians although immigration and other reasons may have affected dispersion from the sixth century to the second century BC (figure 2).³⁰²

²⁹⁷ Pseudo-Scylax 92.

²⁹⁸ Xenophon, *Hellenica* I 3, 1: “...Now the Chalcedonians, when they learned that the Athenians were approaching, had put all their portable in the keeping of the Bithynian Thracians, their neighbours.”

²⁹⁹ Mansel 1973, 57.

³⁰⁰ Meriçboyu-Atasoy 1969, 67-90; Çalık-Ross 2007, 104-5. The architecture of the tomb was Hellenistic, but it is clear that the tomb had been re-used on numerous occasions in the Roman Period. Therefore, it is very likely that it shows the significance of this structure in relation to the history of the city.

³⁰¹ RG 1908, 218, 1-2, 4. This type of Artemis Bendis, apart from being a characteristic design of the Bithynian Kingdom, which was a newly established Hellenistic Kingdom, could also be thought to have been used by Nicomedes I on the coins for its unification and integrating influence on the people, bearing in mind that he just conquered his brother in the struggle for the throne and was establishing his authority as the second king of the kingdom. See Jones 1971, 151; Arslan 2007, 56; 60-68. For a dedication to Artemis Bendis by Talaris (Thracian name) in north-western Bithynia dated to Roman Imperial Period. It shows continuity of the cult even in the Roman times. *SEG* LII 1221.

³⁰² Corsten 2007, 124, Map: Bithynia: the heartland. See discussion below on p. 21. Even dedication to “theois Thrakiois” made by a Nicomedian carrying a Thracian name attested in the Roman period. *TAM* IV 84.

ii. Greek Colonists and Greek Colonisation in Bithynia

The Bithynians shared the region with newcomers brought by Greek colonisation starting about sixth century BC. It is necessary to ask what driving forces triggered colonisation and what the relations were between colonisers and indigenous people. As seen in the list composed by Tsetsckhladze, Greek interest in the Black Sea region began on a large scale in the second half of the seventh century although the earliest Greek colonisation starts at the beginning of the ninth century BC. Moreover, it can be clearly seen that Bithynia was mainly colonised by Milesians and Megarians.³⁰³

It is worth assessing the reasons behind colonisation. Overpopulation, food shortages, and the hunt for raw materials are mostly accepted as main reasons for colonisation. However, according to Tsetsckhladze, they do not seem to be the real reasons for Milesian colonisation, which was more related to changing political structures in the region.³⁰⁴ In the second half of the seventh century, it seems that there was a gradual expansion of Lydian hegemony in Ionian territory. It may be inferred that this triggered Milesians to look for new territories. Moreover, from the middle of the sixth century when the Achaemenid Empire conquered Ionian territory it was time to find new territories for Ionians, as there was no other option for them except fighting or being slaves of a new ruler. The commercial purpose of colonisation came in the second place, and since an agrarian society prevailed in the Greek colonisation period as well the role of trade as a motivation should be evaluated within the broader socio-economic perspective. In the case of Milesians, it was ‘stenochoria’, that is the lack of land, rendered by the Lydians and then the Persians, which triggered large-scale colonisation. Milesian colonies were founded in the “pre-existing trading posts” and enhanced.³⁰⁵ For the Megarians, similar reasons can be observed. Megarians were the main contingent of settlers in the colonizing process. This is explained by the tense political struggle in Megara in the late 7th - early 6th centuries BC. As a result of this political tension, a very large number of people had to leave Megara and look for other places to live.³⁰⁶ Therefore, Megarian colonists sought fertile land in the first place and the foundation of Byzantium, Chalcedon, Astakos, and other colonies was firstly related to this search for land.³⁰⁷ The appetite for fertile lands helps to explain Bithynia as a potential region for settlement on grounds of the fertility of the area. On the other hand, a recent study by

³⁰³ Tsetsckhladze 2006, lxvii-lxxiii (Table 6).

³⁰⁴ Tsetsckhladze 1994, 114-5.

³⁰⁵ Greaves 2007, 19; Boardman 2001, 33-42 and 1999; Scheidel 2003, 120-140.

³⁰⁶ Tsetsckhladze 1994, 115.

³⁰⁷ Saprykin 1997, 22-23.

Foxhall shows not the shortage of land but practical limits of land cultivated by households without supplementary labour was decisive in colonisation.³⁰⁸

There were also other economic reasons behind colonisation to do with raw material and resources. The earliest colonies were founded in the first half of the eighth century by Miletus on the south shore of the Black Sea, at Sinope, Trapezus, and Amisus. They were main ports through which passed the rich trade of the interior, especially in silver, iron, realgar (arsenic), and ship-timber. Miletus also was the first state to colonise the Propontis, a sea rich in fish (especially in tunny) and the centre of trade routes leading from Asia to Europe and from the Mediterranean to the Black Sea.³⁰⁹

As for the reasons behind the colonisation in Bithynia, it is clear in Xenophon that the region was very suitable for both the Bithynians and the Greeks to settle, because it contained all essential components of life: springs, all sorts of timber, cereals, and grapes to produce wine, even other sorts of vegetable and fruits in 400 BC.³¹⁰ Along with its important location between the Aegean Sea and the Black Sea, the region was rich in resources. These two features must have been attractive reasons to the colonists.

The first colony to be dealt with is Astakos, which might have been situated near Yuvacık, or perhaps was closer to the sea around Başiskele as some Archaic (?) and Classical pottery has been found here.³¹¹ Moreover, some fragments of Attic black-figure pottery found in Astakos are now on display in the Kocaeli Archaeology Museum.³¹² These finds shows that Attic black-figure pottery was first imported from Greece to western Anatolia in 610-600 BC, and continued during the mid-5th century BC.³¹³ However, absence of any publication of this material prevents one from evaluating the data properly and drawing reliable conclusions. The data naturally shows that Greek pottery was in use on the Propontis coast and Black Sea coast, but it is not obvious to what context these pottery fragments were related. As for the literary

³⁰⁸ Foxhall 2005, 75-92.

³⁰⁹ Gabrielsen 2007, 287.

³¹⁰ Xenophon, *Anabasis* VI 4, 4-6; VI 6, 1-2.

³¹¹ Şahin 1974, 68; Robert 1974, Nr. 574; Avram 2004, 977. This archaeological material was not published. In the pottery collection on display, as specified by the archaeologists in the museum, there are fragments dated to the Archaic and Classical times (author's personal observation). An Archaic Kouros head was found near Başiskele (Astakos?) dated 540-530 BC. Bayburtluoğlu 1960, 331-334.

³¹² Şahin 1974, 68; Robert 1974, 574; Avram 2004, 977; Ulugün 2008, 18 n. 15.5. Attic black-figure pottery found in Astakos or around İzmit on display in the museum includes three *lekythoi*, *aryballos*, *kylix*, six lamps and terracotta figurines dating the 6th/5th centuries BC.

³¹³ Tuna Nörling 1993, 437-445. Fragments of Attic pottery found Troas, Aeolis, Ionia, Chios, Samos, Caria, Cos, Lycia, Rhodos, Lydia, Phrygia, and Mysia.

sources, Astakos was founded by Megara and Athens in 711 BC according to Memnon.³¹⁴ According to Charon of Lampsakos, it was founded by the Chalcedonians.³¹⁵ Memnon speaks of a noble man called Astakos, a descendant of the Spartans from Thebes, whose name was given to the colony of Astakos by the Megarians.³¹⁶ Memnon (c. 1st century AD) also talks about the later arrival of Athenians in 435-434.³¹⁷ Strabo's non-contemporaneous account confirms the Megarians as founders and specifies a later Athenian colony.³¹⁸ On the other hand, the name of Astakos is mentioned in Arrian's non-contemporaneous account, in a foundation myth³¹⁹, and such mythic tales that can be related to encounters between local people and the Greeks. It may not be suitable, however, to accept these tales as recording the intention of Greek settlers to merge local people with the Greek tradition.³²⁰ According to Arrian, the eponym of Astakos was a son of Poseidon and the nymph Olbia. Interestingly an engraved female head representing Olbia can be seen on some coins of Astakos dated to the first half of the fifth century BC.³²¹ There is also another colony named Olbia, is accepted as Astakos, whose name was changed from Astakos to Olbia. Although nothing is known about the history of this settlement, Olbia was important city as the Gulf of Astakos was also called Olbianos. Olbia might have been founded by Megara and it belonged to the territory of Megarian colonisation.³²²

In Astakos, earlier archaeological evidence of a local population has not yet been attested³²³, and there were no archaeologically visible indigenous inhabitants here before the colonists.³²⁴ However, the 2nd century AD ancient writer Polyaeus described the territory of Astakos as a marshy *khora* inhabited by *Thrakes* (Thracians) who might have been Bithynian helots.³²⁵ The expression “Thracians in the *khora* - *Thrakes ...ek*

³¹⁴ Memnon *FGrHist* 434, fr. 12.

³¹⁵ Charon of Lampsakos *FGrHist* 262, fr. 6; Avram 2004, 977. Avram suggests that Astakos must have founded by the Chalcedonians first, and then reinforced by the Megarians.

³¹⁶ Memnon *FGrHist* 536, fr. 20. “Astacus was founded by settlers from Megara at the beginning of the 17th Olympiad (712/11 B.C.) and was named as instructed by an oracle after one of the so-called indigenous Sparti (the descendants of the Theban Sparti), a noble and highminded man called Astacus.”

³¹⁷ Memnon, *FGrHist* XII 3-4; Fernoux 1999, 188.

³¹⁸ Strabo XII 4, 2. “... And on the gulf itself there was also a city of Astacus, founded by the Megarians and Athenians and afterwards by Doedalsus; and it was after the city Astacus that the gulf was named. It was razed to the ground by Lysimachus, and its inhabitants were transferred to Nicomedeia by the founder of the latter.”

³¹⁹ Arrian, *FGrHist* 156, fr. 56; Avram 2004, 977.

³²⁰ Summerer 2007, 28.

³²¹ Arrian, *FGrHist* 156, fr. 56. Asheri 1978, 94-95, p. 98: Asheri revealed that elements of “Holy Family” of Astacus are Boiotian rather than Megarian.

³²² Avram 2004, 990.

³²³ Tsetsckhladze 2006, lxviii.

³²⁴ Avram 2004, 977.

³²⁵ Polyaeus II 30, 3, “... (Clearchus) When he came near to Astacus, he established a camp for the citizens on a flat marsh, full of dead and stagnant water. He ordered them to watch the movements of the

tes khoras” has been missed in the translation.³²⁶ In the original text, it is visible that there is a direct expression referring to the Thracians.³²⁷ Eventually, it is necessary to take account of the absence of archaeological evidence from the area, and accept that traces of the indigenous settlements may have been missed.

Another colony Kios (Kianos) was founded by Miletus in c. 627. Again, there is no earlier archaeological material or evidence of a local population in the settlement.³²⁸ Kallipolis as a small settlement was presumably situated between Astakos and Kios.³²⁹ Chalcedon was one of the most important settlements in the region and it was founded by Megara in 685 BC. There is also no earlier archaeological material or evidence for an earlier local population in Chalcedon.³³⁰ Myrleia (Brylleion) is other colony mentioned as neighbours of Kios. Archaeological and written sources do not provide evidence for the earliest local population in Myrleia either. However, Corsten claims that Brylleion as a barbarian toponym turned into Myrleia.³³¹ Thus, both Corsten’s approach and Polyaeus’ obscure passage refer to the possible existence of Thracian or non-Greek inhabitants in the region. It is possible, although there is no archaeological support for this claim, that there was also a Bithynian population settled on the coastline. When the Greeks came to the region, it is likely that inhabitants on the coast were killed or enslaved. All in all, considering the suitability of the region for settlers, the absence of evidence for an early local population does not mean that the region was empty before colonisation. It is very likely that the Bithynians had settled all favourable places for them in the region. Greek settlers might have forced the Bithynians from the coasts.

As for the political life in the region, beside the Greeks, according to Herodotus, especially in the last years of Greek colonisation, the Kingdom of Lydia began to take control of the west and north of Anatolia, and Bithynia was one of the nations, which displayed deference towards the Kingdom of Lydia and agreed to pay taxes to it.³³²

Thracians, while he himself advanced with the mercenaries, as if to sustain all the danger of the siege; but he took up a position on a hill, which was shaded by trees, and refreshed by streams. Then he protracted the siege, until all the citizens were dead, from the fatal diseases, which were inevitably caused by the stagnant waters in that hot season. Having achieved his purpose, he raised the siege, and pretended that the citizens had died as a result of an infectious disease.”

<http://www.archive.org/stream/polyaenistrategie00polyuoft#page/102/mode/2up>, Avram 2004, 977.

³²⁶ Polyaeus II 30, 3.

³²⁷ Burstein 1976, 130, n. 64; Berve (1967, I 318) interpreted that “Astacus was under the Bithynian control at this time.” However, Busolt-Swoboda (1920, I, 285, n. 1.) suggested that these people were likely Bithynian helots since *khora* refers to city’s rural territory.

³²⁸ Avram 2004, 982.

³²⁹ Avram 2004, 981.

³³⁰ Tsetskhladze 2006, lxvii.

³³¹ Corsten 1987, 4-6; Avram 2004, 989.

³³² Herodotus I 28; Burstein 1976, 16. Bithynia and Mariandynia occupied by Lydians in the reign of Alyattes.

After the Great King Cyrus had taken full control over Anatolia, he proclaimed Pharnakhos to be in control of the satrapies of Aiolis-Hellespont and Phrygia.³³³ Darius (522-486 BC) however, divided the empire up into 20 satrapies and passed control over the region of Bithynia to the satrap of Daskyleion. Herodotus mentions that Darius took taxes from the satrapies he had created and Bithynia is mentioned in the list of taxpayers under the heading of the third state. This suggests that this third state was a satrapy. Herodotus indicates that the Bithynians (Thracians of Asia) together with the Phrygians, Paphlagonians, Mariandynians, and Syrians had to pay three hundred sixty talents of tribute.³³⁴ It shows that there was not any central power in the region established by the Bithynians.

iii. Relationships between the Bithynians and Greek Colonists

The Greek colonies exercised an intense influence on the life and culture of the surrounding peoples. Greek art and Greek inventions gradually spread across southern Europe from Spain to South Russia. The impact of colonisation, enlarged by the channels of trade, radiated far inland from the Greek colonies on the coast.³³⁵ The expansion of trade created new networks, so that Aegean merchants started to import tin from Britain, amber from the Baltic Sea, and gold from the Ural Mountains.³³⁶

The relationship between colonists and native inhabitants was important, and since all relationships are two-way processes, “locals were influenced by the Greeks, Greek colonies adopted and adapted local practices.”³³⁷ Clearly, in many cases, only men set off to colonise, and thus Greek men took local women as wives, generating a practice of intermarriage. The relationship between two groups who lived alongside each other was also an important phenomenon because it led to the introduction of mechanisms of trade relations between locals and colonists. This could be based on gift-giving and exchange.³³⁸ Many colonies were established in territory occupied either by a local population or with one close to hand. Sometimes local tribal rulers gave the land to the Greeks to settle and cultivate, either by special agreement or in return for payment

³³³ Satrap was provincial governor in the Achaemenid Empire. Darius I (r. 522-486 BC) established twenty satrapies (province or domain) with an annual tribute. They collected taxes, were the highest judicial authority, and were responsible for internal security and for raising and maintaining an army. See Briant 2002, Part 1, Chapter II, 2.

³³⁴ Herodotus III 90.

³³⁵ Hammond 2003, 122. See Bradley-Wilson-Bispham 2006; Graham 2001. For example, the tribes of Italy adopted olive trees and vine cultivation.

³³⁶ Hammond 2003, 114.

³³⁷ Tsetskhladze 2006, Lii.

³³⁸ For the gift-exchange in general see Reden 2003. For gift-giving between the Athenians and Thracians see Mitchell 2002, 134-145; Finley 1977, 61-145.

of a moderate tribute.³³⁹ The relationship between new-comers and locals was therefore shaped by their common interest. Local rulers employed Greek artisans as has been observed in the Iberian Peninsula and Black Sea.³⁴⁰ There is no sufficient archaeological evidence showing gift-giving and exchange relations between the Greeks and locals in the pre-Hellenistic Bithynia, just as there is no evidence supporting intermarriage or any territorial agreement, but Xenophon, Pseudo Scylax, Arrian, and Diodorus give some hints about the relationship.

Xenophon describes the Bithynian Thracians who aggressively abused shipwrecked Greeks, and he points out that there were no Greek colonies or friendly people between Heraclea Pontica and Byzantium.³⁴¹ His army only reached “friendly territory” when they arrived at Chalcedon. Obviously, it seems that there were not good relations between the Bithynians and the Greeks in the region.³⁴² When Xenophon reached Calpe, the Bithynians described as “the hostile people who dwelt nearby” sent their envoys to be friends with him.³⁴³

In accordance with Xenophon’s passage, Fernoux, evaluating non-contemporaneous ancient written sources such as Diodorus and Arrian as well as Xenophon and Pseudo-Scylax, argues that coastal Greek colonies in northern Asia Minor and the Bosphorus were barely able to secure their territory and unable to expand their territory because of the native threat, except in Heraclea Pontica.³⁴⁴

Astakos disappeared in the middle of the fifth century BC after being worn down by numerous attacks of the Bithynians. It survived only temporarily with the arrival of new settlers from Athens in 435-434 BC.³⁴⁵ Similarly, Helicore (Nicaea) was destroyed by the Mysians in the fourth century. According to Arrian, the city was taken by trickery; its population was massacred in part, while the survivors found refuge in neighbouring cities (Kios or more distant Myrleia?).³⁴⁶

Chalcedon was more powerful, and could afford to organize raids on barbarian land. In 416, the Chalcedonians led the Byzantines in an expedition into Bithynian land to collect a great number of men, women, and children. They killed their captives and

³³⁹ Tsetschladze 2006, Xlviii; Liii-liv.

³⁴⁰ See the chapter on “Commercial Interchanges between Greeks and Natives” in Graham 2001, 45-175.

³⁴¹ Xenophon, *Anabasis* VI 4, 2: “It is a long day journey for a trireme to row from Byzantium to Heraclea, and between the two places there is no other city, either friendly or Greek, only the Bithynian Thracians.”

³⁴² Xenophon, *Anabasis* VI 6, 37-8.

³⁴³ Xenophon, *Anabasis* VI 4, 4.

³⁴⁴ Fernoux 1999, 187-188.

³⁴⁵ Memnon, *FGrHist* XII 3-4.

³⁴⁶ Arrian, *Bithynica* in Gelzer 1890, 11-12; Fernoux 1999, 188, fn. 69.

destroyed many Bithynian settlements.³⁴⁷ Another non-contemporaneous written source quoting earlier historians, Athenaeus from the third century AD, reports that the Bithynians were exploited as slaves by Byzantium. It is important to show the ‘master-serf relationship’ between two groups.³⁴⁸ Thus, the increasing threat of the Bithynian population with named tribal leaders, who were pursuing an expansion policy to unite the region under their hegemony, is evident in the written sources. It is possible that Chalcedonians had taken advantage of some complicity among tribal leaders.³⁴⁹

Byzantium also remained under the constant threat of the barbarians. Obviously, Byzantium was unable to protect its own territory and to guard against the frequent incursions of the Thracians. In 403, Byzantium called with the Spartans, who sent Clearchus and then Xenophon and the Ten Thousand in 400 BC.³⁵⁰

Heraclea³⁵¹ on the west was seemingly more powerful against the barbaric raids. To ensure the stability and integrity of its *khora*, the Heracleots founded an urban centre in its own right in the south-west of their territory.³⁵² The oligarchic rulers of Heraclea established emporia at Elaios, Chelae, Dia, Calpe, and Apollonia Thyniada, which were next to the Bithynians. Most of these settlements have not yet been excavated, but some ancient remains can be seen.³⁵³ One of these emporia is Calpe³⁵⁴, mentioned by Xenophon as a market in the late fifth century.³⁵⁵ Calpe was a harbour or anchor station, (Xenophon calls it a *limen*) in another passage.³⁵⁶ Xenophon does not specify who possessed Calpe; thus, it presumably only came under control of Heraclea only in the fourth century BC.³⁵⁷ In another statement, Xenophon mentions one ‘Heracleot’ who

³⁴⁷ Diodorus of Sicily XII 82:

³⁴⁸ Athenaeus, *Deinosophistai* VI 101, “In his History of the Carians and the Leleges, Philippos of Theangela mentions the Lacedaemonion Helots and the Thessalian Penestai, and says that in the past, and indeed today, the Carians use the Leleges as their house-boys. Phylarkhos, in book six of his Histories, says that the Byzantines, too, had the same master and serf relationship towards the Bithynians as the Spartans had towards the Helots.” Wiedemann 1981, 88.

³⁴⁹ Compare the story in Plutarch *Alcibiades* XXIX 6.

³⁵⁰ Fernoux 1999, 187-188; Diodorus of Sicily XIV 12.

³⁵¹ Saprykin 1997, 36. A Megarian colony, Heraclea was founded by Megarians and Boeotians in 554 BC, and half of the local tribe, the Mariandyni, were killed and the rest enslaved. The Mariandyni were the native population of mixed Thraco-Anatolian origin and Poseidonius vividly describes their status. in Athenaeus *Deinosophistai* VI 263.

³⁵² Fernoux 1999, 187. Saprykin 1997, 24. The Megarians chose Heraclea since it has a distinctive position in the region and fruitful land and a native population, which could be used as a labour force.

³⁵³ Saprykin 1997, 34.

³⁵⁴ Firatlı 1953, 18-19. A necropolis and some sherds were found in Calpe.

³⁵⁵ Xenophon, *Anabasis* VI 6, 2-3. “And by this time there was an abundance of everything, for market products came in from the Greek cities on all sides, and people coasting past were glad to put in, since they heard that a city was being founded and that there was a harbour.”

³⁵⁶ Xenophon, *Anabasis* VI 4, 2: “Now this place which is called Calpe Harbour is situated in Thrace-in-Asia; and this portion of Thrace begins at the mouth of the Euxine and extends as far as Heraclea, being on the right as one sails into the Euxine.”

³⁵⁷ Saprykin 1997, 23, fn. 37.

knows of nearby villages to get provisions for soldiers when the army was in Calpe.³⁵⁸ As the Heracleot knows the villages around Calpe, it shows that he has a connection with native villages.³⁵⁹ It is possible that the Greeks established relations with the native people when they entered a new area.

In the Hellenistic period, Calpe seems to become more significant and larger.³⁶⁰ Calpe Harbour must have operated as a bridge (possibly a trading post) connecting the Greek world to the Black Sea and, as Xenophon described in 400 BC, market goods from Greek cities passed through the harbour. It may have been that resources of the region were transported through the Black Sea. Later Calpe was to become part of the territory of Nicomedia.

Another site is the island of Thyniada and the island especially provided fish for the Heracleots.³⁶¹ In addition, Herodotos talks about a temple of Apollo the Dawner and an altar which indicate the Greek existence.³⁶² There were also archaic and classical walls, fragments of Attic black-figure pottery of the 5th-4th centuries BC, including a vessel, made in form of a Negro figure.³⁶³ It was much easier for Heraclea to expand her power to the west, because there were no Milesian colonies in this part of the coast and, except the Bithynians, the territory was free for erecting forts and *emporía*.³⁶⁴ This part of the coast was very important for Heraclea also because of the sea-routes, and the citizens tried to control the coast and the coastal route in order to prevent piracy by resident tribes. Therefore, it could be considered that Heraclea started to enlarge her territory at first to the west. It has been seen that the rulers of Heraclea oppressed the Bithynians. The extreme western border of Heracleian *khora* in the fifth century BC was the river of Calpe. Calpe and Apollonia Thyniada were perfect stations on the sea route between Byzantium and Heraclea Pontica.³⁶⁵

Against Byzantium's calls to the Spartans, and then the incursion of Xenophon and the Ten Thousand in 400 BC³⁶⁶, the Bithynians had little chance against powerful Greek enemies. They consequently appealed for help to Pharnabazos, the Persian satrap

³⁵⁸ Xenophon, *Anabasis* VI 4, 23.

³⁵⁹ Saprykin 1997, 28. It may well be the reason that he was brought with Xenophon is his knowledge of Thracian language. Maryandyni in Heraclea has Thraco-Anatolian origin as presumably Bithynians and there may well be the same/similar language shared by two communities that lived side by side.

³⁶⁰ Dörner 1969, 92; Firatlı 1953, 18.

³⁶¹ Dörner-Hoepfner 1989, 103-104.

³⁶² Apollonios Rhodios *Argonautica* II 684.

³⁶³ Saprykin 1997, 30; Firatlı 1953, 16. Firatlı also found some fragments (drinking cups e.g. kylix, kotyle and kantharos) of Attic black figure which possibly dated to the first quarter of the 4th century BC.

³⁶⁴ Saprykin 1997, 30.

³⁶⁵ Saprykin 1997, 33-35.

³⁶⁶ Diodorus of Sicily XIV 12; Fernoux 1999, 187-188.

of Daskyleion, to prevent the passage of Ten Thousand through Bithynia.³⁶⁷ It is reported that the Persian commanders Spithridates and Rhathines joined up with Pharnabazos's army (401 BC) and fought together with the Bithynians against the Greeks. However, the joined forces were completely defeated. As far as can be seen in Xenophon, in the fifth century, Bithynia was still without a central government and the people of Bithynia were scattered in diversely sized villages throughout the region, so that control was seemingly in the hands of the Persian satrap of Daskyleion.³⁶⁸

However, it is clear that the Thracian-Bithynian population was emerging into more organized chiefdoms, with named tribal leaders who formed an embryo of the kingdom. From the beginning of the mid- fifth century Doedalses, and then Botiras and Bas, who were tribal leaders, were better able to challenge the Greeks by attacking, and were also successful at making agreements with them and Persian satrapies for their own benefit.³⁶⁹ Xenophon mentions that in the last quarter of the fifth century BC, the peoples of Anatolia faced serious persecution from the Persian satrapies, and when they appealed to Sparta for assistance, a Spartan commander came to Anatolia.³⁷⁰ The Bithynians fought against the Greeks as a united force and were able to compel to them. It is very likely that the region became a choke point between two cores, the Persian hegemony in the east and the Spartans in the west. Their hegemonic rivalry manifested itself in the relations between the Greek colonies Byzantium, Astakos, Chalcedon, and the Bithynians.

There are also many examples demonstrating the interrelationships of local people and Greek colonists in the wider Black Sea region, especially in archaeological respects. They allow one to draw an analogy between the Bithynians and the Greek colonists and the local people of other parts of the Black Sea and Greek colonists.

For instance, the points made in Solovyov's case study of Scythia are very striking and elucidate relations between the local elite/ aristocracy and Greek colonists.³⁷¹ According to this, commercial interaction could have been occurred between Greek tradesmen and the tribal leaders of nomadic and semi-settled Scythians. It is very likely that the Greeks had to gain the approval of the local leaders at first-hand and they used different ways to obtain this, e.g by gift-giving, making agreements and

³⁶⁷ Xenophon, *Hellenica* I 3, 1-8; Jones 1971, 148-149; Çalık-Ross 2007, 57-58.

³⁶⁸ Xenophon, *Anabasis* VI 5, 7-8.

³⁶⁹ Jones 1971, 147.

³⁷⁰ Xenophon, *Anabasis* VI 4, 24-25.

³⁷¹ Solovyov 2007, 38-39.

paying tribute.³⁷² The Bithynians were a Thracian tribe and had a tribal system.³⁷³ However, details of their community are not known, and it is not attested archaeologically, Greek colonists primarily could have communicated with tribal chiefs in the region. When the Bithynians started to gain strength, a sort of ‘guerrilla war’ waged with hit and run tactics must have occurred against the Greeks.

Summerer’s work on the southern Black Sea coastline between Sinope and Amisus and their indigenous hinterlands is also helpful for comprehending the picture in Bithynia.³⁷⁴ Ancient written sources do not mention if Amisus was subjugated by the Greeks, imposing themselves on the local people by force, or if it was conveyed into their control by treaty. However, Amisus was located in the middle of Leucosyrian territory, and the Greek city must have been like an island, enclosed by inhabitants ‘in a barbaric ocean’. Probably the same picture existed in Bithynia: there were a couple of Greek cities located on the coastline of the Gulf of Astakos, and they were surrounded by the Bithynian Thracians’ villages. Having examined the archaeological and historical data Summerer argues that the early Greek pottery from the indigenous sites in the Halys basin proves that the Greeks had contacts with this region before the foundation of the coastal cities. The Greek settlers in Sinope and Amisus had to deal with the natives as their survival depended on access to the native territory to obtain agricultural products, metals, and minerals. Moreover, discovery of local pottery in Sinope and Amisus shows the existence of a native population there. Thus, natives could be taken from villages by the colonists, or these people may have already been there before the foundation of Greek cities.³⁷⁵

As a result, on the east the Megarian colony of Heraclea had a strong political and economic position controlling Calpe and Thyniada, and on the west and south the Bithynians were neighbours of other influential Greek colonies, with Chalcedon, Astakos and Byzantium further to the west. There are two distinctive periods in terms of relationships in Bithynia. The first period is the first contact between the Bithynians and the Greek colonies which is not clearly attested, but there some hints and analogies to consider. The second period starts with the resurgence of the Bithynians especially by the mid-fifth century. In general, Greek colonists were technically stronger than local

³⁷² Solovyov 2007, 41-42.

³⁷³ Rumscheid-Held 1994, 92-93; Corsten 2007, 128. A stele found in Tarsos (the modern village, Adliye-Adapazari) belonged to a rich individual called Mokazis. He, his wife, and sons have obvious Thracian names and this is a vivid example of the Bithynian aristocracy. The monument dates from the first half of the second century BC.

³⁷⁴ Summerer 2007, 27-36.

³⁷⁵ Summerer 2007, 35.

people, and they must have easily subjugated them. As has been seen in the case of the Mariandyni, the Greeks might have enslaved some of the Bithynian Thracians and exploited both the people and the resources of the region. The nature of economic relationship is illustrated by the cases of Amisus and Sinope and their hinterlands. All in all, though the beginning of the relationships is rather obscure, it seems that relations between the Bithynians and the Greek colonies were hostile and competitive in general, especially by the beginning mid-the fifth century, as reflected in the historical account.

As for the economic consequences, due to its advantageous geographical position on the Straits, Byzantium had complete control over the supply of, and gained the greatest financial benefit from, all the goods that were being traded between the Pontus and Mediterranean.³⁷⁶ Byzantium, founded by Megara, played an essential role in the economic life of that region and in that of the Mediterranean. The city controlled the Straits, which connected to the Black Sea and the Propontis-Aegean Sea and kept its importance from its foundation to Roman times and well beyond.³⁷⁷ By doing so, Byzantium decided which producers (and products) from the Black Sea could reach which Mediterranean destinations, and which Mediterranean producers (and products) could approach the Black Sea ports. In the 5th century BC, the main actors in the Straits were the Athenian Empire, the Persians, and the Thracians, but economic life was fuelled by Athens, Byzantium and merchants from the Black Sea and the Mediterranean. Athens as an imperial power fostered Byzantium by supporting its role in trade, not only trade in grain.³⁷⁸

It can be highlighted that trade in timber, slaves, and fishery products operated around Bithynia. Calpe Harbour on the Black Sea Coast (under control of Heraclea by the fourth century) was also on the doorstep of the Bithynians and played an important role in trade.³⁷⁹ Thus Bithynia as a region rich in resources must have especially benefited from being on the trade routes between Greece and the Black Sea region during the Greek colonisation period. Cereals, grapes, and timber can be identified as commercial goods besides being consumed in the region.³⁸⁰ Goods were presumably exchanged between the Bithynians and the Greeks for their mutual benefit, including agricultural products, timber, and slaves, which were provided in return for Greek

³⁷⁶ Gabrielsen 2007, 288-9.

³⁷⁷ Gabrielsen 2007, 287.

³⁷⁸ Gabrielsen 2007, 290-6. Gabrielsen emphasises two major points. The first was that the city was a central trading post for the commodities traded between the Pontus and the Aegean; and the second was that it offered infrastructural facilities and services.

³⁷⁹ Xenophon, *Anabasis* VI 6, 2-3.

³⁸⁰ Xenophon, *Anabasis* VI 4, 4-6; VI 6, 1-2.

pottery, olive oil, and wine, but insufficient archaeological data exists to support this conclusively. It is known that Attic black-figure pottery from the 6th to 4th century BC was in use in Thyniada and Astakos.³⁸¹

iv. Foundation of Bithynian Kingdom and General Conclusion

As shown above, there was an increasing power of the Bithynians in the region in contrast to earlier periods. Until the late classical period, however, there was no successful centralisation of power in Bithynia by the Bithynian Thracians.

In the second half of the fifth century BC, Doedalses, a member of the Bithynian dynasty, attempted to unite the Bithynians.³⁸² Memnon tells that, after the Megarians and Athenians had occupied the city of Astakos.³⁸³ Doedalses came to power and put an end to the conflict, which the Athenians had brought about.³⁸⁴ Given that the period of Athenian colonisation was around 435 BC, it would seem sensible to identify this period as the approximate date of the reign of Doedalses (about c. 435 BC)³⁸⁵, who was succeeded as local ruler of the area by Botiras (423-427 BC), and then Bas (or Bias, 377-327 BC).³⁸⁶ The last of these was one of the leading figures in Alexander the Great's eastern campaign. According to Arrian, after Alexander the Great had moved from the Granicus further on into Anatolia, he proceeded south leaving his commanders in northern Anatolia.³⁸⁷ Alexander appointed Kalas, the commander of the Thessalian cavalry, to take control of Hellespontine Phrygia, the region of the Persian satrap of Daskyleion. Kalas arrived in Bithynia in 327 BC, but met by opposition from Bas, who defeated Alexander's commander.

Bas's son, Zipoites (326-278 BC), became the first member of the dynasty to bear the title king of Bithynia in the Hellenistic period, and Bithynia began to be hellenised during his reign. Zipoites' direct attack on Astakos and Chalcedon in 315 clearly shows the power of the Bithynians towards the end of the fourth century BC.³⁸⁸ Demetrios Poliorketes' son Antigonos, however, was determined not to hand over these harbours to Zipoites and sent his nephew Ptolemy to lift the siege. This move was successful, and not only Chalcedon and Astakos but also the other towns of the area

³⁸¹ In Astakos: Şahin 1974, 68; Robert 1974, 574; Avram 2004, 977; Ulugün 2008, 18 n. 15.5. In Thyniada: Saprykin 1997, 30; Fıratlı 1953, 18-19.

³⁸² Jones 1971, 147.

³⁸³ Memnon, *FGrHist* 53, fr. 20.

³⁸⁴ Strabo XII 4, 2.

³⁸⁵ Bosch 1942, 52.

³⁸⁶ Jones 1971, 147.

³⁸⁷ Arrian, *Anabasis* I 12, 8.

³⁸⁸ Diodorus of Sicily XIX 60.

passed under the control of Antigonos. Zipoites had no choice and eventually an alliance was formed with Antigonos.³⁸⁹ This alliance endured until about 301 BC, the year in which Antigonos died. After this point, Lysimachos, the new ruler of Thrace, appeared as a new enemy for the Kingdom of Bithynia.³⁹⁰ Lysimachos aimed to annex the Straits and Byzantium by pushing towards Bithynia in 301.³⁹¹ However, the commanders of Lysimachos were unable to defeat Zipoites. Thus, Lysimachos joined forces with Clearchus II, son of Amastrine, the queen of Heraclea Pontica, and waged another war against Zipoites. However, the campaign also became unsuccessful, and Lysimachos was forced to retreat from Bithynia. This occurred sometime after 300 BC, which suits dating of the beginning of the Bithynian era to 297 BC.³⁹² The deaths of Lysimachos and Seleucus I Nicator in the Battle of Corupedium brought a chance for the local kings of Anatolia, Philetaerus of Pergamon (283-280 BC)³⁹³, Zipoites of Bithynia (297-296 BC), and Mithradates I of Pontus (around 280 BC)³⁹⁴ to manifest their independence.

Bithynia, as a kingdom, was dominated by the elite of Thracian descent, whose members were leaders in the Bithynian army. Native Bithynian leaders were settled at suitable places for themselves in the region, and they continued to live in their rural properties after Greek colonisation. As a result, throughout the Hellenistic Period there is no evidence for these families in the Bithynian cities.³⁹⁵ As Xenophon reported, the Bithynians were living in the villages in 400 BC.³⁹⁶ According to Corsten, the Bithynians were not involved in the life of the poleis, and preferred to live in rural areas, as they had earlier. Corsten based this theory on epitaphs containing Thracian names found in rural areas of Bithynia, which indicates continuity of this preference.³⁹⁷ Even in the Hellenistic period, people who originated from the Bithynians maintained their lives in the rural areas rather than in cities.³⁹⁸ The epigraphic evidence also shows that the Bithynian Thracians were gradually hellenised, adopting the Greek language, and Greek burial and commemorative practices. This process had been started in the Greek Colonisation Period in the region and then accelerated and peaked with the foundation of the Bithynian Kingdom as a Hellenistic kingdom.

³⁸⁹ Vitucci 1953, 15.

³⁹⁰ Billows 1990, 441; Glew 2005, 131-9; Jones 1971, 150.

³⁹¹ Memnon *FGrHist* 434, fr. 12, 5; Leschhorn 1993, 185-6.

³⁹² Heinen 1984, 425.

³⁹³ Radt 2002, 25, cf. Mørkholm 2000, 205.

³⁹⁴ Günaltay 1987, 280-287.

³⁹⁵ Corsten 2007, 130-131. See also Corsten 2006, 85-93.

³⁹⁶ Xenophon, *Anabasis* VI 4, 24.

³⁹⁷ Corsten 2007, 128.

³⁹⁸ Mitchell-Katsari 2008, 219-247.

To summarise, the founders of the Bithynian kingdom were the Bithynians who possessed a dual identity, hellenised and local. They formed a majority population in the region alongside the Greek colonies, which formed an isolated minority on the coast. When the Romans received the kingdom as a bequest in 74 BC, the Bithynians did not disappear, but maintained their existence in rural settlements.³⁹⁹ Consequently, there is a historical continuity in the settlement of the region by the Bithynians. The city of Nicomedia and the economy of the city were shaped by these people and their relationships from pre-Roman times to late antiquity. Therefore, one of the central aims of this first section is to emphasise the existence of the non-Greek population before the city was founded.

Although the exploitation of land and the economic basis of the native inhabitants is not well documented, it can qualitatively be said that there was a self-sufficient primitive economy in the rural territory of the Bithynians which apparently started to change by the colonisation period. The economic exchange that presumably occurred between the Bithynians and the Greek colonists will have included products such as wine, olive oil that locals demanded and raw materials such as timber needed by the colonies. Furthermore, there was a cultural difference, especially in production and consumption, between the Greeks and the Bithynians. The olive oil and wine diet of the Greeks was new for the non-Greek, Thracian inhabitants. It is likely that demands for new products triggered exchange between the Greeks and the Bithynians.⁴⁰⁰ Moreover, while construction for religious and public buildings was essential for the Greek colonies, it is likely that in the rural areas where the Bithynians lived in the villages, they did not need the same construction materials. Greek colonies introduced the idea of religious and public building, which is higher standard than normal village life. Accordingly, the evolution of larger and more developed urban culture created a need for more elaborate raw materials especially large-scale timber and cut stones.⁴⁰¹

Finally, it seems that the Bithynian villages remained in the Hellenistic period and Roman period since no new city was founded in this area. If one takes the point further, these economically integrated village settlements functioned as a supplier of

³⁹⁹ Corsten 2007, 124.

⁴⁰⁰ Xenophon, *Anabasis* VI 4, 4-6, trans. C. L. Brownson. Xenophon counts barley, wheat, beans of all kinds, millet and sesame, a sufficient quantity of figs, an abundance of grapes in the northern part of the region in 400 BC, and he emphasises the absence of olive. From the cultural point of view, based on Mitchell's assumption, it can be explained that Thracian Bithynians (non-Greek inhabitants of the region) might not have preferred olive oil for their consumption as the Greeks did. See p. 29 in the text. Mitchell 2005, 89-93. It should be noted that Thracians were famously wine drinkers; it is likely that the Bithynians were the same. Dalby 2000, 158.

⁴⁰¹ Ward-Perkins 1980a, 23-69; 1980b, 325-338; Xenophon, *Anabasis* VI 4, 4-6.

Nicomedia, the capital of Hellenistic Bithynian Kingdom and later *metropolis* of Roman province of Bithynia and Pontus.

II. Cities and Villages from the early Hellenistic Period to the Late Antiquity

i. From the early Hellenistic Period to the Early Roman Times

Some of the driving forces of economic ideology in the Hellenistic period can be identified. Economic behaviour and activity were shaped by the kingdoms' interest. Kings were primarily interested in the preservation and expansion of their territory through warfare. Military success through warfare brought the economic benefit of booty.⁴⁰²

Another engine of development was urban foundations. The royal creation of new cities was not a new phenomenon in the Hellenistic period. There is no doubt that new or enlarged urban centres (resulting from *synoikismos*) created a new locus of demand for essential commodities, and new markets. Moreover, cities always served the kings' main interest since a new city was also a new source of taxes and labour. War and urbanisation were main elements forming economic attitudes in the period, and surely they played a role under the Hellenistic Kingdoms and the Roman Empire as well.⁴⁰³

These phenomena can easily be traced in the Hellenistic Bithynian kingdom. Zipoites' success against Antiochus I Soter helped to establish a kingdom, whereby Bithynia started to gain recognition from the other Hellenistic kingdoms. Zipoites followed the pattern of other local Hellenistic dynasties and tried to establish family ties with other Hellenistic kingdoms in order to assure the independence of his kingdom. Following these successes, Zipoites founded a city bearing his own name, Zipoetium at the foot of Mount Lyperus as a capital of Bithynia⁴⁰⁴, before dying around 280 BC. After Zipoites' death, Nicomedes came to power. His accession, however, caused a struggle for the throne with his brother Zipoites.⁴⁰⁵

Nicomedes made an agreement with Leonnarios, the leader of one of the Celtic tribes, whereby they would support him. The conditions of the agreement were that Nicomedes would have the Celtic tribes brought by boat from Byzantium to Asia in order to fight against Zipoites, while Nicomedes would allow the Celts to plunder all the

⁴⁰² Reger 2007, 480-481.

⁴⁰³ Reger 2007, 463.

⁴⁰⁴ Memnon, *FGrHist* 432, fr.12; Diodorus of Sicily XIX 60; Jones 1971, 150-2.

⁴⁰⁵ Jones 1971, 151; Arslan 2007, 56.

cities that had revolted against him.⁴⁰⁶ The territory settled by the Celts, later called ‘Galatia’, became the crucial buffer zone between the Seleucids, Bithynia, and Pontus. Bithynia also would have greater position for the later campaigns since it could draw on the Celtic forces.⁴⁰⁷

Nicomedes sought to expand to the south-east rather than west because of the existence of the Greek colonies. In this way, Bithynia came to become an independent kingdom possessing substantial power rather than a small dynasty of tribes. Nicomedes founded Bithynium, a military colony of Bithynian settlers strategically placed to hold territory newly acquired from the Paphlagonians. It is likely that Nicomedes also integrated Nicaea into the kingdom, although this is not mentioned in the written sources.⁴⁰⁸

Nicomedes founded the eponymous city of Nicomedia as his capital around 264 BC. It was built on the site of Olbia, a ruined Greek colony, and populated by the people of Astakos, another Greek colony close to Nicomedia.⁴⁰⁹ Thus it can be said that it was created by *synoikismos*.⁴¹⁰ The city was founded in 262 BC, and it was built on Astakos, which Lysimachos had ruined.⁴¹¹ On the other hand, according to Libanius’ non-contemporaneous account, Nicomedes aimed to establish the city in ruined Astakos, but the oracle indicated that the new foundation should be to the north, opposite Astakos.⁴¹² According to the foundation myth during the sacrifice of offerings to the gods in Astakos when they were consulted about where the new city should be established, as the sacrificial animal was being burnt on the altar, an eagle seized its head from the fire; at the same time, a serpent appeared swimming, and they both left together. They passed the gulf of İzmit and stopped on the slopes where modern İzmit is now. The oracle interpreted this as a sign that gods wanted the city established there. This scene is depicted on coins that were minted for the 500th anniversary of the foundation.⁴¹³ Indeed, Nicomedia was more advantageous than Astakos, which was located in a flat plain and open to threats from the sea and land. The hilly location of Nicomedia and the construction of the city on four peaks show that the city could

⁴⁰⁶ Memnon, *FGrHist* 19, 2-5; Livy XXXVIII, 16, 8; Pausanias, *Periegesis* 10, 23, 14; Strabo XII 5, 1-3.

⁴⁰⁷ Marek 1993, 20-25; Mitchell 1993, 15; Magie 1950, 5 n. 10; Arslan 2000, 68.

⁴⁰⁸ Jones 1971, 150.

⁴⁰⁹ Strabo XII 4, 2.

⁴¹⁰ Ruge 1936, 471.

⁴¹¹ Strabo XII 4, 2. Avram 2004, 990.

⁴¹² Libanus *Orationes* LXI 4; Ruge 1936, 468.

⁴¹³ *SNGAul.* 826; Bosch 1942, 18-9. The coins issued during the reigns of the Roman emperors Maximinus Thrax (AD 235-238) and Gordian III (AD 238-244).

benefit from its natural defences.⁴¹⁴ The city was strategically located near the sea, next to neighbouring Greek areas, which facilitated the influence of Hellenisation in Bithynia, and close to new neighbours the Celtic allies of Nicomedes.⁴¹⁵

The city was urbanised in accordance with the Hellenistic model. It was the capital of an established local dynasty, similar to the other Anatolian capitals Pergamon, Alexandria, and Seleuceia during the Hellenistic Period.⁴¹⁶ The description of the city in from the fourth century AD provided by Ammianus Marcellinus, attests that Nicomedia had already been decorated by the king of Bithynia with valuable works of art and monuments.⁴¹⁷ The city hosted many craftsmen and artisans⁴¹⁸, and Pliny the Elder, in the 1st century AD, mentions the special interest of Bithynian kings in Greek sculpture.⁴¹⁹ Pausanias' description of the city, with an ivory statue representing Nicomedes erected in its centre, also indicates to what extent the city had been hellenised.⁴²⁰ Moreover, kings' effort can be clearly seen in Zipoites' desire to initiate Hellenisation by giving his first son a Greek name, in order to manifest himself as a part of the Greek world.⁴²¹

Rescue excavation and survey research have partly revealed the architectural elements in the city. The city walls were an essential structure for maintaining and protecting the city. It has been impossible to define precisely the remains of walls from the Hellenistic Period, but later remnants have been mapped by C. Foss.⁴²² Many wall remains were identified during the 'Surveys of Kocaeli and its Districts' in 2005.⁴²³ The theatre of the city was situated in an imposing central location in the Orhan neighbourhood, which also provided a view over the city.⁴²⁴ Another important element

⁴¹⁴ Ruge 1936, 490.

⁴¹⁵ Storey 1998, 13-14.

⁴¹⁶ Harris 1980, 860; Çalık-Ross 2007, 93.

⁴¹⁷ Ammianus Marcellinus XXII 9, 3.

⁴¹⁸ Pliny the Elder, *Naturalis Historia* XXXVI 35.

⁴¹⁹ Pliny the Elder, *Naturalis Historia* XXXVII 39: "Praxiteles has been ennobled by his works in marble, and more especially by his Cnidian Venus, which became remarkable from the insane love which it inspired in a certain young man, and the high value set upon it by King Nicomedes, who endeavoured to procure it from the Cnidians, by offering to pay for them a large debt which they owed."

⁴²⁰ Pausanias, *Periegesis* 5, 12, 6-7.

⁴²¹ Harris 1980, 865; Glew 2005, 131-139. According to Glew, the name of Nicomedes was an administrator in Kos who had played as a mediator between Zipoites and Polemaios, so Zipoites probably has chosen the name to show his indebtedness to the mediator Nicomedes.

⁴²² Foss 2002, 72. Excavation conducted in 1938 by the German Institute in SEKA (İzmit Paper Factory) revealed a large bath-house, and traces of the city wall. Wilson 1960, 110-111.

⁴²³ Fıratlı 1971, 11; Foss 2002, 29; 41; Zeyrek 2005, 29. Traces of the city walls ascertained extend through a line from the borders of the Orhan and Paç neighbourhoods in the district of İzmit, and, then down to the land occupied by SEKA.

⁴²⁴ Çalık-Ross 2007, 111. The location of the ancient theatre of Nicomedia had been registered by the Monuments Committee in 1995, and registered in detail in 2003. The location of the theatre was examined in the survey research in 2005 and a three dimensional virtual model of the theatre created.

for the city was the harbour. Texier and Perrot saw some remains of the harbour.⁴²⁵ Colossal architectural structures were ascertained in the western part of the city by the survey in 2005. The area of the SEKA plant is located right behind the Hellenistic and Roman harbour.⁴²⁶

There must have been construction for the water supply in Nicomedia. The water had to be brought a long distance from the north-east to meet the demands of the Hellenistic city.⁴²⁷ Because of the location of Nicomedia, the city must have faced a water-supply problem during and after the Roman Era.⁴²⁸ To deal with the problem the kings in the Hellenistic period and, later, the governors sent by Rome built more than twenty-three aqueducts.⁴²⁹ Ainsworth saw traces of an aqueduct on the hillside, which could bring water to the upper and lower parts of the city.⁴³⁰

Although there is much evidence of Hellenistic urbanisation in the city, rescue excavations in the necropolis area show an exact relation to the Thracian burial architecture. Yayla Pınar Tumulus in Kefken, Kanlıbağ near İzmit, İzmit Akyazı Tumulus⁴³¹, the Aytepe Tumulus and the Tersiyе Tumulus located in the vicinity of the village Tersiyе near Adapazarı were dated to the Hellenistic Period. The importance of the tumuli derives from the similarities of its architecture with that of other tumuli in the site of salvage excavations of Thrace.⁴³² In 1991, it revealed one of the most important necropolis sites in the city, used from the Hellenistic period onwards, during the construction of a park situated on the road between Kınalı and Sakarya. Another rescue excavation took place at one of the tumuli near Üçtepelер, which has also been dated to the Hellenistic Era. The Üçtepelер Tumulus is in fact a very good example of the type of tomb with *dromos* (passage) found in Bithynia.⁴³³

By the reign of Prusias II (182-149), the territory of the Bithynian kingdom was probably the same as in 74 BC, when the last king Nicomedes IV bequeathed the

⁴²⁵ Wilson 1960, 110. Texier described a mole largely silted up, and making a series of arches of brick topped with stone. Texier 1862, 62. Perrot noted that in a more general way to moles, quays and divers constructions of large blocks. Perrot 1867.

⁴²⁶ Çalık-Ross 2007, 108. In the area between the SEKA and TEIAS plants (Turkish Electricity Transmission Company), big blocks of shaped stone were found. The traces of the harbour complex has been identified in the form of walls, in the garden in the State Supply Office (DMO).

⁴²⁷ Aksoy 2000, 5.

⁴²⁸ Ünal 2001, 15-9; Galitekin 2006, 19.

⁴²⁹ Çalık-Ross 2007, 99.

⁴³⁰ Wilson 1960, 110; Çalık-Ross 2007, 99. In the upper part of the city debris containing columns, sarcophagi, architectural fragments, pottery and glass were moved to the İstanbul Archaeological Museum.

⁴³¹ Fıratlı 1953, 15-25.

⁴³² Fıratlı 1960, 22-5; Çalık-Ross 2007, 104-5.

⁴³³ Turgut-Aksoy 1996, 399-414; Çalık-Ross 2007, 105; Wilson 1960, 111; Fıratlı 1971, 14. Parts of a western and an eastern necropolis and a 2nd century AD nymphaion, which was one of the biggest nymphaions in Anatolia revealed in 1968.

kingdom to Rome. In the times of Xenophon, in the pre-Hellenistic period, there were only the Greek colonies and “many inhabited villages” in later Nicomedian territory. The Bithynian region saw Hellenistic creation of new cities by this period.⁴³⁴ Nicomedia as a capital flourished both in urbanisation and in the economy in this period since it became a centre of demand and supply attracting many products and services. Presumably, goods flowed from its large territory to meet the demands of the capital, and the king’s taste for a luxurious life style, which was also shared by the city elite.⁴³⁵

With the rise of the new kingdom in Bithynia in the third century BC, the kings obtained not only a very fertile and vast area but also a hub of exchange for goods and trade. It is difficult to gauge the extent of trading activities in the Hellenistic Period due to the lack of affirmative archaeological sources. However, epigraphic and written sources show that the kings sought developing friendship with Greek cities and islands. The kings established closer political, cultural, and economic ties to benefit the intellectual life and works of art with important cities of mainland Greece: Olympia, Delphi, Delos, and Epidaurus.⁴³⁶

The kings sought to associate themselves with the most important religious events.⁴³⁷ Prusias and Nicomedes II went to Didyma, to consult the oracle on how best to govern the affairs of the kingdom. Following them, Nicomedes III went to Delphi, following the dispatch of 30 slaves assigned to the various services of the sanctuary; a *proxenos* ensured the connection between Bithynia and the citizens of Delphi.⁴³⁸

Political and cultural contacts also contained significant economic purposes, including the Hellenisation of the kingdom. In 242, Ziaelas, like five other monarchs, had responded positively to the request of the ambassadors of the asylum Cos recognized the sanctuary of Asklepios.⁴³⁹ On this occasion, the Coans also obtained security for their merchants who came around on the coast of the Propontis. The vagueness of the royal letter suggests that until that time, there was a limited penetration

⁴³⁴ Xenophon, *Anabasis* VI 4, 24.

⁴³⁵ Reger 2007, 481. For an example of Prusias’ tendency for luxury see, Athenaeus *Deinosophistai* XII 94. “There is also the Prusias; and it has been already said that this is an upright kind of cup, and it derived its name from Prusias king of Bithynia, who was a man very notorious for his luxury and effeminacy; as is mentioned by Nicander of Chalcedon, in the fourth book of his History of the Events of the Life of Prusias.”

⁴³⁶ Pausanias, *Periegesis* V 12, 7; Fernoux 2004, 61. An ivory statue of Nicomedes I was brought from Olympia in 280 BC.

⁴³⁷ Fernoux 2004, 61-62, Table 1. For example, a cult was organized in honor of Nicomedes II (?), along with the sacrifices made to Asclepius and Hygieia in Cos. At Delos, Nicomedes III contributed a temple to Isis and Nemesis. There were relations between the monarchy and Bithynian the cult of Apollo Didymeion at Platea.

⁴³⁸ Fernoux 2004, 62-63; Debord 1998, 147-148.

⁴³⁹ *TAM* IV 1.

of Greek trade in this market.⁴⁴⁰

Similarly, Prusias I helped Rhodes in 227 after an earthquake⁴⁴¹, and this must be explained in part by economic considerations. The agreement between the two powers was politically effective seven years later, when Byzantium decided to tax goods in transit through the Bosphorus, which impeded Rhodian trade and, consequently, the activity of the port of Nicomedia. Multiple contacts maintained with institutions and the Greek cities gave rise to exchanges of ambassadors.⁴⁴² However, as also attested in Olbia in the Roman Period, proxenies were instituted between cities partly for commercial reasons.⁴⁴³ Epigraphic testimony clearly shows the importance of the presence of the Bithynians in the various ports in the Black Sea and the Aegean that are evidence for trading activities (export to privileged cities). The unification of the Black Sea region gradually took place under Roman rule, and this enlarged the penetration areas of the maritime cities.⁴⁴⁴

The acquisition of Kios, Myrleia, Nikaia, Cierus, and Tiejium on the eastern border provided significant economic advantage to the kingdom. Chalcedon, Herakleia, Byzantium, and Apameia shone out as trading centres in the north-western Anatolia. The Bosphorus was important in linking the northern Aegean and the Black Sea. The king of Bithynia permitted publicans to control maritime traffic through the Bosphorus where ships were obliged to moor in Chalcedon or the port of Hieron and pay custom dues of up to 20 per cent of cargo value.⁴⁴⁵ The customs law of the province of Asia shows the significance of harbours such as Hieron, Kalchedon, and Apollonia for maritime trade in Bithynia.⁴⁴⁶

ii. From the Roman Republican Period to the Imperial

The Roman Empire acquired its second province in Asia Minor (Asia being the first) when Nicomedes IV bequeathed his kingdom to the Romans in 74 BC.⁴⁴⁷ In 63 BC, Pompey annexed the Western Pontus to Bithynia, which then became the province of Bithynia-Pontus and territory of the province was allocated to the cities.⁴⁴⁸ Apamea and Prusa were ascribed to the province of Bithynia-Pontus, while Apollonia was

⁴⁴⁰ Fernoux 2004, 63-64.

⁴⁴¹ Polybius V 90, 1; 77, 2.

⁴⁴² *OGIS* 341; Fernoux 2004, 64.

⁴⁴³ Fernoux 2004, 266, and fn. 119.

⁴⁴⁴ Fernoux 2004, 267.

⁴⁴⁵ Engelmann-Knibbe 1989, 199-200; Katsari 2011, 193.

⁴⁴⁶ Scramuzza 1940, 185. As is known, Emperor Claudius granted Byzantium tax exemption on revenues that the city took over maritime traffic and trade in Bosphorus. Tacitus, *Annales* XII 62-63.

⁴⁴⁷ Arslan 2007, 305-306.

⁴⁴⁸ Marshall 1968, 103-105; Broughton 1938, 736.

included in Asia. The southern boundary reached Mysian Olympus and stretched beyond the Sangarios River. The eastern limits reached as far as the city of Creteia and the small town of Tieum.⁴⁴⁹ The existing cities of Bithynia were re-shaped on the Roman model.⁴⁵⁰ In accordance with the *Lex Pompeia*, there were first *archons*, *agoranomoi*, secretaries, and *phylarchs* in Bithynia.⁴⁵¹ Pompey's organization preserved the land for the local inhabitants, and his decision required establishing a permanent network of self-governing cities to maintain their viability and autonomy⁴⁵², but as Jones pointed out, the urbanisation of Bithynia, Paphlagonia, and Pontus was superficial. The cities ruled enormous territories where primitive village life of the native population was continued.⁴⁵³ The province of Bithynia-Pontus was governed by the proconsuls for 150 years, from the restoration of the Roman Republic (27 BC) to the rule of the emperor Hadrian.⁴⁵⁴ The governing of Bithynia-Pontus was given to the authority of the Senate.⁴⁵⁵ Although Pompey's organization in Pontus is well known thanks to Strabo's accounts, information about the organization in Bithynia is lacking.⁴⁵⁶ As is known, the kings' personal goods and properties became the property of the Romans and his land became public land (*ager publicus*) which was farmed by publicans.⁴⁵⁷ According to Jones, tithe payment must have been particular to the Bithynians as a normal rent charged on royal lands in the Hellenistic kingdom, paid by native cultivators, and later paid on public lands under Principate. Pompey, while giving authority over royal lands to the cities, maintained the title of the Roman people to these lands and guaranteed the collection of the tithe, which the kings had levied on them via a company of Roman tax-farmers.⁴⁵⁸

During rule by the Roman Republic, the land was thoroughly exploited in peace and plundered in war. Efforts to develop cities arrived after the regime of Augustus and the peace of the empire brought recovery. As clearly shown in the previous section from the Hellenistic period onwards, Nicomedia was located in the region, which was more

⁴⁴⁹ Harris 1980, 869.

⁴⁵⁰ Jones 1971, 162.

⁴⁵¹ Mitchell 1993, 88-89. In the *Lex Pompeia*, the chief magistrates of each city were the *archontes*, annually elected officer between three or five officers leading by the first archon. It seems each city possessed a secretary, (*grammateus*), and an *agoranomos* to control market prices, and treasurers (*tamiai*, *argyrotamiai*) to inspect all spending of public revenues.

⁴⁵² Mitchell 1993, 162.

⁴⁵³ Jones 1971, 172.

⁴⁵⁴ Nicols 1990, 101-102.

⁴⁵⁵ Rostovtzeff 1916-1918, 10-11.

⁴⁵⁶ Jones 1971, 159; Mitchell 1982, 120-133.

⁴⁵⁷ Broughton 1938, 532.

⁴⁵⁸ Jones 1971, 161.

intensively populated and highly urbanised than Central Anatolia.⁴⁵⁹ In this regard, when the kingdom's territory was annexed to the empire, Nicomedia, as a capital city, was already urbanised. However, the economy of the city had been affected badly during the Mithridatic Wars and later civil wars.⁴⁶⁰ Increasing military expenses forced the kings to obtain loans from the *negotiatores* and bankers, who were mainly Roman *publicani* part of the powerful economic group consisting of Roman and Italian businessmen in the region. As is known, Nicomedes IV was indebted to members of the staff of the Roman generals.⁴⁶¹ These loans led to the seizure of mortgaged lands and the sale of persons into slavery. According to Diodorus, in 104 BC, the Consul Marius asked for auxiliary troops from Nicomedes III who responded that many Bithynians "had been kidnapped by the publicans and were serving as slaves in the Roman provinces".⁴⁶² As seen, the Bithynians were being sold into slavery by the Romans before 104 BC, and the kingdom was under the pressure of the moneylenders. To meet the demands of Aquilius and Cassius in 90 BC, Nicomedes IV had to attack Pontic territory for booty.⁴⁶³ In these severe economic conditions, Nicomedes IV announced the bankruptcy of the kingdom and probably his bequest of the kingdom was necessary because of his indebtedness to the Romans. As a result, the kingdom had suffered from exploitation by *negotiatores* in the late second century and early first century BC.

The disturbed times of the first century BC unbalanced the existing power structure in the region. To meet interminable Roman demands for military expenses, taxes and other charges increased the power of Roman and Italian *negotiatores*.⁴⁶⁴ Bithynian cities as well as other Asian communities were compelled to borrow money at high rate of interest to pay taxes. The land thus was acquired by the Roman and Italian *negotiatores* either in exchange of debt or by direct purchase from the locals who sold their properties as a last resort to pay taxes.⁴⁶⁵ Therefore, landownership pattern was changed by the Roman rule in Bithynia. However, it is worth examining whether this was the case in Nicomedia in particular. (For this issue see discussion in Chapter 3, I,iv)

⁴⁵⁹ Mitchell 1993, 80.

⁴⁶⁰ Appian V 14, 139. One example showing the burden on the city is Pompey's imposition on Nicaea and Nicomedia. According to Appian, during the struggle between Pompey and Anthony, Pompey took Nicaea and Nicomedia and he gained large supplies of money, which made him powerful enough in many respects.

⁴⁶¹ Broughton 1938, 552.

⁴⁶² Diodorus of Sicily XXXVI 3; Broughton 1938, 541; see also Westermann 1984, 66.

⁴⁶³ Broughton 1938, 543.

⁴⁶⁴ Mitchell 1993, 162.

⁴⁶⁵ Mitchell 1993, 30, 160. Harris 1980, 870-874.

iii. From the Imperial Period to the Late Antiquity

There is no doubt Augustus' reign brought wealth and gradual recovery to the cities. After a long term of chaos and distress in Asia Minor, conditions started to improve under the Julio-Claudians. For two centuries after Augustus, Asia Minor was free from civil warfare and foreign invasions, and remained free from brigandage and piracy.⁴⁶⁶ Under the Flavians and Antonines, the prosperity of the cities became widespread. In the age of the Severans, however, the prosperity of the previous age started to decline. Subsequent civil wars (AD 235-285) affected the troops and weakened the army, allowing the Persians to invade Syria, Cilicia, and Cappadocia in AD 252-260. While south-eastern Asia Minor was under threat, the northern and western coasts were also threatened by the plundering expeditions of Scythians and Goths, whose raids were extended to Ephesus and into the interior of Phrygia, Galatia, and Cappadocia. Recovery under Aurelian and reorganization under Diocletian helped to rebuild the economic structure.⁴⁶⁷

Apparently, there was no major change in terms of the prestigious position of Nicomedia under the Roman rule. When the province of Bithynia-Pontus was created by Pompey, it was the leading city in a province slightly bigger than the kingdom's territory. The city was situated on the main roads through west to the east and possessed a natural harbour. What changed was the opening of free communication between cities under Roman rule in comparison to the defined borders of Hellenistic kingdoms. The communication and the formation of new cities brought about two results; first, the importance of the cities on the main roads into the interior increased; second, the importance of the small coastal cities of Aeolis, Ionia and Caria declined.⁴⁶⁸

Rivalry between cities was instigated by the new hegemony. In this way, rival cities competing for titles and reputation became more dependent on the Empire. In 29 BC, Augustus allowed the cities of Pergamon and Nicomedia to build temples of worship dedicated to himself and the goddess Roma.⁴⁶⁹ Thus, Nicomedia became the imperial cultic centre of the province and the centre of the Bithynian Assembly, housing the Temple of the Assembly.⁴⁷⁰ Tiberius' adopted son Germanicus took away Nicaea's title of *metropolis* and presented it to Nicomedia in AD 18.⁴⁷¹ Dio Chrysostom's speech from the 1st century AD, entitled "Peace with the People of Nicaea", addressed

⁴⁶⁶ Broughton 1938, 903.

⁴⁶⁷ Broughton 1938, 794, 903-909; Ensslin 1971, 383-407; Kolb 1987; Williams 1985.

⁴⁶⁸ Broughton 1938, 794.

⁴⁶⁹ Cassius Dio LI 20, 6-9.

⁴⁷⁰ Harris 1980, 876; Mitchell 1993, 219.

⁴⁷¹ RG 1908, 513.

the dispute that had risen between Nicaea and Nicomedia during the rule of Trajan about which city should lead the parade of the festival of the Bithynian Assembly.⁴⁷²

In the reign of Trajan, Pliny the Younger was assigned to the province as a governor in c. AD 110 because of provincial mismanagement and was charged with improving the situation. However, as B. Levick pointed out, under the Principate the balance of the empire was shifting towards northern Europe, for many reasons. The first primarily important reason was the advance of Roman power towards the Danube and the establishment of the new province of Dacia under the reign of Trajan. The second reason was that while the Euphrates was a barrier against the Parthians, there were also threatening tribes, e.g. the Sarmatians and Scythians who lived beyond the Caucasus in southern Russia. Consequently, the increased importance of Bithynia was clear to Trajan, and Pliny the Younger was appointed to the province to provide a good standard of administration to make it superior in diplomacy, strategy, and communications for the current and future needs of the empire.⁴⁷³ According to G. Salmeri, Pliny's duties were to make feasible Trajan's forthcoming campaign to the east.⁴⁷⁴

Pliny arrived at Bithynia and stayed in the province two years. During his term of office, he corresponded with Emperor Trajan to discuss the situation of Nicomedia. Thus, Pliny's letters are extremely important sources of information, especially for the economy of Nicomedia. He gives a report of investments on unfinished buildings in the Bithynian cities such as theatre in Nicaea and bathhouse in Claudiopolis. In this context, in one of his letters, Pliny mentions the Nicomedian aqueduct, a project in which the city had invested, but which it could not finish. Although, 3, 329,000 HS has been spent for the construction of the aqueduct, it has been wasted. The cash amount in the hand of civic authority is striking here, if a comparison is made to understand the economic value of the amount. The theatre in Iguvium in Umbria, which was built similarly cost 3,325,120 HS (70.37 m diameter) in the 1st century BC gives a sense of scale of wasted money in Nicomedia.⁴⁷⁵ Pliny had found a spring and proposed another project to Emperor Trajan. Trajan agreed to this, and asked him to find how the Nicomedians' money has been wasted and who was responsible for this mismanagement.⁴⁷⁶

⁴⁷² Dio Chryostom, *Orationes* XXXVIII.

⁴⁷³ Levick 1979, 125-127.

⁴⁷⁴ Salmeri 2005, 192.

⁴⁷⁵ *CIL* XI 5820; Sear 2006, 21. It should be noted that the cost and labour were higher under the Principate compared to the Republican period. Moreover, the nature of the projects differs in terms of specialised workmanship e.g. land surveyor, engineer which were required to build an aqueduct.

⁴⁷⁶ Pliny, *Epistulae* X 37-38.

In another letter, Pliny speaks of an important project concerning Lake Sophon and he recommends that Lake Sapanca be joined to the Sea of Marmara by a canal, to make cheaper and easier access to the resources beyond the lake by facilitating transport. Though it could not be achieved, however, it shows the governor's eagerness in making an investment in the city to promote imperial economic policy.⁴⁷⁷ (For discussion of canal scheme, see p. 164-167)

As a result, during the reign of Trajan and Hadrian, an important change occurred. Financial situation of the province led emperors to dispatch special *legati* or *correctores* whose main duty was to regulate the municipal life of the province. Conflict between the Bithynians and their senatorial rulers showed the problematic situation in the province, as is many times referred by Tacitus, Cassius Dio and Pliny.⁴⁷⁸ In the second century AD, the military importance of the province on the military road from lower Moesia to Syria increased although it was not a frontier province. Moreover, there was an increasing economic relation between the Crimea and Bithynia and Pontus within the Black Sea context.⁴⁷⁹

Pliny the Elder mentions twelve cities within the province, listed as Caesarea-Germaniceia, Apamea, Prusa, Prusias ad Mare, Nicaea, Nicomedia, Prusias ad Hypium, Juliopolis, Bithynium-Claudiopolis, Creteia-Flaviopolis, Chalcedon, and Byzantium in the 1st century AD.⁴⁸⁰ Two new cities were formed in Bithynia during Augustus' reign. One of these was styled Caesarea Germaniceia and the other one was Juliopolis on the upper course of the Sangarius.⁴⁸¹

Many small settlements are attested as Roman settlements in comparison to Hellenistic times in the territory of Nicomedia (table 1, figure 3). These settlements can be identified by inscriptions found *in situ*. On the other hand, it is not clear where the inscriptions were found, so it is difficult to pinpoint several other villages, including to koinon Agrokometon, Dradizanoi, Kome Dolanon, Kome Rhakelon, Paiksiaitene, Kome Tyristata, Demos Rhizouragon, Kome Semane/Simana, Lakkeno[i], Agros Kaloumenos Kyberon.⁴⁸²

⁴⁷⁷ Pliny, *Epistulae* X 41.

⁴⁷⁸ Tacitus, *Annals* XIV 46, 1; XII, 22, 4; Cassius Dio LX 33, 5; Pliny, *Epistulae* IV 9; V 20; VI 5; VI 13; VII 6, VII 10. Marek 2003, 48. Testimony of these ancient sources show that Bithynians complained many proconsuls and officials accusing *repetundae* to the Senate. One of well-known example is proconsul M. Tarquinius Priscus who was a proconsul in Bithynia in AD 59/60. Bithynians charged him with bribery in AD 61 and the Senate found him guilty of bribery and dismissed him.

⁴⁷⁹ Rostovtzeff 1916-1918, 10-11.

⁴⁸⁰ Pliny the Elder, *Naturalis Historia* V 143; Jones 1971, 164.

⁴⁸¹ Jones 1971, 162.

⁴⁸² Wilson 1960, 113, Ruge 1936, 489.

Table 1: Settlements attested in the territory of Nicomedia

Names of settlements attested in the territory of Nicomedia	Reference
Agros Kaloumenos Kyberon	Wilson 1960, 113, Ruge 1936, 489.
Arbeila (near Tuzla)	Dörner 1941, 83-85. ⁴⁸³
Baradendromia (Güvemler)	<i>TAM</i> IV 100. ⁴⁸⁴
Byzapena (Yağcılar)	<i>TAM</i> IV 72. “Byzapenon”, dedication.
Calpe (Kerpe)	Talbert 2000, 786-792.
Chelaita (Şile?)	Talbert 2000, 786-792.
Chelai (near Cebice)	Talbert 2000, 786-792.
Desa (near Kandıra)	<i>TAM</i> IV 243. “kome Desanon”, sarcophagus.
Dolanon	Perrot 1876, 412, Nr. 8. “kome Dolanon”
Dradizanoi	Mordtmann 1887, 168 no. 1.
Kalasyrta (Solaklar)	Şahin 1974, 90.
Kassa (near Sapanca)	Wilson 1960, 113; Dörner 1941, 105-106. “kome Kassenon”.
Koinon Agrokometon	Perrot 1876, 413, Nr. 15.
Koubaita (Gündoğdu)	<i>TAM</i> IV 56. “Koubaitenois”, dedication to Zeus.
Kypra (Omurlu)	<i>TAM</i> IV 267. “kome Kypra”, sarcophagus.
Lakkeno[i]	<i>TAM</i> IV 16, 17, 18, 328.
Leptoia (Kayacık)	<i>TAM</i> IV 329. “kome Leptoion”, sarcophagus.
Libyssa (Karaburun)	
Morzapena (near Kandıra)	<i>TAM</i> IV 65. “kome Morzapenon”, dedication.
Nerola (Karakadılar)	<i>TAM</i> IV 87. “kome Nerola”, dedication to <i>Trapezae</i> (<i>Theois Thrakiois?</i>).
Paiksaitene	<i>TAM</i> IV 88.

⁴⁸³ Five different forms of the village name were attested in the inscriptions found in the territory of Nicomedia.

⁴⁸⁴ “Baradendromianon phylitai”, dedication. *Para* and *dendro* may well indicate that this village was near a wooded area. Indeed, the modern location of the village is near wooded area in Kandıra.

Pentephyle/Triknaita (Göğüşler)	<i>TAM IV 269.</i> “kome Pentephyles (sic)”, sarcophagus.
Petrozetoï (near Ishakçılar)	<i>TAM IV 60.</i> “en phyle Petrozetoï”, dedication to Zeus Sabazios by Seios Zardoelos (Thracian?) dated to AD 98-99.
Prepa (Ekşioğlu)	<i>TAM IV 231.</i> “kome Prepanon”, sarcophagus.
Prindea (Hamidiye)	<i>TAM IV 23.</i> “Prindeanon”, honorary inscription to Hadrian, AD 125-6.
Psarela (Yağcılar)	<i>TAM IV 51.</i> “kometai Psarelanoi”, dedication to Apollo.
Rhakelon	<i>TAM IV 272.</i> “kome Rhakelon”
Rhizouragon	Kleonymos-Papadopoulos 1867, 159, no. 5. “demos Rhizouragon”
Rhoe (Kefken)	Talbert 2000, 786-792.
Psillion (Ağva)	Talbert 2000, 786-792.
Thynias (Kefken adası)	Talbert 2000, 786-792.
Semane/Simana	Mordtmann 1887, 172, “kome Semane/Simana”.
Sirkanos (Kayalı Dağ)	<i>TAM IV 49.</i> “Demos Sirkanos”, dedication to Apollo.
Soka (Kaşıkçı)	<i>TAM IV 249.</i> “kome Soka”, sarcophagus.
Tenba (Bezirgan)	<i>TAM IV 68.</i> “kome Tenba”, dedication to “Tea Pyriane” by the gymnasiarkhos.
Trikomia (Tekeli)	<i>TAM IV 95.</i> “Trikomias”.
Tyristata	Perrot 1876, 412, Nr. 15. “kome Tyristata”.

This list shows that villages existed in Nicomedian territory. These villages were integrated into Nicomedia, which had an easily accessible market economy.⁴⁸⁵ Its vast territory possessed many villages even in the time of Xenophon in the pre-Hellenistic period, and this account of the names and sites of villages is hard to parallel

⁴⁸⁵ Mitchell 1993, 181.

elsewhere.⁴⁸⁶ On figure 3, it can be clearly seen that these villages were located on a parallel line to the secondary roads running from Nicomedia to Artanes (Şile). Moreover, Şahin's work identified the road between Nicomedia and Kandira.⁴⁸⁷ (For this road see discussion in chapter 4)

When one examines the foundation structure of the villages, Trikomia can be understood as a *synoecism* of three villages. Another *synoecism* example was *kome tes pentephyles*, which was *synoecism* of five tribes near Nicomedia.⁴⁸⁸ The villages were spread alongside the road north-west of Nicomedia. Moreover, the Roman bridge is still in use at Kutluca (west of ancient Nerola) and connects the two banks of the Psillis River (the modern Göksu).⁴⁸⁹ There was a Thracian dome-shaped tomb found in Kutluca (23 km north-west of İzmit) dated to the fourth century BC by Mansel.⁴⁹⁰ The site of the tomb is close to the Roman village Nerola (today Karakadılar, on figure 3). Therefore, it indicates early Bithynian settlements in this area. When one moves further north, the aforementioned village of Pentephyle/Triknaita, the phyle Petrozetoi, Baradendromia (inhabited by *phylitai*) and Lakkenoi show the *phyle* structure.⁴⁹¹ It seems Xenophon's "many inhabited villages" in later Nicomedian territory observed in 400 BC, continued under the Hellenistic Kingdom as their tribal forms called *phyle*. When the Romans entered the Bithynia, they combined or enlarged these tribal settlements and gave them more integrated village forms. Rural settlements in the territory of the city were important suppliers of the city and for the Romans who aimed to get maximum benefit, especially from exploiting the marble and timber resources.

There are four inscriptions found at Ihsaniye on the gulf of İzmit near Nicomedia related to a communal festival and the benefactors of a group of five villages between AD 93/4 and 134/5.⁴⁹² As a result, the list of villages in the territory of Nicomedia reveals a vivid picture on village life, which was different than the depressing observations of Galen. Galen describes bad health conditions of city dwellers and he explains the reason as insufficient diet and disease caused by frequent famines in the empire.⁴⁹³

⁴⁸⁶ Wilson 1960, 112.

⁴⁸⁷ Şahin 1974, 73.

⁴⁸⁸ Mitchell 1993, 185.

⁴⁸⁹ Dörner 1941, 33.

⁴⁹⁰ Mansel 1973, 57.

⁴⁹¹ Dörner 1941, 41-43; Adak-Stauner 2006, 156.

⁴⁹² Wilson 1960, 114; Mitchell 1993, 187; Villages were listed as *Zbalenoi*, *Baitenoi*, *Gauriano*, *Lakkenoi*, *Troialenoi*. It is interpreted that these villages were subdivisions of tribe of Lakkenoi. Adak-Stauner 2006, 156.

⁴⁹³ Galen 486, trans. O. Powell. Garnsey-Saller 1987, 97; Mitchell 1993, 169 and 187.

The city took the side of Severus by undertaking to supply the prospective emperor's army. This was obviously a major economic challenge for the city of Nicomedia, but it reveals the importance of the city for army supply. Consequently, another rivalry between Nicomedia and Nicaea began, for Nicaea supported Niger. Following Septimius Severus' ascent to the throne⁴⁹⁴, his victory was celebrated on Nicomedian coins.⁴⁹⁵ Therefore, Nicomedia probably benefited from Emperor's generosity in following years.

From the third century onwards, Asia Minor became a mainstay of the Empire thanks to relative freedom from invasion, self-sufficient productivity, considerable natural resources and the availability of peasants. Inhabitants were subjected to the severe policies of emperors who imposed military demands for ineffective campaigns, and they were oppressed by the lawlessness of soldiers themselves.⁴⁹⁶ These conditions caused depopulation, left the land abandoned and uncultivated, and reduced the standard of living in the cities.⁴⁹⁷ However, there were two factors which protected Asia Minor from the worst scenario. It was not as affected by foreign invasions as Syria and the Balkans, and it was an economically self-contained region, and therefore probably more able than many to produce staple. Finally, the great development of cities within it had never fully superseded its basic dependence upon its villages.⁴⁹⁸ It seems that Nicomedia was affected by the general conjuncture and served as a military-logistic city during that period. As for economic decline in the third century crisis, Nicomedia was more fortunate and experienced rather beneficial change thanks to Diocletian.

In this period, the city also hosted a Roman military garrison, because of its strategic location and because the emperor's eastward campaigns required the presence of Roman soldiers. The emperor Caracalla, who spent the winters of AD 214 and 215 in Nicomedia⁴⁹⁹ while preparing his army for the campaign into Parthia⁵⁰⁰, ordered the construction of baths in the city during his visit.⁵⁰¹ Then in the winters of AD 218 to 219, the emperor Elagabalus was hosted in Nicomedia on his return from Antioch. During the winters of AD 233-234 and AD 242-243, the Emperors Severus Alexander and Gordian III even brought their royal courts to Nicomedia.⁵⁰² The accommodation of

⁴⁹⁴ Texier 1997, 103-4.

⁴⁹⁵ *RG* 541, 198.

⁴⁹⁶ Aurelius Victor, *De Caesaribus* 7; Broughton 1938, 912.

⁴⁹⁷ Herodian VII 3, 3; Broughton 1938, 910-911.

⁴⁹⁸ Broughton 1938, 913; Levick 2004, 198.

⁴⁹⁹ Cassius Dio LXXVII 17-8.

⁵⁰⁰ Harris 1980, 897.

⁵⁰¹ Wilson 1960, 108.

⁵⁰² Bosch 1942, 36.

the Emperors and the presence of the army very likely brought an economic burden on the civic economy as well as an acceleration of the flow of goods towards Nicomedia. Between AD 257 and 258, Nicomedia faced attacks from the Goths like the other cities in Bithynia. Emperor Valerian's attempt to move the garrison to the eastern frontier to protect Roman territory from the Sassanid threat in the East, allowed the Goths to land and occupy Nicomedia in AD 258. This resulted in heavy plundering and ruin to the city caused by the Goths.⁵⁰³

Diocletian revised administrative structure of the empire, which had existed since the Augustan era.⁵⁰⁴ During his reign, the main centre of the Roman state in Anatolia had moved further eastwards because of the attacks from the Sassanids.⁵⁰⁵ Diocletian made Nicomedia, in which he had been crowned emperor, his capital⁵⁰⁶, and he resided in Nicomedia during the tetrarchy period. For the emperor's purpose, Nicomedia was suitable as a capital because of its harbour and the ease of transportation from the city to the northern and western borders.⁵⁰⁷

After being Hellenistic capital, Nicomedia became a capital for a second time and mostly benefited from this situation, while severe economic conditions prevailed in the rest of the Empire. Diocletian aimed to create a city that would be equal to Rome in terms of its appearance. According to contemporary account of Lactantius, Diocletian had palaces built for his wife and daughter, as well as for himself. In addition, he ordered the construction of a shipyard, a circus, a mint, and a weapons workshop. Lactantius mentions how the Emperor was dissatisfied with the building programme and lavishly spent money to improve it.⁵⁰⁸ There is no trace of the hippodrome that Diocletian had built out of his interest for games in modern İzmit.⁵⁰⁹ Diocletian surrounded the city with a fortification and repaired damaged sections of the wall. He also restored the completely ruined Antoninus baths and made it available for public use. The mint and the production of weapons were very important for the economy of the city and region. The weapons workshop was founded to supply the main needs of the *tetrarch*. The coin mint, which opened in 294, supplied all needs of Bithynia and Pontus.⁵¹⁰ Silver and copper mines in Bithynia and Pontus must have been exploited to

⁵⁰³ Kean 2005, 139; Foss 2002, 2.

⁵⁰⁴ Mattingly 1971, 324-7.

⁵⁰⁵ Ostrogorsky 1981, 40.

⁵⁰⁶ Kean 2005, 167.

⁵⁰⁷ Foss 2002, 3.

⁵⁰⁸ Lactantius, *De Mortibus Persecutorum* 7-8, 10.

⁵⁰⁹ Texier 1997, 104. The building stones used for the hippodrome were possibly re-used in another structure.

⁵¹⁰ Foss 2002, 3-4.

meet the demand of the mint and weapon workshop.⁵¹¹ Diocletian greatly contributed to the development of the city not only with regard to architecture but also in terms of culture. From within the boundaries of the Empire, famous sculptors and public speakers were brought to Nicomedia.⁵¹² In this period, Nicomedia was one of the four greatest Roman cities, alongside Rome, Antioch, and Alexandria. While the city flourished in this way, new towns emerged and some of the old villages remained in this period (see table 2).

Table 2: Late Roman settlements attested in the territory of Nicomedia.

Names of the settlements	Reference
Achyron (suburb of Nicomedia, <i>Proasteion tes Nikomedeias</i>)	Ruge 1936, 489.
Brunca (Hereke/Yarımca)	Talbert 2000, 786-792.
Charax (Hereke)	Talbert 2000, 786-792.
Chelai (near Cebice)	Talbert 2000, 786-792.
Dakibyza (Gebze)	Talbert 2000, 786-792.
Dekaton (10 miles east of Nicomedia)	Talbert 2000, 786-792.
Diolkides (opposite Zeytinburnu)	Talbert 2000, 786-792.
Elaia (Zeytinburnu)	Talbert 2000, 786-792.
Eribolon (road station at Ihsaniye)	Talbert 2000, 786-792.
Geragathe (Kirazlı)	Talbert 2000, 786-792.
Herakleion (Ereğli)	Talbert 2000, 786-792.
Libyssa (Karaburun)	Talbert 2000, 786-792.
Limnai (near Hersek)	Talbert 2000, 786-792.
Psamathia (suburb of Nicomedia, <i>Proasteion tes Nikomedeias</i>)	Ruge 1936, 489.
Psillion (Ağva)	Talbert 2000, 786-792.
Rhoe (Kefken)	Talbert 2000, 786-792.
St. Autonomous (Tepeköy)	Talbert 2000, 786-792.
Thynias (Kefken adası)	Talbert 2000, 786-792.

The settlements in the table above are identified as Late Roman settlements in the territory of Nicomedia (table 2). Regio Tarsia and Potamoi also remained on the

⁵¹¹ Strabo XIII 56, Strabo mentions mines near Andeira which must have been Balya Maden which is known for its silver mines near Balıkesir today. Chalcedon also had sources of copper and semiprecious stones. Westropp 1874, 68; Pitarakis 1998, 141-185.

⁵¹² Rand 1971, 607-8.

edge of the south-eastern border. There was a relative decrease in the number settlements in comparison to the early period. Moreover, newly emerged settlements were mainly located on the coast and highlight increased importance of the Pilgrims' Road, which ran from Constantinopolis to Nicomedia, Nicaea east to Ankara and then south through Tyana (Bor) to the Cilician Gates in the late third century onwards.⁵¹³ However, it would be misleading to make conclusions about the settlements since survey archaeology is still wanting in Nicomedian territory. It only reveals the situation with regard to numbers of settlements in this period.

The accession of Constantine to the throne was beginning of a new era for Nicomedia and the entire Empire.⁵¹⁴ Constantine (AD 324-337) ordered the rebuilding of a new church in place of that burnt by Diocletian in Nicomedia. However, he established a new capital in Byzantium, which became Constantinople in 330. The foundation of Constantinople was another important milestone for Nicomedia. During the construction of the new capital, many statues were transported to the new city's hippodrome to be erected there.⁵¹⁵ Lastly, there is a generally accepted idea that the importance and value of Nicomedia decreased after foundation of Constantinople. However, this decrease can be explained in political terms that Nicomedia was no longer a capital and a central point. Probably the greatest change to the economic development of Nicomedia occurred after foundation of Constantinople. The new capital apparently created an enormous market for Nicomedia, which was in the backyard of Constantinople. Economic effect of Nicomedia on the supply of Constantinople can be better observed in the Byzantine and Ottoman periods. As attested, the land of Nicomedia was used to grow products, which were unable to grow in Constantinople in the 16th-17th centuries.⁵¹⁶ As known, livestock raising in Nicomedia provided fresh meat to Constantinople in the Byzantine times and later Ottoman period.⁵¹⁷ Travellers' accounts, especially statistical accounts given by Cuinet confirm the importance of export products from Nicomedia to Constantinople in the Ottoman times.⁵¹⁸ If the supplier role of the city of Nicomedia commenced by the foundation of Constantinople, movements of goods from Nicomedia to Constantinople must have provided wealth to the city. It thus can be proposed that while the capital city

⁵¹³ Winfield 1977, 152; French 1985, 26.

⁵¹⁴ Foss 2002, 6; Ruge 1936, 477.

⁵¹⁵ Foss 2002, 7.

⁵¹⁶ Faroqhi 1984, 97.

⁵¹⁷ Mango 2000, 199.

⁵¹⁸ For export of grape and many other products in large quantities, see Cuinet 1895, 324, for timber and firewood export see Marcellus' account (1819) in Ulugün 2008, 141. Meiggs 1982, 203.

became the main centre of consumption, Nicomedia acted an essential economic role as a main productive city, which supplied the capital.⁵¹⁹ However, more archaeological evidence are needed to prove supplier role of Nicomedia in late antiquity.

Nicomedia was hit by a large earthquake, which resulted in massive destruction in AD 358.⁵²⁰ Emperor Julian, who spent many years there, helped and donated a considerable amount of money towards its restoration.⁵²¹ In the same year, the city was affected by another earthquake in which, according to Ammianus Marcellinus' contemporary account, the rest of the city that had still remained standing after the earlier earthquake collapsed.⁵²² Another earthquake occurred in AD 362 and several other major catastrophes until the final earthquake in AD 533/4. Nicomedia lost its magnificent appearance, but continued to exist in the Byzantine Period. During the rule of the Emperor Justinian, churches, aqueducts, and bath-houses were re-built, which revived the city again.⁵²³

III. Conclusion

The city of Nicomedia chronologically became a Hellenistic capital, *metropolis* of the province, capital of the Eastern Empire and supplier city of Constantinople. Therefore, the economic development of the city was formed within these four periods.

Taken together, the results of this chapter suggest that, first; the struggle between the Greek colonies and the Bithynian tribes indicates that the Bithynian resistance hindered the Bithynian territory from the Greek hegemony. The village settlements of the pre-Hellenistic period, apparently survived under the possession of local inhabitants in the Hellenistic period. The existing evidence also shows that this territory remained in the hand of the Bithynian landowners in the Roman period. This must have created fewer opportunities for new Roman landowners in Nicomedia. The third chapter investigates landownership pattern in more detail.

Second, the territory of Nicomedia, occupied by the Bithynian tribes before the city was founded, had already been around intensive commercial activities between the Black Sea region and the Aegean Sea especially by commencing the Greek Colonisation. When the city was founded and became a capital in the Hellenistic period,

⁵¹⁹ The increased economic importance of Nicomedia is discussed in the papers of Mango and Dagron's volume: A. Mango-G. Dagron, *Constantinople and its hinterland: papers from the twenty seventh spring Symposium of Byzantine Studies*, Oxford 1993.

⁵²⁰ Guidoboni et al. 1994.

⁵²¹ Ammianus Marcellinus XII 9, 3.

⁵²² Ammianus Marcellinus XXII 13, 5.

⁵²³ Texier 1997, 109.

it grew rich. Although there was an unstable political condition due to prevailing military campaigns and wars during this period, it seems that Bithynian kings sought to establish political and commercial links with the Black Sea region as well as the Aegean and that they paid attention to these economic relations. After the rise of the Romans in the west, the political and economic balance changed in Asia Minor. Nicomedia was one of cities in Asia Minor, which had been economically damaged during the Mithridatic Wars and civil wars, and plundered by the publicans in the late Republican period. For that reason, it can thus be suggested that uneven political and economic conditions before the Roman Imperial period prevented the city from achieving much economic development. The city, however, must have enjoyed a vivid and independent economic life and peaked as the *metropolis* of Bithynia under the Principate. Indeed, site numbers in the territory in this period indicate an increase in rural settlements. When it comes to the third century, the city became a capital of the Eastern Empire and took an exceptional economic role. However, the economy of Nicomedia in this period should mostly be considered on smaller scale within the economy of Rome, which was a centre of consumption. There must have been a strong imperial control over the economic activities of the city, which was primarily organised to serve the imperial entourage during this period. As a tetrarchic capital, the economy of Nicomedia apparently reflects a consumer capital economy. As a natural result of this, there was possibly an increase in population, urbanisation, and imported goods. Nevertheless, this only occurred in the urban centre. In fact, there is an opponent contradiction of rural expansion as the numbers of rural settlements decreased in comparison to previous period, and few new settlements were placed on the land route in the late third century. By the foundation of Constantinople, Nicomedia played a supplier role like the harbour city Ostia, which thrived economically by means of supplying Rome. Therefore, it is worth focusing on the economy of the city under the Principate, rather than the Hellenistic and the tetrarchic period, which largely represent an exceptional consumer economy. The next three chapters pay a particular attention whether there was a growth in the economic activities of the city under the Principate investigating population, carrying capacity, and commercial commodities.

CHAPTER III

The Resources of Nicomedia and its Production-Consumption Patterns

The Finleyan minimalist perspective on trade and the self-sufficiency of cities was one of the major points of debate in ancient economic studies. Whilst most cities were largely taken for granted to be involved in agriculture, due to the lack of quantitative and qualitative data derived from archaeological evidence, the knowledge of self-sufficiency is mostly qualitative. It relies on ancient written sources, which refer to ‘fertile areas/rich in resources’ or the typological interpretation of numismatic/epigraphic material. For example, while Libanius praised the fruitfulness of its soil in the fourth century AD⁵²⁴, Eustathius reports that the Bithynians are proud of possessing very fertile land.⁵²⁵

The aim of this chapter is to examine production and consumption patterns of Nicomedia and gauge the self-sufficiency of Roman Nicomedia, where systematic excavation has not yet been conducted. As pointed out by Malanima and Lo Cascio the availability of natural resources did not remain stable for centuries and carrying capacity is not a static element.⁵²⁶ There are many variables and changes in production and consumption patterns over time, which need to be examined in the case of Nicomedia. Taking L. Robert’s approach further, which qualitatively evaluates economic activities of Nicomedia and Prusias ad Hypium (Bithynia) in the light of travellers’ accounts from the 18th and 19th centuries as well as ancient sources⁵²⁷, it questions the extent to which figures from the pre-industrial period could provide an analogy for the calculation of carrying capacity in Nicomedia.

In particular, it deals with cereals, a staple of the ancient diet, in order to estimate how much was produced and consumed in the city, determining the extent to which Nicomedia fits into a self-sufficient agricultural city type. This consequently sheds some light on civic income and expenses.

The chapter therefore has been divided into two main sections. The first section titled “The Resources and Production Patterns of Nicomedia” starts with defining the territory of Roman Nicomedia and then examines variables and changes affecting carrying capacity e.g. the physical setting, which includes the physical geography as a

⁵²⁴ Libanius, *Orationes* LXI 7-10.

⁵²⁵ Eustathius ad Dion, 793 in *GGM* II 355; Debord 1998, 163, Robert 1978, 424.

⁵²⁶ Lo Cascio-Malanima 2005, 18, 26.

⁵²⁷ Robert 1978, 408-428 and 1980.

whole, e.g. flora-fauna, climate, and soil type in Nicomedia. Subsequently, it deals with agricultural products, viticulture, agricultural patterns, measures, techniques, animal husbandry, exploitation of land and land ownership in the city through travellers' notes, ancient written sources and other ancient material, e.g. inscriptions, and coins. Having examined the economic basis and estimated the carrying capacity, the second section deals with consumption patterns of the city and evaluates the results derived in the first section. Comparing the population figures from pre-industrial periods and relying on urban and rural areas of the ancient city, it estimates the population of the city and questions the self-sufficiency of Roman Nicomedia.

I. The Resources and Production Patterns of Nicomedia

i. Territory and Physical Setting of Nicomedia

Examining the territory, physical setting, and location of any region or city is essential prior to evaluating the basis of the economic structure. The physical factors, e.g. landscape, climate, and soil have an effect in both quality/diversity and quantity of natural products. Many economic inferences can be made by looking at the physical features of the city and the changes occurred since antiquity. By doing so, a comparison can be made between antiquity and pre-industrial times in Nicomedia/İzmit. First, the territory of Nicomedia must be defined. Secondly, changes/similarities in the physical setting from the Roman times to pre-industrial period need to be presented in order to calculate carrying capacity of Nicomedia.

In the 1st century AD, in the *Natural History*, Pliny the Elder placed Nicomedia in the sixth region, which also included Rome⁵²⁸, while Ptolemy calculated the position of Nicomedia as 57° 30' east and 42° 30' north in the 2nd century AD.⁵²⁹ The Marmara region, particularly the eastern end of the Gulf of İzmit (the Gulf of Astakos) and its surroundings, the Kocaeli Peninsula, is roughly equivalent to ancient Bithynia. According to Strabo's account, from the 1st century BC, the Parthenius (Bartın Stream) is commonly accepted as the geographic division, which separates Bithynia from Paphlagonia. On the north, it was bounded by the Black Sea, on the west by the Propontis, on the south-west it was separated from Mysia by the River Rhyndacus, and on the south, it adjoined Phrygia Epictetus.⁵³⁰ The west coast is indented by two deep

⁵²⁸ Pliny the Elder, *Naturalis Historia* V 148.

⁵²⁹ Ptolemy, *Geographika Hyphegesis* V 1, 2. Today, it is located between 29° 22' and 30° 21' longitudes east, and 40° 31' and 41° 13' latitudes north.

⁵³⁰ Strabo XII 4, 1: "Bithynia is bounded on the east by the Paphlagonians and Mariandyni and some of the Epicteti; on the north by the Pontic Sea, from the outlets of the Sangarius River to the mouth of the

inlets, the northernmost, the Gulf of Astakos (today the Gulf of İzmit) separated by an isthmus from the Black Sea; and the Gulf of Kios (the Gulf of Gemlik).

The territory of Roman Nicomedia was roughly defined by Ruge and Robert.⁵³¹ According to their definitions, it reached the Gulf of İzmit on the south, and it ran as far as Dakibyza where it adjoined the territory of Chalcedon on the west. The ancient town of Libyssa (Diliskelesi) belonged to Nicomedia, and Panteichion was in the territory of Chalcedon together with Dakibyza.⁵³² Milestones found at Libyssa dated to Gordian III read “a Nicomedeia ad fines xxxi” and itineraries show that this stone should have been erected close to the *mutatio* Pontamus (Potami, probably Üçburun today) west of Gebze. The distance between İzmit and Gebze is 40 km, which implies that the stone has come from a point east of the town.⁵³³ Hence, it could conceivably be accepted that Gebze, which is the Byzantine Dakibyza, was on the western border. Şahin’s work illuminates the extent of the city in the light of new inscriptions and suggests that the north-western border must have roughly been drawn along the Artanes River to Şile.⁵³⁴ On the north, the city reached the Euxine. Inscriptions show the existence of two villages between Ağva and Kandıra called Tenba and Desa. This suggests that they were in the territory of Nicomedia, as there is no any other city with which they could be associated between Prusias ad Hypium in the east and Chalcedon in the west.⁵³⁵ Although Ruge suggests that the Gulf of Nicomedia was a natural border on the south, the territory of Nicomedia extended to the opposite side of the Gulf.⁵³⁶ Four inscriptions found in Ihsaniye (south of Praenetus/Karamürsel) reveal the texts of decrees (dated to AD 93/4 and 134/135) related to five villages in the territory of Nicomedia. There is another town near Ihsaniye known as Eribolon. *In situ* inscriptions carry the names of the villages around Nicomedia and this presents the radius of settlement.⁵³⁷ As there is no other city near these villages, it is evident that they were in the territory of Nicomedia. As is known, Nicaea was a landlocked city and always was in need of a port

sea at Byzantium and Chalcedon; on the west by the Propontis; and towards the South by Mysia and by Phrygia ‘Epictetus’, as it is called, though the same is also called ‘Hellespontiac’ Phrygia.”

⁵³¹ Ruge 1936, 488-489; Robert 1978, 425.

⁵³² Eutropius IV 5, 2; “*Hannibal apud Libyssam in finibus Nicomedensium sepultus est.*”, Fernoux 2004, 134.

⁵³³ Dörner 1941, 44; Şahin 1983, 52-53; Şahin-Öğün Polat 1985, 100, Nr.4, 3906.

⁵³⁴ Şahin 1974, 9-22, 104; Şahin 1975, 29-32.

⁵³⁵ TAM IV 68 and 243.

⁵³⁶ Şahin 1974, 71-83. Şahin evaluates the epigraphical material for the southern part of Nicomedia. He found two inscriptions *in situ* in Konca (nr. 42) and Yazlık Köy (nr. 48) along with many others scattered in Karamürsel and Altınova (Nr. 43-47). He interprets that the sarcophagus including inscription (Nr. 42) found in Konca in Karamürsel shows the expansion of the city on the south, since a sum of money should be paid to civic authority at Nicomedia in the case of violation.

⁵³⁷ TAM IV 15-18; Öğüt-Polat-Şahin 1985, 102-105; Mitchell 1993, 187.

to export its products. Thus it took over the control of Kios, and had problems with Nicomedia in port usage.⁵³⁸ Hence, Libon Mountain between the Gulf and Lake Ascanius created a natural border between Nicomedia and Nicaea. Sophon Mountain (Samanlı) belonged to Nicomedia.⁵³⁹ The border of Bithynia was moved westward in the later period and four new cities appeared in the region: Dascylium (Ergili), Helenopolis (Hersek), Basilinopolis (Pazarköy) and Praenetus (Karamürsel).⁵⁴⁰ According to Cedrenus, Drepanon/Helenopolis (today Altınova-Hersek) belonged to Nicomedia before Constantine made this village, whose inhabitants were collected from the neighbouring districts, a city in AD 318.⁵⁴¹ Basilinopolis, however, belonged to Nicaea founded by Julian in honour of his mother Basilina.⁵⁴² Praenetus is known to have been (also Strobilos-Pylai in Byzantine times) in the territory of Nicomedia in the later period.⁵⁴³ According to Jones, this city was located on the coast of the Gulf between Helenopolis and Nicomedia, and must have previously belonged to the territory of Nicomedia.⁵⁴⁴ The development of Helenopolis and Praenetus, as ports, is linked to the foundation of Constantinople and the consequent growth in importance of the roads from Bithynia to the east. Land journey from Chalcedon by Nicomedia to Nicaea was much safer taking ship directly to Helenopolis or Praenetus and beginning land journey to Nicaea.⁵⁴⁵

According to Pliny, the territory of Nicomedia encompassed very large lake (the Lake Sophon) in the east.⁵⁴⁶ Fernoux accepts the Sangarius as the natural eastern border.⁵⁴⁷ Accordingly, the territory includes not the whole plain of the lower Sangarius with Sophon Lake and the river mouth as suggested by Robert.⁵⁴⁸ Dia was an emporium of Prusias ad Hypium, thus the River Hypius may well have been the natural eastern border between the two cities.⁵⁴⁹ A recent interpretation of epigraphic evidence, however, suggests that the territory lies beyond Sangarius, even to the east of Adapazarı

⁵³⁸ Wilson 1960, 88; Dio Chrysostom, *Orationes* XXXVIII 32.

⁵³⁹ Fernoux 2004, 134.

⁵⁴⁰ Jones 1971, 160.

⁵⁴¹ Cedrenus I 517, 16-21: “*Drepanam quoque apud Nicomediam, in honorem Luciani, qui ibi capitali supplicio veritati testimonium perhibuerat, condidit, et a matre Helenopolin appellavit*”. Ruge 1936, 388; Jones 1971, 160. From the thirteenth action of the Council of Chalcedon, Helenopolis elevated to the city status. Mango 1997, 173. The bishop of Helenopolis was subject to Nicomedia.

⁵⁴² Şahin 1987, 112, T. 48 and 38 T. 26.

⁵⁴³ Jones 1971, 166.

⁵⁴⁴ Jones 1971, 166.

⁵⁴⁵ Mango 1997, 174.

⁵⁴⁶ Pliny, *Epistulae* X 41. “*Est in Nicomedensium finibus amplissimus lacus*”.

⁵⁴⁷ Fernoux 2004, 134.

⁵⁴⁸ Robert 1978, 425.

⁵⁴⁹ Robert 1980, 70-106.

plain.⁵⁵⁰ The territory south of the Geyve Boğaz belonged to Nicaea, and Çamdağ to the east of Hendek was the border between Prusias ad Hypium and Nicomedia. This gives the eastern border of the city and implies that the eastern part of Adapazarı plain beyond the Sangarius belonged to Nicomedia.⁵⁵¹ Pliny recommends that Sophon Lake be joined to the Sea of Marmara by a canal that would facilitate transport.⁵⁵² He indicated that beyond the lake marble, grain, firewood, and timber were available and that it was being difficult and expensive to exploit these resources because of the land transport between the Sea and Sophon Lake.⁵⁵³ This shows that the city also had access beyond Sophon Lake, because the sources were already being exploited with difficulty. The region beyond Sophon Lake was called *Regio Tarsia*. *Regio Tarsia* is placed in the Adapazarı plain, and its centre was located by von Diest at Küçük Tersiyе and has revealed a rich Hellenistic burial in a tumulus excavation.⁵⁵⁴ It is possible therefore that grain was transported from the fertile *regio Tarsia* and the lower Sangarius, while timber and firewood must have been exploited from forests south-east of Sangarius in the chain of Boz Dağ, especially the ancient Sophon Mountain.⁵⁵⁵ In Late Antiquity, the Notitia shows two or three bishoprics, which were not cities in the ecclesiastical province of Nicomedia.⁵⁵⁶ These were Daphnusia, an island on the coast of the Euxine, Cadosia, or Lophi. These bishoprics might have been ‘regions’ under Nicomedia or some other city of its province. One of these was the *regio Tarsia* specified in the fourth century as

⁵⁵⁰ Adak-Şahin-Akyürek 2005, 134.

⁵⁵¹ Adak-Şahin-Akyürek 2005, 134.

⁵⁵² Pliny, *Epistulae* X 41. trans. W. Williams: “There is a very large lake in the territory of the people of Nicomedia. Across it marble, grain, firewood, and timber are carried by boat as far as the road with little expense and effort, but by cart from there to the sea with great effort and at even greater cost... [Probably lacunae in the text]. This project calls for many hands. But those are readily available. For there is both a plentiful supply of men in the countryside and a very plentiful one in the town, and the sure prospect that they will all most gladly take part in a project which is of advantage to all”. Original text in Latin: “Est in Nicomedensium finibus amplissimus lacus. Per hunc marmora fructus ligna materiae et sumptu modico et labore usque ad uiam nauibus, inde magno labore maiore impendio uehiculis ad mare deuehuntur... hoc opus multas manus poscit”.

⁵⁵³ Moore 1950, 97.

⁵⁵⁴ Rumscheid-Held 1994, 92-93; Corsten 2007, 128. Tarsos (Tersiyе, modern Adliye Village-Adapazarı) is known since Hellenistic Period. Thanks to Mokazis’ stele of a Bithynian aristocrat, dated to the first half of the second century BC.; Foss 1990, 181-182. Foss evaluates the sources about region Tarsia, which was the name of a region whose centre was the town of Tarsos in the Classical and Byzantine sources. He explains: “The earliest mention of Tarsos or Tarsia appears in a rather confused notice which Stephanus of Byzantium (sixth century) abstracted from the Hellenistic or early Roman work of Demosthenes of Bithynia. This merely gives the names, but shows that they were applied to town and region. Tarsia is twice mentioned, in contexts, which show that it was near Nicomedia on the road, which led from there to the Pontus. Finally, as already noted, Michael VIII had been governor of a district called Bithynia and Tarsia. These indications, which point to a region just east of the Sangarius in the Optimate theme on a major highway, naturally lead to the Ak Ova, the flat and fertile plain beyond the Sangarius east of Adapazarı”.

⁵⁵⁵ Fernoux 2004, 263.

⁵⁵⁶ Jones 1971, 164.

lying east of the Lake Sophon.⁵⁵⁷ According to Wilson, Tarsia is attributed to Nicomedia as a 'region', in the same way as the 'regions' further south are attributed to Nicaea.⁵⁵⁸

As a result, in the Roman period, the city lies to the Gulf of İzmit including Drepanon through the coastline on the south, and then it was bordered by a line stretching from Şile to Dakibyza, where it adjoined that of Chalcedon on the west. On the north, on the Euxine, it includes not only this part of the Bithynia, but also the whole plain of the lower Sangarius with Sophon Lake, and Sophon Mountain. The eastern border passes along the towns of Hendek and Akyazı but excludes the Melen Çayı (River Hypius).⁵⁵⁹ The territory of Nicomedia includes not only modern İzmit, but also the central and northern parts of contemporary Adapazarı.⁵⁶⁰ This information allows drawing 'an approximate' territorial map (figures 4-5), covering an area calculated as 5000 km².⁵⁶¹ As Wilson noted, even without Tarsia, the territory of Nicomedia extended 85 km by 55 km.⁵⁶² Wilson's measures without Tarsia are consistent with area of 5000 km² which includes Tarsia. These figures will be used in calculating carrying capacity in the last section.

The territory is occupied by mountains and forests but has valleys and coastal districts of great fertility. Most of these are known since antiquity. Libon and Sophon Mountains are on the southern border, and Kayalı and Karakayalı Mountains are on the west of the city.⁵⁶³ Cuinet provides a panorama of İzmit Mutasarrıflığı (province) in 1893. He notes that 2/3 of the territory consisted of wooded areas in which there was no animal husbandry and these mountainous areas were intersected by fertile valleys. In the northern part of Anatolia, mountains ran to the north and north-east as far as Trabzon (Trapezus) and including the Olgassys range (today Ilgaz Dağları) the so-called 'Sea of Trees' in Paphlagonia.⁵⁶⁴ East and north-east in the right bank of the Sangarius River in the border between the districts of İzmit and Kastamonu the hills gradually rise to the

⁵⁵⁷ Jones 1971, 164-166.

⁵⁵⁸ Wilson 1960, 111-112.

⁵⁵⁹ Robert 1978, 425; Adak-Akyürek Şahin 2005, 135, 164. Adak and Şahin believe that Akyazı possibly was in the territory of Nicomedia based on funerary inscriptions found in this town.

⁵⁶⁰ Adapazarı (or Sakarya) central, Söğütlü, Ferizli, Kaynarca, Sapanca and north-western part of Karasu.

⁵⁶¹ For the calculation Google Earth Professional was used. See the link:

http://www.google.com/enterprise/earthmaps/earth_pro.html

⁵⁶² Wilson 1960, 111-112.

⁵⁶³ Şahin 1978, 110. There are five village settlements attested in and around the mountains. See TAM IV, p. 99. Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 231.

⁵⁶⁴ Robert 1980, 24; Hannestad 2007, 86. "Sea of Trees" or "Ağaç Denizi" were specified by Perrot, Guillaume, Eugene Boré, Katip Çelebi and most of travellers who visited the region. See Ulugün 2008, 46.

Olgassys range in Paphlagonia. Thus İzmit Province was located at the beginning of this mountain range. In the valleys between İzmit and Sapanca, there are meadows and a few modest hills around the Sangarius River (figure 6).⁵⁶⁵ Today, mountainous areas alone make up 18.8 % of Kocaeli district; together the wooded areas and forest consists 39.42% (figure 7).⁵⁶⁶ As for the plains, the İzmit plain is located between the Gulf and Sophon Lake; further east the Adapazarı plain (or Akova) includes the lower Sangarius as far as Keremali Mountain (east of Akyazı).⁵⁶⁷ The overview drawn above indicates that the territory of Nicomedia (5000 km²) was smaller than İzmit Mutasarrıflığı, which was 12.050 km² in 1893, but slightly bigger than the territory of the modern city which is 3505 km² (figure 8). While wooded areas and forests were 2/3 in 1893, they comprise nearly half of the district today.

Another feature in the physical setting are the rivers and streams. The rivers and streams in and around Nicomedia, since antiquity are the Sangarius (Sakarya)⁵⁶⁸ traversing the province of Bithynia from south to north, the Psil(l)is in Ağva (today Göksu/Ağva), the Calpas in Kandıra (today Sarısu)⁵⁶⁹, the Artanes in Şile (today Darlık Deresi, but Darlık Dam built on it), the Rhebas in Riva (Çayağzı), the Kerez/Kilez⁵⁷⁰ near Başiskele, the Drakon⁵⁷¹ in Hersek (Yelkendere) and the Libyssos (today Dildere/Tavşanlı)⁵⁷² near Dakibyza (Gebze). Moreover, the Lake Sophon (Boane, Sunonensis, today Sapanca) is an important lake in the city with the potential for supporting agricultural settlements in the area.

Today, only the Sakarya and the Kilez (Kerez) are perennial, and the Göksu, Çayağzı, Sarısu, and Dildere streams almost disappear in summer. Nevertheless, in winter and spring their flow rates increase and can cause flooding. Therefore, to protect the agricultural fields from floods and to provide irrigation, ponds were built on some streams including the Bıçkıdere, Kurtdere, Şeytandere, and Bayraktar Ponds.⁵⁷³

⁵⁶⁵ Cuinet 1895, 344-345. One of the highest hills in the east is Gökdağ (the highest point is Keltepe/Kartepe, 1620m) which makes a border with Uzunçayır, and the other one, in the west is Dağhamami (820m).

⁵⁶⁶ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 230, 271.

⁵⁶⁷ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 231.

⁵⁶⁸ Talbert 2000, 791. The river is attested from archaic times onwards.

⁵⁶⁹ Strabo XII 3, 7. "Between Chalcedon and Heracleia flow several rivers, among which are the Psillis and the Calpas and the Sangarius, which last is mentioned by the poet. The Sangarius has its sources near the village Sangia, about one hundred and fifty stadia from Pessinus".

⁵⁷⁰ Pliny, *Epistulae* X, 41.

⁵⁷¹ Mango 1997, 173.

⁵⁷² Talbert 2000, 787, 789, 791 s.v.

⁵⁷³ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, streams in Kocaeli Peninsula 24, 119, 230; table of streams and their conditions for transportation, water sports and fisheries 120-123; ponds 124-127.

The rivers and tributaries could be used for irrigation and watering animals, water mills and even floating timber. Inscriptions in the territory of Nicomedia attest forty-one villages and seven settlements called *phyle*.⁵⁷⁴ As seen in figure 3, the settlement pattern was dispersed, but most of these villages, which were connected to the capital city, Nicomedia on the south and the Black Sea coast on the north by land routes, were located along the river valleys, and it is probable therefore that the streams were used to irrigate their fields and to water animals. The Kerez (or Kilez) Stream which is known since antiquity⁵⁷⁵, originated from Sophon Mountain reaches extending to the Gulf of İzmit was being exploited for floating timber in the 18th century during autumn and winter, and there is also evidence for the navigability of the Sangarius in antiquity and in the 19th century.⁵⁷⁶ It should be noted that changes especially in the courses of streams were known since antiquity, for example the Tiber River⁵⁷⁷, and regional hydrographical studies are wanting in order to be more precise about actual exploitation pattern in antiquity.

As for the climate, specific studies on climatic changes throughout history in northwestern Anatolia and İzmit/Nicomedia are still wanting. However, research done by Gassner and Weniger shows that there were no radical changes in climate in Anatolia over three millennia.⁵⁷⁸ Oscillations in climate are always the case in Anatolia, but there have been no fundamental changes for at least three millennia.⁵⁷⁹ Climatic evolution acts an increasing or reducing role in the availability of arable land. Given the recent paleoclimatologic researches in the Northern Hemisphere from the third century AD onwards, determining the effects of climate on the development of civilizations has become possible. However, it is still difficult to assess the influence of climate on agricultural production. As far as known temperatures slowly increased in the third century BC, reached a peak around the Late Republican-Early Roman period, and started to decline in the third century AD.

The recent results regarding incessant series of annual temperatures from the third century onward obviously shows a declining tendency. Temperatures were low until the beginning of the so-called Medieval Climatic Optimum between the 9th and early 14th centuries, then the Little Ice Age started and it ended in the early nineteenth

⁵⁷⁴ TAM IV 99-100.

⁵⁷⁵ Pliny, *Epistulae* X 41.

⁵⁷⁶ Ulugün 2008, 78. From Peyssonel's record.

⁵⁷⁷ Taylor 2000, 131-132.

⁵⁷⁸ Gassner-Weniger 1942. Hütteroth 2006, 22.

⁵⁷⁹ White 2011. According to research related to drought in Kocaeli District, there was no significant change in the average temperature between 1971 and 2000. Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 87.

century.⁵⁸⁰ Thus, Lo Cascio and Malanima suggest that late Republican-early Imperial Roman times climate provided more suitable condition to population growth than during the early Middle Ages and the long Little Ice Age. As a result, the large population size of early Imperial Italy that they suggested was not unlikely.⁵⁸¹ The cycle observed here is increased temperatures in the Late Republican period and early 19th century and their probable positive effects on the agricultural produce and population, which may have been the case in Roman Nicomedia.

The climatic environment mentioned in travellers' notes and modern times partially helps one to imagine antiquity. Cuinet noted the climate in 1893 and he observed that in summer the temperature rarely exceeded 26-30°C and in an extraordinary winter or on the peaks of the mountains the temperature dropped a few degrees below zero.⁵⁸² This late nineteenth century account alone cannot prove increasing temperature trend in the 19th century mentioned by Lo Cascio and Malanima, but it shows that there was a favourable climatic conditions in İzmit in 1893.

Today, the annual average temperature is 14, 5° C, in July the average temperature is 23, 5° C and the highest temperature 41° C. In winter, it only reaches -2° C. This more or less corresponds to the climatic condition mentioned by Cuinet in 1893. As for the precipitation, it gradually lessens from north to south. On the Black Sea coast, annual average precipitation is 1000 mm, and İzmit, annually, gets an average of 768 mm. The south facing slopes of the Samanlı Mountain near Körfez, experience conditions similar to the Black Sea coastal regions. Winter winds blow from the south-to-south-east, while in summer they are mainly south-easterly. There is a diversity of micro-climates between Karamürsel to the south of the Gulf, the northern shores of Kandira, to the north and north-east of Gebze, and on the north of the Körfez. The city benefits from a macro-climate transition from the Mediterranean to the Black Sea climate which allows diversity in produce as well as appropriate locations to settle. The Mediterranean effect makes for warm and wet winters. A typical summer is hot and dry. In the northern part of the city on the Black Sea coast, the summer is cooler than in the southern part.⁵⁸³

One of the effects of this climate is clearly on the vegetation of the city. Because of the transition of two different climate types, the vegetation reflects both the Black

⁵⁸⁰ Lo Cascio-Malanima 2005, 26.

⁵⁸¹ Lo Cascio-Malanima 2005, 27.

⁵⁸² Cuinet 1895, 314.

⁵⁸³ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 86. The annual average temperature is 14, 5° C, in July the average temperature is 23,5° C and the highest temperature 41° C. In winter, it only reaches -2° C.

Sea and the Mediterranean features. Zones of species reflect the combination of different climates in the city, ranging from sea level to the highest level as the Lauretum, the Castenatum (chestnut), Fagetum (beech) and the Abietum (coniferous) zones. These well-defined vegetation zones reveal the rich timber resources. Today, on the coast of the Gulf there are maquis, olive trees, and red pine, which are peculiar to Mediterranean vegetation and retain their leaves in winter. In the northern part of Kocaeli Peninsula, especially in the high plateau such as Samanlı (Sophon) Mountain and on the Black Sea coast (Calpe/Kerpe), there are beech and fir, which are peculiar to the Black Sea vegetation.⁵⁸⁴ These wooded areas containing all sort of timber confirm Xenophon's statement that there were all sorts of timber especially for shipbuilding.⁵⁸⁵

After climate, another important factor affecting fertility and produce is the soil. Xenophon's account illustrates the fertility of the soil in later Nicomedian territory in the pre-Hellenistic times. He speaks of the land as "deep soiled and free from stones" which corresponds very well with the modern soil features in Kocaeli described above.⁵⁸⁶ Xenophon notes that the extensive and good land produced cereals, grapes, and fruits. By mentioning the frequent plundering of later Nicomedian territory by troops, he indirectly emphasises the territory's prosperity.⁵⁸⁷ In another statement, he counts the booty they obtained in this territory such as slaves and sheep.⁵⁸⁸ In this statement, expressions such as "provisions in abundance", "seizing many slaves and much property" and "being full of a great deal of plunder" refer clearly to the wealth of the territory and also highlight the scale of the victory over the Bithynians. The statements about the slaves also indicate a certain level of population in later Nicomedian territory. In the *Hellenica*, he also mentions plunder from the same area.⁵⁸⁹ Around 1829, Baron Felix de Beaujour who led a military expedition in the Ottoman Empire mentions Calpe Harbour and even after many centuries, he confirms its strategic importance and fertility as being a potential site for a city, as Xenophon described.⁵⁹⁰

⁵⁸⁴ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, vegetation 173, distribution and species of vegetation 232.

⁵⁸⁵ Xenophon, *Anabasis* VI 4, 4-6; Fernoux 2004, 134.

⁵⁸⁶ Xenophon, *Anabasis* VI 4, 4-6. trans. C. L. Brownson. "The ridge extends back into the inferior for about twenty stadia, and this stretch is deep soiled and free from stones..."

⁵⁸⁷ Xenophon, *Anabasis* VI 2, 17.

⁵⁸⁸ Xenophon, *Anabasis* VI 6, 37.

⁵⁸⁹ Xenophon, *Hellenica* III 2, 2-3.

⁵⁹⁰ Ulugün 2008, 152. "A castle to protect the city could have been easily constructed. Xenophon had thought that found a city and become a king. Actually, he would have chosen good place. Harbour pool carved under the rock, it is closed to winds of each directions. A spring is rising from slopes of rocks and it is consisted a beautiful fountain. There were very fertile and intense wooded areas around the Kandira and throughout the coastline." Xenophon, *Anabasis* VI 4, 3-4, trans. C. L. Brownson. "As for Calpe Harbour...the space to the seaward of the isthmus is large enough for ten thousand people to dwell in".

Kannenberg's book entitled *Kleinasiens Naturschätze* published in 1897 refers to the Bithynian region as a suitable area to colonise.⁵⁹¹

In the late antiquity, the ancient writer Libanius talks about “fruitfulness of the soil” of Nicomedia⁵⁹², and speaks of Nicomedia as “the city of Demeter” and existence of temple of Demeter.⁵⁹³ It is a not coincidence that the city goddess of Nicomedia is Demeter, depicted during almost every emperor's reign on the civic coins.⁵⁹⁴ Demeter and her daughter Persephone are linked to the fertility and agricultural life. Cults and festivals around these goddesses must have had an important role in ancient peasant life.⁵⁹⁵ One votive inscription found in Nicomedia possibly mentions Demeter within the context of fertility and acquiring good harvest⁵⁹⁶, and, there are also votive inscriptions to Cybele (Magna Mater) and Zeus Bronton found in the territory.⁵⁹⁷

The anonymous author of the *Expositio Totius Mundi et Gentium* (AD 359) speaks of the land in the Hellespont and Bithynia in laudatory terms in late antiquity. According to this source, the soil is fertile and offers great variety of products from grain to grapes and nuts.⁵⁹⁸ The rainfall was also important for the variety. The climate is hot and humid in summer, especially in the deep valleys, and conducive to intensive polyculture.⁵⁹⁹

The fertility of the soil can also be inferred from the accounts of many travellers. William George Brown noted that the soil between Üsküdar and İzmit was fertile, bright, and abundant in barley (some of fields had not ripened even on 20th June), rye, onion, and lentil. Brown added that the soil was partly chalky, pebbly, and loamy. In 1828, Serristori a Russian colonel, reported that the soil between İzmit and Karamürsel was rich and under cultivation. In June 1832, the traveller David Porter stated that almost the whole area between Tuzla and İzmit was sown, and the soil was fertile.

⁵⁹¹ Kannenberg 1897; Robert 1980, 31. As Robert says, Kannenberg made a compilation from a vast literature, giving each product's name in Turkish, Greek, and German. It provides information on the locations of such products and many details on their use.

⁵⁹² Libanius, *Orationes* LXI 7-10. “...This only I can say, that frequently travelling there from Nicaea, we used on the road to discourse on the trees, and the soil, abundant in all productions, and also of our families, our friends, and ancient wisdom. But after we had passed through the intricate windings of the hills, when the city appeared, at a distance of a hundred and fifty stadia, on all other subjects a profound silence instantly ensued, and, no longer engaged either by the towering branches of the gardens, or by the fruitfulness of the soil, or by the traffic of the sea, our whole conversation turned on Nicomedia. And yet mariners, or those who labour at the oar, and ensnare the fish with nets or hooks, naturally attract the observation of travellers.”

⁵⁹³ Libanius, *Orationes* LXI 7; I 48. *TAM* IV 53. A column was found and identified by Pogodin-Wulf.

⁵⁹⁴ Boyana 2006, 171-189.

⁵⁹⁵ Wilkins-Hill 2006, 3. As is known, Arrian was a priest of Demeter. *TAM* IV 402.

⁵⁹⁶ Şahin 1974, 103. Nr. 60. This is a marble fragment found in Çayırköy, which carries “Demetri”, however, context is not clear.

⁵⁹⁷ Zeus Bronton, *TAM* IV 58; Magna Mater *TAM* IV 74.

⁵⁹⁸ *Expositio Totius Mundi et Gentium* 49.

⁵⁹⁹ Fernoux 2004, 235-236.

Having passed İzmit, Porter again observed a vast and very fertile area. In May 1830, Eli Smith and H. G. O. Divide assigned by the American Board, report that the soil of the plain starting at the edge of the Gulf and stretching east towards Sapanca was humid and fertile.⁶⁰⁰

Today, the soil in Kocaeli district is mainly defined as brown forest soil, which has intensive loam and clay.⁶⁰¹ In the mountainous areas, it contains clayish sand, and is less chalky, less pebbly, moderately cool, and deep. Generally, brown forest soil was seen in the humid-mild climatic regions with dry seasons. This soil, which contains medium level of organic substance has a clayed texture and has a high water retention capacity, and is therefore able to produce good crops.⁶⁰² The prosperity and fertility of the city and its territory have been demonstrated and stressed in all travellers' notes, and this is consistent with the statements of ancient written sources.

In general, therefore it seems that the physical setting did not change radically since antiquity. Together with the calculation of Nicomedia's territory, this allows moving to the next step in order to calculate the land's carrying capacity in the last section. Furthermore, increasing trend in temperature, which presumably provides a favourable environment for agriculture, and likely affecting population growth were attested in the Late Republican period and the 19th century in Italy, and this needs to be taken into account and examined for the case of Nicomedia in the following section.

ii. From Xenophon's age to Modern Times: Products of Nicomedia/İzmit

The production of the staple crop is the vital element of traditional agricultural economies. Thus, another variable affecting carrying capacity is the staple crop.⁶⁰³ The staple crop and changes in cereal production in Nicomedia need to be examined. For understanding production and consumption patterns at Nicomedia and Bithynia in general, Galen's work, from the second century AD, presents invaluable information as he broadly mentioned the territory of Pergamon, which is Asia, and the Mysian and Phrygian regions, which were neighbours of Bithynia.⁶⁰⁴

⁶⁰⁰ Ulugün 2008: William George Brown 91; Serristori 151; David Porter 158-9; Eli Smith and H. G. O. Divide 161.

⁶⁰¹ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 174.

⁶⁰² Şeker-Musaoğlu-Kaya 2000, 1359.

⁶⁰³ Lo Cascio-Malanima 2005, 18-19.

⁶⁰⁴ Galen, *De Alimentorum Facultatibus, On the Properties of Foodstuff*, trans. O. Powell, Cambridge 2003.

It is known that barley, wheat, and beans of all kinds, millet, sesame, figs, and abundance of grapes, which yield a good sweet wine, were produced at Calpe in the pre-Hellenistic period.⁶⁰⁵

Beginning with agricultural products, wheat was the most superior cereal in the rank of the cereals in antiquity. After wheat barley was less important in Italy, but was consumed widely especially in Classical Greece.⁶⁰⁶ Galen, however, accepted barley as superior as wheat in general.⁶⁰⁷ After the harvests, good quality of wheat and barley were taken away by the urban inhabitants for their annual consumption and rural people had to spend the whole year with what was left. Inferior products were consumed in the rural areas around Pergamum whose inhabitants ate einkorn and emmer.⁶⁰⁸ Galen mentions that Asian farmers produced naked wheat, which made white bread for the market, and they produced inferior crops for their own consumption.⁶⁰⁹ In Asia, foxtail millet and broom millet⁶¹⁰, even oats and vetch, normally used as animal feed, were used to make bread to be consumed in times of famine.⁶¹¹ It is obvious that Asian peasants produced different types of cereals to survive and protected themselves by crop diversification against hunger. Galen speaks of people from the parts of Bithynia, Nicaea, Prusa, Crateia, Claudiopolis, Juliopolis, and Dorylaeum who were affected badly from severe winters and grew a crop named *zeopyron*, which was a shorter form of wheat.⁶¹² Galen does not mention Nicomedia, and it can be seen that all these cities were inland and today they have a slightly colder climate. Thus, it is not clear whether

⁶⁰⁵ Xenophon, *Anabasis* VI 4, 4-6. "...At the very foot of the rock there is a harbour whose beach faces toward the west and abundantly flowing spring of fresh water close to the shore of the sea and commanded by the headland. There is also great deal of timber of various sorts, but an especially large amount of fine ship-timber, on the very shore of the sea. The ridge extends back into the interior for about twenty stadia, and this stretch is deep soiled and free from stones, while the land bordering the coast is thickly covered for a distance of more than twenty stadia with an abundance of heavy timber of all sorts. The rest of the region is fair and extensive, and contains many inhabited villages; for the land produces barley, wheat, beans of all kinds, millet and sesame, a sufficient quantity of figs, an abundance of grapes which yield a good sweet wine, and in fact everything except olives." Also *Anabasis* VI 6, 1-2.

⁶⁰⁶ Garnsey 1988, 51.

⁶⁰⁷ Galen 501-503, 506, trans. O. Powell.

⁶⁰⁸ Galen 511, trans. O. Powell, Nr. 13.

⁶⁰⁹ Galen 516, trans. O. Powell, Nr. 13. *Olyra* (emmer) and *tiphe* (einkorn or zeia) were cereals of local people in the territory of Pergamon used to make bread because they sent the wheat to the cities. Bromos is another cereal, inferior to *olyra* and *tiphe* mentioned by Galen as a horse food. However, it was consumed in the time of hunger. Garnsey 1988, 52.

⁶¹⁰ Galen 524, trans. O. Powell, Nr. 15.

⁶¹¹ Wilkins-Hill 2006, 217.

⁶¹² Galen 515, trans. O. Powell, Nr. 13. "In wintry parts of Bithynia, moreover, a particular grain is called *zeopyros*, with the first syllable having no letter *iota* as it has in Homer: 'Wheat and *zeia* and broad-eared white barley...'...Bread from it is much better than that in Macedon and Thrace. Roughly speaking, just as the name *zeopyros* is compounded of both names *zea* and *pyros*, the substance is some average of both, since it has been blended from them. At any rate, it is as inferior to naked wheat as it is superior to Thracian rye. The names of the cities in which this grain occurs are Nicaea, Prusa, Crateia, Claudiopolis and Juliopolis; but Dorylaeum which is a city at the furthest extent of Asiatic Phrygia, also has this sort of grain produced in the region, as also do some other cities on its border."

growing *zeopyron* or other kinds of grain were also common at Nicomedia. However, Cuinet's list of 19th century agricultural products reveals a similar pattern. According to this, as well as wheat, barley, rye, oat, maize, millet, vetch, and rice, there was a different form of wheat called *kablıca* (spelt) in İzmit. In addition, *melez*, which means hybrid in Turkish, was a cross of wheat and rye.⁶¹³ Spelt, like emmer and einkorn was one of the primitive forms of wheat.⁶¹⁴ Broughton translates *zeopyron* as spelt-wheat, and it is likely that *kablıca* (spelt), cultivated in İzmit in 1893, must have been the *zeopyron* of antiquity.⁶¹⁵ All these crops were consumed in place of wheat and barley when the climate or the land prevented them from being cultivated. It can be assumed that wheat and barley were the main crops, along with some other minor cereals. However, this changed by the spread of maize from the nineteenth century onward in İzmit as also observed in Po Valley in Italy in the 17th century.⁶¹⁶ Maize (corn flour, known as Turkish flour) was being produced from the beginning of 19th century and it mainly replaced consumption of wheat due to new immigrants from Caucasia.⁶¹⁷ Maize therefore must have profoundly changed agricultural carrying capacity as it provides higher productivity that is double than other cereals. As stressed by Lo Cascio and Malanima, the volume of calories supplied by a field cultivated with maize was twice that of the same field sown with wheat. The price of maize was half the price of wheat.⁶¹⁸

The annual maize produce shows the fact that it was very abundant, 780,000 hectolitres, more than any other cereal in İzmit in 1893.⁶¹⁹ Production of maize altered agricultural production in quantitative terms. It however does not make the same effect in monetary terms. As a matter of the fact, the volume of calories provided by a field cultivated with maize was twice that of the same field sown with wheat. As illustrated by Lo Cascio and Malanima, the price of maize was half the price of wheat. Maize produce thus triggered the rapid population increase in the second half of the seventeenth century in Italy.⁶²⁰ It can be hypothesised that production of maize made similar effect in the population of İzmit in the 19th century. Kaya's research on the demography and settlement pattern of İzmit in the 19th century illustrates the fact that

⁶¹³ Cuinet 1895, 314.

⁶¹⁴ Wilkins-Hill 2006, 16.

⁶¹⁵ Broughton 1938, 608.

⁶¹⁶ Lo Casci-Malanima 2005, 29.

⁶¹⁷ Cuinet 1895, 314.

⁶¹⁸ Lo Casci-Malanima 2005, 29.

⁶¹⁹ Cuinet 1895, 314.

⁶²⁰ Lo Casci-Malanima 2005, 29.

the city heavily inhabited by the 19th century.⁶²¹ When compared to the preceding centuries, it can be seen that there is an increasing trend in population of İzmit from the 19th century onwards.⁶²² Nevertheless, as mentioned above Caucasian immigrants settled İzmit in the same period also increased the population in general.

Beans are another item produced in Nicomedia. As is known from Hittite texts, which are confirmed by archaeology, bean and peas were integrated into Anatolian diet.⁶²³ Galen mentioned that *vicia faba* that is broad beans, lupine and Egyptian beans were known.⁶²⁴ Theophrastus' account, from the third century BC, talks about beans and other legumes (lentils, peas, and chickpeas) which were being cultivated in the open fields and gardens to an important level.⁶²⁵ Beans, indeed, together with other dry legumes, or pulses are rich protein source. Legumes in general provide other nutrients such as calcium and vitamin C, which were not sufficient in the cereals. In early Rome, bean flour was added to cereal flour. Beans were usually boiled, and made into soup, roasted or eaten as dessert. In the poor people's diet, beans accompanied the cereals, although they were not a staple in the diet of the elite.⁶²⁶

Sesame was eaten with boiled honey and also used to sprinkle on bread.⁶²⁷ As already mentioned, foxtail and the superior broom millet were used to make bread in the province of Asia, and millet flour was sometimes eaten with boiled milk.⁶²⁸ This supports the view that production of millet and sesame in Nicomedia must have provided complementary nutrition for country people.

Grapes and figs listed by Xenophon were also important for the diet. Grapes were less nutritious than figs as a fruit. The role of the two products in consumption culture in antiquity is well explained by Galen. According to his work, grapes and figs were consumed fresh, and stored in late summer, while raisins and dried fig were for the winter. They might have served as supplementary products for the rural inhabitants.⁶²⁹ In addition to Xenophon from the pre-Hellenistic period, Florentius, an early third

⁶²¹ Kaya 2007, 59-80. He gives population of İzmit 20292 people in 1838, 39528 people in 1881/2-1893, 68173 people in 1906/7 and 71335 in 1914.

⁶²² It should be noted that population estimates of İzmit between 16th and 18th centuries are fragmentary, and estimates were partly based on census figures and traveller's accounts including the number of houses observed. For instance, Census 1523 gives population of İzmit as 7397 city dwellers based on house number. Ottoman traveller Evlia Celebi mentions house number which approximittely make 17000 city dwellers. Kaya 2007, 64-65.

⁶²³ Brothwell 1998, 106.

⁶²⁴ Galen 530, trans. O. Powell, Nr. 19. In 554, Galen describes legumes as seeds of Demeter.

⁶²⁵ Theophrastus, *Historia de Plantis* 8, 3, 4.

⁶²⁶ Garnsey 1998, 223-225.

⁶²⁷ Galen 548, trans. O. Powell, Nr.30.

⁶²⁸ Galen 524, trans. O. Powell, Nr. 15.

⁶²⁹ Galen, grape 574-581, figs 571-573, raisins 582-584. trans. O. Powell Nr. 8, 9, 10.

century AD writer on farming writes that grapes were grown up trees in two regions of Bithynia, one of which was the fertile *regio Tarsia*.⁶³⁰ A seventh century Byzantine testimony, Theodore of Sykeon, mentions trees and vineyards.⁶³¹

There is epigraphic evidence vividly demonstrating viticulture in the villages of Nicomedia. The wine festival (*oinoposion*) was celebrated annually and magistrates, who supported the festivals, were honoured by villagers in/around Ihsaniye, which is near the southern border of Nicomedia.⁶³² Other inscriptions found in Nicaea and Kios, show that such wine festivals were common in Bithynia.⁶³³ A votive inscription found in Bağıranlı, shows a donation for an *oinoposion* in honour of the local goddess Rhysiane.⁶³⁴ Existence of the cult of Dionysus related to viticulture is also observed in the territory of the city. There is an epigram found in Kandıra, linked to the god's mysteries.⁶³⁵ Another inscription found in Karaman Ocağı in Adapazarı dated to the third century AD shows that a wealthy woman, Aurelia Rufina dedicated a crater to her village for wine consumption in the *panegyreis*. This also shows importance of wine consumption in the social level.⁶³⁶

Archaeological evidence found in the Kocaeli Survey 2006 and 2007 needs to be evaluated. Modern⁶³⁷ and ancient material belonged to olive/flax presses, and wine presses were seen in Kutluca village, in the north-western part of the city and also in Umuttepe and Paşasuyu (figures 9-11). The evidence shows the existence of wine produce in the southern and northern parts of the city in antiquity.

19th century figures provide a glimpse of capacity. Cuinet speaks of vineyards, which were very fertile in producing abundant and fine quality grapes, which supplied the needs of İstanbul.⁶³⁸ Indeed, 3.111.688 kg of grape were produced in İzmit and 1.250.000 franks of grape were being sent to İstanbul, while 350.000 franks of wine were exported to Marseille from İzmit harbour in 1893.⁶³⁹ Cuinet mentions the quantity of wine produced in a township named Bağçecik, near which decrees are attested regarding its ancient wine festival. According to Cuinet's account, even this small town

⁶³⁰ Florentius in *Geoponica*, IV 1, 3; Foss 1990, 180-181.

⁶³¹ Theodore of Sykeon 36, 52. Fernoux 2004, 236.

⁶³² *TAM* IV 15-18; festivals dated to AD 93-94, 122-123, 124-125, 126-127, 128-129, 132-133, 134-135; *oinoposiarches*, *TAM* IV 20.

⁶³³ Mitchell 1993, 187.

⁶³⁴ *TAM* IV 68, Şahin 1974, 144-145.

⁶³⁵ *SEG* XXXIV 1266.

⁶³⁶ Adak-Akyürek Şahin 2005, 137-138.

⁶³⁷ A place called *bezirhane* in Kutluca produced flax-seed oil.

⁶³⁸ Cuinet 1895, 324.

⁶³⁹ Cuinet 1895, 348-349.

once alone produced 300,000 kg wine.⁶⁴⁰ In antiquity, this amount could have met 3000 people's wine consumption per year.⁶⁴¹

Vital Cuinet highlights the agricultural products in İzmit and in Kandıra on the north, which is the area specifically mentioned by Xenophon, and his list covers all products mentioned by Xenophon. Moreover, corn, rice, oat, rye, melez (wheat+rye), lentil, chickpea, broad bean (horse-bean), potato, garlic, vegetables, onion, flax-seed, walnut, chestnut and almonds were also available in the city in the 19th century.⁶⁴² Broad range of accessible products seems to have supplied to inhabitants different kinds of taste, ingredients, and nutrients. It therefore created an alternative foodstuff in the time of food shortage. Kandıra was the main producer of wheat and corn in the province and there were about 45 mills and more than 37 estates (*çiftlik*) in the county in 1890s.⁶⁴³ Both Kandıra and İzmit produced roughly the same agricultural products. Kandıra still has the biggest area cultivating vegetable and fruits in the Kocaeli Province.⁶⁴⁴

Other travellers mention agricultural products in different parts of the province of İzmit through the Ottoman times. In 1740, Pococke speaks of wheat fields, wooded areas, the fertile soil of Sophon (Sapanca), and the vineyards and fruit fields of İzmit. In 1802, William George Brown reports that intensive fruit fields in İzmit provided the needs of İstanbul market.⁶⁴⁵ Therefore, the picture drawn by Xenophon is quite coherent with travellers' reports and modern data. In conclusion, since the evidence presented is more generic, continuity of production observed in Nicomedia from the pre-Hellenistic times to modern times provides an overview of production pattern in the city.

Xenophon, however, twice in the *Anabasis* emphasises the lack of olives in the Kandıra region, which was in later Nicomedian territory in antiquity.⁶⁴⁶ It is therefore probable that the Kandıra region is not suitable to cultivate olive trees since the winters are colder and rainier than the coastline of the Gulf of İzmit. Furthermore, no traveller mentions olives in Kandıra, and Kandıra has no olive trees according to modern data.⁶⁴⁷ Yet another reason would be the lack of the Greek culture or the absence of demand and

⁶⁴⁰ Cuinet 1895, 326. *TAM* IV 15-18; *oinoposiarches* *TAM* IV 20. Bağçecik sent 6-700 kg wine per week to İstanbul, as it was more profitable than marketing in İzmit.

⁶⁴¹ 300.000 / 100 lt.= 3000 people. For wine consumption per head see, Mattingly-Aldrete 1999, 195-6. Alcock 2007, 677.

⁶⁴² Cuinet 1895, 363.

⁶⁴³ Cuinet 1895, 384.

⁶⁴⁴ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 219-220, 274.

⁶⁴⁵ Ulugün 2008: Pococke 69-70; William George Brown 91-92.

⁶⁴⁶ Xenophon, *Anabasis* VI 4, 4-6 and VI 6, 1-2.

⁶⁴⁷ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 274.

this could explain why this product was not being cultivated in Calpe/Kerpe in the time of Xenophon.⁶⁴⁸ Few travellers noted olive trees at İzmit and its environs, but there is some evidence for the province in general. In 1890, Ahmet Mithat talks about olive trees in the İzmit Gulf and beautiful vineyards in Tavşancıl and Darıca. He reports how people produced olive oil in the old style, which is known since antiquity. In 1804 Joseph Freiherr von Hammer-Prustgall mentions the Zeytin Mahallesi (Olive quarter) in İzmit after passing İmbaba Cistern. The Hungarian politician Graf Istvan Széchenyi (1818) confirms Hammer's statement. In 1890 the German geologist, Dr. Edmund Naumann travelling from Haydarpaşa to Adapazarı recorded vineyards, fig, cherry, apricot, cypress trees, and olive trees.⁶⁴⁹

This patchy overview about existence of olive trees and its traditional manufacture given by travellers is deficient to accept adequate olive production for at least local needs. On the other hand, in Cuinet's account, olive oil or olive trees are never mentioned in any part of İzmit Mutasarrıflığı in 1890.⁶⁵⁰ In the same account, sesame, for example, was one of products cultivated in almost all parts of the city. There was no olive oil produce in İzmit, but butter and sesame oil, with an annual production of 18.000 kg in İzmit, can be seen. Olive oil production seems geographically restricted and according to traveller's notes and today's situation can only be observed on the coastline of the Gulf; it never occurs in Kandıra region throughout history. It is quite strange not to see any record or mention about olive trees or olive oil produce in Cuinet's diffuse account, which records almost every product with production figures in İzmit. In his export-import table for İzmit harbour the only olive oil (50,290 frank) was imported from Darıca which was not part of İzmit Province. Accordingly, there was no exportation at all in 1893.⁶⁵¹ It indicates that even if there were olive trees and oil production, it did not meet the local need. The exportation of sesame oil (59,291 frank, produced in İzmit and Karamürsel), however, can be clearly seen in the İzmit harbour record in 1893. As mentioned presses found within the Survey 2006-7 might shed more light on oil production capacity if all presses can be identified as ancient and modern. Their functions as wine or olive/flax oil presses also need to be precisely defined. Cuinet records that there were 17 workshops producing sesame oil in İzmit and its

⁶⁴⁸ Mitchell 2005, 83.

⁶⁴⁹ Ulugün 2008: Ahmet Mithat 295-297; Joseph Freiherr von Hammer-Prustgall 102; Graf Istvan Széchenyi 129; Edmund Naumann 234.

⁶⁵⁰ Cuinet 1895, 303-400.

⁶⁵¹ Cuinet 1895, table on p. 348.

environs, and that also flax seed oil was produced.⁶⁵² In spite of the lack of the evidence in ancient Nicomedia indicating consumption of sesame oil and flax seed oil, flax seed oil would be a good alternative for the country folk who had less access to olive oil. Today, on the coastline there are fields, which are covered by olive trees.⁶⁵³

To summarise, maize produce in the 19th century's İzmit highlights the difference between antiquity and 19th century in staple crop. On the other hand, the agricultural products growing in Nicomedia and its hinterland in the 19th century and even today, e.g. wheat, barley, all kinds of beans, millet and sesame, except for new industrial products, remain the same as in antiquity. Consequently, it can be deduced that more or less similar climatic conditions, which allowed almost the same products to be cultivated, were prevalent in Nicomedian territory from the pre-Hellenistic period to modern times. On the other hand, this similarity only gives an average picture and does not allow one to know the historical fluctuations in climate, e.g. drought, or frosty winters, which directly affected agricultural produce.

iii. Agricultural Patterns and Measures in Nicomedia

This section is concerned with exploitation of land and agricultural techniques in order to understand agricultural patterns and measures and eventually their influence to the carrying capacity for produce.

The Kocaeli district mostly sustained an agricultural society from antiquity until modern times before the growth of the industrial city in the 1960s. By moving from the general point of view, it is worth asking in the light of general production patterns in the ancient Mediterranean how agricultural life was sustained in antiquity.

One of the most widespread methods for cultivating wheat, the basic staple crop in Roman agriculture, was the two-field system, sometimes called 'dry-farming'. The system was an adaption to the hot summers and rainy winters of the Mediterranean area. In accordance with the system, crops were planted in the fall and harvested in the spring. After the harvest, the field would normally lie fallow for more than a year when it would be replanted with cereal crop.⁶⁵⁴

In general, Mediterranean peasants grow wheat, barley, different kind of pulses, such as lentils, broad beans, kidney beans, chickpeas, peas, and maize, millet, vines,

⁶⁵² Cuinet 1895, 324.

⁶⁵³ Kocaeli district has 263 ha. total area of olive fields, distributed to 50 ha. in İzmit, 60 ha. in Gölcük; 50 ha. in Gebze, 95 ha. in Karamürsel and 8 ha. in Körfez. In Kandira there is no area devoted to olive trees. Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 274.

⁶⁵⁴ Kehoe 2007, 551-552.

olives and finally fruits. First wheat and barley yields are strongly related to each other, and they occupied the same physical environment. Broad beans inter-change with both wheat and barley since their growth cycles are close to each other in terms of resistance to drought, in most places. They are sown in autumn. In the second category, lentils and chickpeas are sown in late winter and early spring, since they required moisture in their growth cycle. This gives the farmer flexibility as a strategy against crop failure. Theophrastus also illuminates crop diversification and the sequence goes wheat, barley, and broad beans in the autumn, and then lentils, chickpea and peas in the spring.⁶⁵⁵ Finally, millet, sesame, celery, and hedge-mustard were cultivated for summer. He recommends the farmers to cultivate different kinds of crops whose growth cycle is similar.⁶⁵⁶

Xenophon observed that different kind of cereals and beans were combined with orchard trees (grape and fig) in the territory of Nicomedia. According to the sequence, wheat, barley, and bean must have been sown in autumn, and harvested in summer. Then millet and sesame were cultivated successively in summer. Xenophon does not mention growing peas or chickpeas, but Galen records that chickpea was cultivated in Bithynia.⁶⁵⁷ In addition, he mentions that grass peas were cultivated in Asia, Mysia, and Phrygia.⁶⁵⁸ Therefore, the sequence for Nicomedia may follow cultivation of wheat-barley-broad beans, then chickpea and grass peas (?) and finally millet-sesame.

Due to the risky climate of the Mediterranean, ancient farmers mostly created various strategies to avoid risk and ensure their security. Consequently, agricultural patterns are formed by these measures. Garnsey and Gallant investigate survival strategies, agricultural risk management, and adaptive measures of ancient peasants in their works. As expressed by Gallant, "...in general, peasant agricultural production aimed primarily to minimize the risk of subsistence failure and to maximize the opportunities for survival."⁶⁵⁹ Yields of the main subsistence crops differed from year to year in the Greek world. Both ancient and modern farmers had to deal with this essential agricultural reality resulted as malnutrition and even famine. Consequently,

⁶⁵⁵ Theophrastus, *Historia de Plantis* 8, 1, 1-4 and 8, 1, 4.

⁶⁵⁶ Theophrastus, *Historia de Plantis* 8, 1, 2; Gallant 1991, 36-38.

⁶⁵⁷ Galen 533, trans. O. Powell, Nr. 22. "There is also a cleansing property in them to a greater extent than with beans, so that some of them clearly break up kidney stones. The chickpeas that do this are black and small, and especially produced in Bithynia, and are called 'rams'."

⁶⁵⁸ Galen 540, trans. O. Powell, Nr. 26.

⁶⁵⁹ Gallant 1991, 34.

farmers adapted themselves to constantly changing physical and economic conditions.⁶⁶⁰

The most common strategy to reduce risk was to practice mixed farming, poly-cropping, that is mixing the cultivation of olives, vines, or other orchard crops with cereals on the same area with a small livestock. This therefore allowed farmers self-sufficiency and minimising the risk. Within mixed farming, crop diversification, growing a wide variety of crops, each possessing slightly different nutritional requirements and growth cycle reduced the risk from plant disease and unexpected changes in weather.⁶⁶¹ In his article, G. Kron challenges the assumption that productivity of the Roman agrarian economy could not have competed with 'capitalist' agrarian economies.⁶⁶² He introduces that one of the most efficient methods used by the ancient farmers was alternate husbandry or ley farming in which the field is exploited growing cash crops for several years and then it is used for pasture or growing fodder another number of years. This method boosts arable yields, stocking rates and pasture quality.⁶⁶³ Kron compares the 19th and early 20th centuries European farmers and Roman peasants and comes to conclusion that Roman farmers were better condition than European farmers in terms of landownership, social prestige, political influence, diversity of produce, agricultural productivity, quality of livestock, meat and fish consumption, thus, level of nutrition and living standards.⁶⁶⁴

Intercropping, another production strategy means the cultivation of two different plant species on the same piece of land. The categories of intercropping are mixed cultivation which is planting of two crops together, row intercropping that is planting cereals and tree crops (olive, vine) together and relay cropping which means the growing of two different crops successively on the same land during a one season. Farmers practiced crop rotation, in particular the rotation of cereal crops with beans and other lupines.⁶⁶⁵ Crop diversification and intercropping protect the peasant from climatic changes by minimizing the risk crop failure and consequently food shortage. Orchard trees including grapes and fig are known in Nicomedia. It is therefore likely that row cropping might have been practiced in Nicomedia although there is no evidence supporting this suggestion. As is known, fig and grape are late summer

⁶⁶⁰ Gallant 1991, 35.

⁶⁶¹ Garnsey 1988, 48-49. For example, peasants grew hard wheat and rye as supplementary pairs in pre-industrial Europe.

⁶⁶² Kron 2008, 71-119.

⁶⁶³ Kron 2008, 74.

⁶⁶⁴ Kron 2008, 78, 80, 85, 88, 94, 102, 107.

⁶⁶⁵ Kehoe 2007, 551-2.

fruits.⁶⁶⁶ For that reason, they accompanied the cultivation of millet and sesame in summer.

The final measure is fallow. Fallow helps water-retention, and it rests the soil before replanting.⁶⁶⁷ Hesiod mentions short fallow or multi-cropping.⁶⁶⁸ According to Theophrastus' observations in the Black Sea in the the 3rd century BC, it seems that multi-cropping was practiced. Farmers sow cereals in winter, and spring, and at the same time, they sow legumes.⁶⁶⁹ The Black sea region allows cultivating spring sown and late summer harvest and multi-cropping. Choosing the fallow type is related to soil type (fertile or barren) and moisture.⁶⁷⁰

Among different types of fallow, which rotation would be practiced in the case of Nicomedia? For annual cropping there is a scheme drawn by Chapman following winter-legumes/summer fallow/winter wheat/ summer fallow/ winter barley/summer fallow/winter legumes.⁶⁷¹ In Nicomedia, winter beans/summer fallow/winter wheat/summer fallow/winter barley could be sown in October/November and harvested in June, then the land is fallow. However, this fallow type would not be efficient for ancient peasants who need to pay tax and produce for their own consumption.

As Garnsey suggested for Classical Attica, continuous cultivation or multi-cropping could also have been practiced in the Black Sea region. Continuous cultivation does not mean that the same crop is sown on the same land every year. Growing pulses as fodder helps to integrate animal husbandry to agriculture. By considering the growth cycle and setting up rotation system decreased the important effect of fallow in soil, especially for growing pulses.⁶⁷² Fallow is highly related to the fertility of soil and climate, and its duration must be changed according to the fertility of the soil. As the Marmara region today enjoys both the Black Sea and the Mediterranean climate and the soil type is clay-deep soil, this may allow multi-cropping without any fallow in Nicomedia as opposed to Central Anatolian plateau. Therefore, the scheme could be in winter wheat-barley-broad beans (October-June), in spring legumes and vegetables, in

⁶⁶⁶ Galen 571-574, trans. O. Powell, Nr. 8-9.

⁶⁶⁷ Garnsey 1988, 93.

⁶⁶⁸ Hesiod, *Erga kai Hemera* 573-575, 596-600.

⁶⁶⁹ Theophrastus, *Historia de Plantis* 8, 4, 6.

⁶⁷⁰ Gallant 1991, 52. Forest-fallow: one or two consecutive crops followed by a period of 15 to 20 years fallow. Bush-fallow two or more consecutive crops followed by a period of 8 to 10 years fallow. Short-fallow: one or two consecutive crops followed by 1 or 2 years fallow. Annual cropping: one crop is cultivated each year and the land allowed remaining fallow only a few months. Multi-cropping: Two or more crops are grown successively on the same plot of land each year without any fallow. Preference of these fallow types depends on "labour product, the amount of land, the location of land, livestock holdings, and tenurial arrangements".

⁶⁷¹ Chapman 1971, 18; Gallant 1991, 53.

⁶⁷² Garnsey 1988, 94.

summer millet-sesame (July-October) with complimentary seasonal fruits grapes and figs. Millet, sesame and some other fodder crops have a shorter growth cycle than wheat and barley, and they need less labour and moisture. While fallow rests the soil, growing such crops in terms of their growth cycle would not deteriorate the main ingredients and nutrients of the soil. Accordingly, continuous cultivation instead of fallow would be a good agricultural risk management strategy for the ancient peasant.

Livestock-raising was of central importance to agriculture in the Roman world. Farmed animals were often used for other purposes than slaughter, for milk, wool, and labour. When they were killed for food, it was normally through the sacrificial process.⁶⁷³ Though costly to maintain, plough oxen increased the productivity of farmers, and the ability to maintain draft animals was surely crucial to a farmer's prosperity and independence. The raising of livestock also allowed farmers to diversify their sources of income. Sheep, for example, could be raised for their wool. The manure from livestock was an important source of fertiliser.⁶⁷⁴ Pig rearing is found as an important measure a complementary food source against food shortage and famine in Asia Minor, Mysia and possibly in Nicomedia as well, in the passages of Galen.⁶⁷⁵

Animal husbandry was also integrated into agriculture by cultivating oats or other fodder crops in rotation with cereals.⁶⁷⁶ Xenophon does not mention animal husbandry, but explains how the army took many sheep in later Nicomedian territory. Since the army could not bring sheep with them, it shows that sheep were acquired from later Nicomedian territory.⁶⁷⁷ In another passage, he clearly mentions large number of sheep obtained by Arcadians from the large village in Calpe.⁶⁷⁸

Another item of evidence, according to Robert's interpretation, is an epitaph of Sosylos, the *oikonomos* (bailiff; housekeeper?) of Reglianus Hippon, or son of Reglianus and grandson of Hippon, discovered in Aydınlı near Nicomedia dated to the second and third centuries AD. There are four small animals (seemingly sheep and dog) and two servants in the relief and the main character holds a shepherd's crook wearing a shepherd's felt cloak. Robert draws attention on how the Bithynian Peninsula is ideal for farming, and he counts existence of pasture, forests, and moors based on his and

⁶⁷³ Wilkins-Hill 2006, 142.

⁶⁷⁴ Kehoe 2007, 551.

⁶⁷⁵ Galen 620-621, trans. O. Powell, Nr. 38-39. Galen speaks of pig rearing in his native Mysia and Asia Minor where people were keeping pigs through the winter. However, famine forced people to kill and eat pigs in autumn. Wilkins-Hill 2006, 147-148.

⁶⁷⁶ Kehoe 2007, 551-2.

⁶⁷⁷ Xenophon, *Anabasis* VI 6, 5-6; VI 6, 37-38.

⁶⁷⁸ Xenophon, *Anabasis* VI 3, 1-4. "...They also fixed upon a hill as the place where all the troops were afterwards to gather; and since their onset was unexpected, they took many captives and were in a fair way to secure a large number of sheep".

travellers' observations.⁶⁷⁹ The presence of this shepherd *oikonomos* is an important indication for practicing animal husbandry together with agriculture in Nicomedia in Roman times. As is known, sheep and goat farmers in Nicomedia served as a market for the butchers at Constantinople in the Byzantine times and later Ottoman period.⁶⁸⁰

It is important to remember that Horden and Purcell argue against drawing over-simple divisions between arable and pastoral; plain and hill. They replace these over-simple divisions, for example, wetlands are exploited for different produce, animal husbandry, and cereals. This leads one to think of the physical geography of Nicomedia beyond over simple divisions. The marshes east of Nicomedia in the lower Sangarius Valley are well attested in the 18th-19th century's travellers for the raising of water buffalo.⁶⁸¹ Although water buffalo are not mentioned in the ancient sources, Polyaeus, from the second century AD, mention the existence of marshes exactly in the same area (Astakos/Baş Iskele, east of Nicomedia) during the military campaign of Spartan general Clearchus against the Bithynians in the fifth century BC.⁶⁸² Horden and Purcell draw attention to the economic importance of water meadows without making special mention of Nicomedia.⁶⁸³ These were a source of malaria, but were also suitable for rice cultivating and also raising buffalo. Many travellers note the marshy areas at the end of İzmit Gulf. As observed by David Porter in 1832 those marshy areas served as excellent places for raising buffalo in İzmit.⁶⁸⁴ Raising buffalo was also popular in Prusias ad Hypium. Strabo reports from the first century BC that in the interior of Bithynia above Tieion, the plain of Salona has the finest pastures for cattle and produces *Salonites* cheese.⁶⁸⁵ This confirmed by Richard Leonhard (1899) a geographer and geologist who

⁶⁷⁹ Robert 1978, 429. Robert mentions that the moors and herds of inland plateau can be found in the works of F. Braun and in C. Von der Goltz (especially north of Tuzla and Gebze). Şahin 1975, 41.

⁶⁸⁰ Mango 2000, 199.

⁶⁸¹ Lindner 2007, 117. The lower Sangarius was appropriate neither for agriculture nor for pastoralism except raising water buffalo.

⁶⁸² Polyaeus II 30, 3. He reports Clearchus' campaign on the Bithynians in c. 411 BC. "When he came near to Astacus, he established a camp for the citizens on a flat marsh, full of dead and stagnant water."

⁶⁸³ Horden-Purcell 2000, 186-190.

⁶⁸⁴ Ulugün 2008, 114: In 1818, the Hungarian politician Graf Istvan Széchenyi describes the high mountains and marshy areas at the end of Gulf. 128: the Scottish traveller John Galt also talks about vast marshy areas in 1810. 151: The Russian Colonel Serristori in 1828 reports that area between İzmit-Karamürsel is fertile and there are some marshy meadows. 158-9: In 1832, the traveller David Porter observed herds and water buffalo in İzmit. 189: In 1847, the French geographer, geologist, and engineer Xavier Hommaire de Hell says that there are marshes and wooded areas in the plain between İzmit and Sapanca. 229: The British traveller Thomas Stevens described the area as flat and marshy after passing 4 miles from İzmit in 1885. 144; Dr. Robert Walsh in 1823, and, 258: Vital Cuinet in 1893 mentions valley of İzmit as a source of malaria, and record that the fields in Sapanca-Adapazar and its environs were turning into marsh because of flooding of Sangarius River and other neighbour rivers.

⁶⁸⁵ Strabo XII 4, 7.

notes, “raising buffalo has long been familiar in the country”.⁶⁸⁶ Nevertheless, palaeozoological evidence from excavations is still wanting to prove raising buffalo in antiquity. Wetlands also provide raw material, e.g. bird, fish, salt, peat, timber, and firewood. Floodplains can also be used in agriculture.⁶⁸⁷ In the nineteenth century, the vast marshes around the Gulf were exploited in order to obtain salt, which was very profitable to the city. Salt was very important item in antiquity especially in fish products and for general consumption. Though there is evidence for salt produce in the 19th century, it is not known in antiquity.⁶⁸⁸ Existence of firewood, another wetland product, is both known in Nicomedia and in the nineteenth century İzmit.⁶⁸⁹ However, there is no specific mention in ancient sources that firewood was also obtained from wetlands as well as wooded areas.

All accounts and evidence draw attention to the role of animal husbandry, but not to the scale of activity or to the division of land between agriculture and pastoralism. At least, the shift between pastoralism and agricultural areas, though, can be observed in a later period. According to Cuinet’s figures, there were 264,286 head of sheep in 1893 in the İzmit Mutasarrıflığı, compared with 111,400 goats, 130,000 Angora goats, and 314,290 buffalos and cattle.⁶⁹⁰ Hence, sheep raising was a relatively important portion in animal husbandry. In 2002, in the Kocaeli Province there were 57,482 cattle, 40,275 sheep, and 13,245 goats.⁶⁹¹ The conspicuous reduction between 1893 and 2002 may be connected to changes in the land exploitation. It seems that in the 19th century, the proportion of animal husbandry was higher than 2002. Thus, it is likely that the area occupied by pastoralism in 1893 started to be used for growing cereals by the 1930s. While pastoralism decreased, agricultural areas increased. With the rise of central governments, e.g. Kingdom of Bithynia, the Roman Empire, and the Turkish Republic, agricultural land must have increased in Nicomedia/İzmit.⁶⁹² As a result, it can be suggested that land use differed in 19th century’s İzmit than ancient Nicomedia. (For this issue see discussion in p. 136-138)

⁶⁸⁶ Robert 1980, 54. p. 34, Marshy areas, and marshy soil around Düzce (Prusias ad Hypium) were attested by many travellers e.g Hacı Kalfa, von Diest, Georgos Perrot.

⁶⁸⁷ Keddy 2010, 235-301.

⁶⁸⁸ Robert 1978, 416. Salt was very important item in antiquity especially in fish products and for general consumption. Though there is evidence for salt produce in the 19th century, it is not known in antiquity.

⁶⁸⁹ Pliny, *Epistulae* X 41; Cuinet 1895, 385.

⁶⁹⁰ Cuinet 1895, 327-328.

⁶⁹¹ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 286-7.

⁶⁹² For similar case in Central Anatolia, see Mitchell 1993, 245. For general policy in increasing grain produce, see Rostovtzeff 1926, 188-189. It should be noted that decrease in pastoralism may also be linked to urbanism and industrial period in modern İzmit.

Prior to concluding this section, it is worth mentioning briefly, which technology was used in agriculture and other manufacture in Nicomedia. L. Foxhall in the case of Greece explains that Hesiod's *Works and Days* provide only a restricted view of agriculture in comparison with the archaeological evidence. Nevertheless, his work allows accepting that the basic staples and techniques of Mediterranean farming continued from the Bronze Age.⁶⁹³ Technology made the major effect in changes in the production potential of the economy today. However, its influence was not so decisive in the past. The main essentials of traditional dry agriculture, e.g. the use of animal power, rotation of cultivations, the plough are already attested by the second or first century BC.⁶⁹⁴ H. Schneider's chapter on technology in the *Cambridge Economic History of the Greco-Roman World* presents the gradual technological developments in antiquity, e.g. in the technology of water mills, screw presses, kilns.⁶⁹⁵ Indeed, depictions on sarcophagi and steles illustrate plenty of agricultural products and tools used in farming e.g. reaping hooks in Nicomedia and Bithynia in general.⁶⁹⁶ More strikingly a stele found in Otroia (in Nicaea), in the south-east of Lake Ascanius, shows a wheeled plough, and agricultural tools.⁶⁹⁷ Thus, conventional use of agricultural techniques can be traced in the territory of Nicaea, which was adjacent to Nicomedia.

The Scottish traveller John Galt described rural area of İzmit-Kerpe. He observed village houses made of wood and wheeled ploughs.⁶⁹⁸ In 1893, Vital Cuinet emphasised the continuity of traditional agricultural systems in the villages of İzmit. More strikingly, he reported that villagers were insistent on using primitive tools and had no belief in better systems and methods to improve their produce. As a result, ploughing with oxen and wheeled plough remained the same in the 19th century as in antiquity.⁶⁹⁹ All in all, methods and techniques applied in agriculture in the Roman world must have prevailed. In İzmit in the 19th century, the travellers' notes apparently indicate unchanging agricultural techniques since antiquity.

There were changes in both crops and tools over time, but these changes did not have an effect on productivity. As highlighted by Lo Cascio and Malanima the only major change in Italian agriculture before the arrival of chemical fertilizers and tractors was the appearance of maize. Given the scale of maize produce in İzmit in 1893, it

⁶⁹³ Foxhall 2005, 76.

⁶⁹⁴ Lo Cascio-Malanima 2005, 28-29.

⁶⁹⁵ Schneider 2007, 144-171.

⁶⁹⁶ Adak-Akyürek Şahin 2005, 171.

⁶⁹⁷ Cremer 1992, 65-80, Tafel 16, O2.

⁶⁹⁸ Ulugün 2008, 112.

⁶⁹⁹ Cuinet 1895, 321.

seems that it was also the case in İzmit. Another important point, which is connected to country's historical development, helps with the method. The nineteenth century Europe saw many technological developments in agriculture and one confidently can speak of the Industrial Revolution, which highly changed the economy of European countries. However, in the nineteenth century Ottoman Anatolia, and, even, in the early Republican Turkey, the use of mechanized agricultural technology is a recent phenomenon, starting in the mid 1950s and becoming widespread barely twenty years ago. Thus, not only evidence from the nineteenth century Anatolia but also from the mid 1950s could help observing old tradition and techniques, which seemingly preserved itself since antiquity.⁷⁰⁰

The final variable affecting production pattern is economic institutions such as markets and organizations, and political institutions such as the state. In the long period, it is not easy to determine whether these institutions became more efficient and they displaced the production function to the left. When the circulation of goods and the extension of the market in Roman antiquity, the Middle Ages, and the early Modern age were compared, it is again difficult to distinguish an improvement in the circulation of commodities in the Mediterranean regions. Quite the opposite, the unification of these regions after the Roman conquest must have vividly promoted long distance exchanges of staples and market integration. More peaceful and safer conditions must have provided a marked decrease in transaction costs. Furthermore, the creation of a unified monetary zone and common laws, especially regarding commerce reduced uncertainty and thus lowered transaction costs. When it comes to transportation, the circulation of goods did not alter drastically (from wind power propelling sailing-ships, or the muscle power of mules and horses to the introduction of steam power). For instance, ships were not more efficient in the sixteenth century than in the first century AD, despite the overall changes in shipbuilding techniques, the size, and capacity of Roman merchant ships. The road system was most likely more efficient in Roman antiquity than in following centuries.⁷⁰¹

To sum up, although there is a continuity of similar agricultural techniques from the antiquity to pre-mechanized times in İzmit/Nicomedia, differences in staple crop and land use need to be taken into account while estimating the land's carrying capacity in Nicomedia.

⁷⁰⁰ Greaves 2002, 15.

⁷⁰¹ Lo Cascio-Malanima 2005, 30.

iv. **Landownership and changing economic structure under the Roman Empire**

Having examined production patterns, it is critical to probe the scale and structure of landownership in Nicomedia, and also to question the effect of new power incentivised to maximize agricultural profits. As well as examining the extent of landownership, and the scale of agricultural produce, it is also important to consider Nicomedia within different city types.

As in many other cities, feeding its own population was an essential part of the civic economy and ancient people sought to cultivate as much arable land as they hold. The growth of the urban economy was closely linked to agricultural production, and there is no doubt that Roman imperial peace, and policy provided opportunities for economic growth. The elite's economic and social power depended on their ability to exact the agricultural surplus produced in the countryside. Hence, the urban economy in the Roman Empire in general developed by a transfer of wealth from countryside especially in the form of the rents exacted by the landowning elite. This was the key point in the debate about Finleyan self-sufficient and the Weberian consumer city type (see Chapter I, p. 47-53). Agriculture was promoted through imperial policy, and the elite's share increased throughout the course of the early empire. Consequently, imperial estates increased throughout the empire in the third and fourth centuries, as also observed in Asia Minor.⁷⁰²

The emergence of large estates owned by immigrant Roman or Italian settlers was widespread under Roman rule in Asia Minor.⁷⁰³ On imperial estates, the control of the property was in the hands of an imperial freedman procurator or procurators who were not expected to be resident on the property. Generally, the capital city was their residence. Between the procurators and the *coloni* (inhabitants of the estate), there were conductors (leaseholders) who are responsible to the procurator for the estates' produce and general conditions. One effect of the situation, however, would have been related to reduce in the status of the indigenous peasantry, who were populous in this area. More significantly, Bithynia is one of the few parts of Roman Asia Minor where the poor rural inhabitants were officially classified as being of a lower status than urban settlers under the empire.⁷⁰⁴

⁷⁰² Kehoe 2007, 546-548.

⁷⁰³ Mitchell 1993, 158. Mitchell 1974, 37-38.

⁷⁰⁴ Mitchell 1993, 162. As for the administration of estates, owner of property could determine the best way to administer his belongings. Smallholdings close to the city might be worked directly by his family and dependants, but the wealthier owner, and their more extensive estates were likely in charge of the some agents on behalf of the owner.

As for Nicomedia, it is difficult to establish the extent of the dominance of imperial estates or Roman landownership in the light of current evidence. Although estates largely were widespread under Roman rule, seemingly there were fewer opportunities for new Roman landowners in Nicomedia than for example in Nicaea. There are only four inscriptions including names of *oikonomoi* and a tenant who worked in an estate.⁷⁰⁵ One of them dated to the High Empire, epitaph of Phyllis, found in the village, Yanık (near Sapanca, south of Sophon Lake), is interpreted as belonging to an estate manager of the estate owner M. Iunius Faustinus who is a Roman citizen.⁷⁰⁶ *The Vedii* attested in Nicomedia seems to have been a prominent Italian family.⁷⁰⁷ In contrast to this limited evidence, inscriptions attested in Nicomedia and its territory, refer to twenty-four local notables who seemingly possessed ‘a small or middle-sized property’ and held Roman citizenship with the universal grant of citizenship (*Constitutio Antoniniana*) in the third century. Epigraphic evidence cited by Fernoux generally indicates that there was a relatively late process of acquiring Roman citizenship in Nicomedia in comparison to other Bithynian cities. As a Hellenistic capital, it seems that acceptance of Roman rule took some time in Nicomedia.⁷⁰⁸ Moreover, this can be observed coin types in the Early Empire in the city.⁷⁰⁹

Funerary inscriptions of these notables are attested in the rural area around Nicomedia and they point that a sum of money should be paid to civic or village authority in the case of violation. This shows vitality of local landownership in Nicomedia.⁷¹⁰ It is very likely that their properties were in those villages. Table 3 (below) presents fifteen local landowners who were attested in the villages in the territory of Nicomedia, and nine of them were found in Nicomedia/İzmit.

⁷⁰⁵ *TAM IV 57*, it was found in Beyköy-İzmit and it is a dedication made by *oikonomos* M. Skreibonios Kapetolinos in the village of Rhizouragos. Şahin 1978, 123, there is an epitaph found in Aydınlı-Gebze and only half of the name of *oikonomos* can be read as Sosylos son of Reglianus. *SEG XXXVI 1155* (Gündoğdu-İzmit) It is a marble altar for dedication of Priettos made by Zosas son of Zoilus in 147 AD. It refers to an estate owner and Zosas must have worked as tenant. *TAM IV 276*, a sarcophagus found near Nicomedia carries name of an *oikonomos* Gaios Tryphonos.

⁷⁰⁶ *SEG LV 1367*; Adak-Akyürek Şahin 2005, 139-140, Nr.5. Adak and Şahin specify that M. Iunius Faustinus must have possessed very large area between southern Sophon Lake and Sophon Mountain.

⁷⁰⁷ Fernoux 2004, 160 and 251. *TAM IV 37*. Honorary inscription of Agoranomos Poplius Vedius Pollionos. *TAM IV 70* Dedication to the Gods in the village of Harmodiane by P. Vedius Kornelianos and Stratonos Vedius Pausanias. All of them were arrested in the city of Nicomedia.

⁷⁰⁸ Fernoux 2004, 201. Number of the Nicomedians obtaining Roman citizenship in the city attested: Iulii-1, Claudii-8, Flavii-15, Ulprii-5, Aelii-27 and Aurelii-91; in total 147.

⁷⁰⁹ Fernoux 2004, 165, 276. In the time of Papirius Carbo, while Nicomedia depicted Zeus Stratios on the obverse which is reminiscence of Bithynian monarchy, other Bithynian cities preferred Dionysos in their civic coins.

⁷¹⁰ Fernoux 2004, 251.

Table 3: List of Nicomedian landowners attested in/around the city.

Names of the landowners	Location of the property	Provenance	Reference
Aurelius Potamonianus Murocles	Kassa	Sapanca	TAM IV 117
Aurelius Zosimos	-	Deli Hasanlar	TAM IV 186
Aurelis Bathyllinus	Prepa	Ekşioğlu	TAM IV 231
Ailius Septimius Severus	Arbeila	İzmit	TAM IV 234
Asklepiodotos	Desa	Kandıra	TAM IV 243
Asklepiodotos	-	Kara Yakuplu	TAM IV 244
Aurelia Arria	Soka	Kaşıkçı	TAM IV 249
Aurelia Basilike (?)	-	Kara Yakuplu	TAM IV 250
Calerius Pomponius	Arbeila	Tuzla	TAM IV 285
Aurelius Marcianus	Kypra	Omurlu	TAM IV 267
Aurelius Pison	Pentephyle	Göğüşler	TAM IV 269
Philete and Aurelius Socrates	Arbeila	Gebze	TAM IV 309
-	-	Sofular	TAM IV 315
-	Leptoia	Kayacık	TAM IV 329
-	Arbeila (?)	Tavşancıl	TAM IV 343
Aristainetos	Arbeila	İzmit	TAM IV 238
Aurelius Hesichius	Arbeila	İzmit	TAM IV 247
Aurelius Eu- Catilinus	Sarakelon	İzmit	TAM IV 262
Aurelius Festus	Rhakelon	İzmit	TAM IV 272
Aurelius Eugenius	Arbeila	İzmit	TAM IV 263
Aurelius Christinaus Timocrates	Dolanon (?)	İzmit	TAM IV 274
Capitolinus	Dolanon (?)	İzmit	TAM IV 283

-	Arbeila	İzmit	TAM IV 326
-	Lakkenon	İzmit	TAM IV 328

As far as offices holding by these landowners are concerned, Aurelius Eu-Catilius was a *bouleutes*, *argyrotamias* (treasurer)⁷¹¹, *mysteriarkhes* (related to Demeter), *sitones* (grain supplier/commissioner) and he was involved in *parapompé* many times, Asclepiodotos in Desa was a *presbyteros*, and finally Aristainetos from *Phyle Ploteinia* in Arbeila was an *archiereus* and *gerousiastes*.⁷¹² There is another landowner who was *presbyteros* served in *parapompé* many times.⁷¹³ Testimony of *sitones* (grain supplier) draws attention as there were also *agoranomoi* who were in general in charge of supervision of weights and measures and the supply of essential commodities attested in Nicomedia.⁷¹⁴ The existence of *agoranomoi* and *sitones* shows that supplying the wheat was separately dealt with. Aurelius Eu-Catilius was in charge of grain distribution in the city. It is however obscure that he was also involved in grain production by means of his property in Sarakelon. Fernoux infers that the division of labour was done differently in Prusias ad Hypium. *Agoranomoi* of this city seemingly were involved in both wheat and all other essential products.⁷¹⁵ There is another neighbour city of Nicomedia, Cyzicus, which considered grain supply important. *Sitophylakes* was in charge of grain supply in this city, and he supervised public granaries.⁷¹⁶

Village settlements are known since the pre-Hellenistic period.⁷¹⁷ During the Hellenistic period, it can therefore be assumed that the villages of the rural territory of Nicomedia served to supply the kingdom. Under Roman rule, the picture may not have changed as many villages' names of native origin are attested in the territory of

⁷¹¹ He was treasurer for the fund allocated to the *Boule*, and ambassador for several times. Fernoux 2004, 549.

⁷¹² TAM IV 262, 243, 238.

⁷¹³ TAM IV 329. The name is not known, as the inscription is broken.

⁷¹⁴ For *agoranomoi* attested in Nicomedia, see TAM IV 37, 42, 43. SEG XXXIX 1342, the lead weight with inscription found in a modern estate in the east of Nicomedia including the name of *agoranomos* in 245-246 AD. It is interpreted as the existence of an *emporion* in this part of the region. Besides this, lead weights attributed to Nicomedia published recently carry about nineteen *agoranomoi* of Nicomedia. SEG LV 1369-1388.

⁷¹⁵ Fernoux 2004, 333-334; Erdkamp 2005, 269. Most of inscriptions yielded in Asia Minor carrying grain funds (*sitonia*) whose function was to supply adequate grain in all years and its officials (*sitonai*) are dated to the second or early third century AD rather than earlier or later periods. Although it was claimed that *sitonai* were appointed temporarily in the time of grain crises, continuity of the office and officials attested over centuries indicate that it was a permanent institution.

⁷¹⁶ Hasluck 1910, 257.

⁷¹⁷ Xenophon, *Anabasis* VI 6, 1-3.

Nicomedia.⁷¹⁸ Some of these villages were re-organized by means of *synoecism*, e.g. at Pentephylai under Roman rule. Forty-one villages and seven settlements called *phyle* are attested in the territory of Nicomedia (figure 3). As the evidence by and large indicates a lack of big properties or imperial estates, attested villages in the territory must have been the producer unit of the civic economy. Indeed, epigraphic evidence presently shows that landownership was formed by small and middle-sized properties scattered through these villages owned by local notables whose epitaphs are found in Nicomedia and in the villages around Nicomedia.

According to the theories of Crawford, Corsten and Fernoux, Bithynian landowners, who mostly were Thracian, were by and large displaced by Roman-Italian immigrants by the last century BC in Bithynia.⁷¹⁹ As opposed to their claims, Bekker-Nielsen reduced the effect of this generalisation by re-considering epigraphic sources.⁷²⁰ It was the case that large number of Italians was in Asia Minor as *publicani* or *negiatores* during the last century of the Republic. However, it is not clear whether those immigrants settled in Bithynia or returned to Italy with their revenues. Fernoux notes eight Italians who had direct financial interest in Bithynia, but only one of them had settled in Bithynia. While farming an estate requires long-term economic aims, contracting business indicates short-term goals. Fernoux's examination on family names (*gentilicia*) which has been done to reveal the existence of Republican immigrants in Bithynia, presents that eight of *gentilicia* were already attested in Aegean islands and Asia Minor in the early second century BC. Thus, these people may have come from families settled in the Levant for centuries ago, and it cannot be totally said that all of them were from landowning elite.⁷²¹ Corsten points out the lack of personal Thracian names as an indicator of absence of Bithynian estate owners. He suggests that they were replaced by Roman-Italian landowners instead.⁷²² According to Bekker-Nielsen, however, onomastic analysis on the names cannot accurately define ethnic origin or cultural identity of people. Hellenised Italians or Romanised Greeks or Bithynians cast doubt on Corsten's analysis. Bekker-Nielsen therefore concludes that large number of Bithynian landowners of various origins remained under the Roman rule. Their outlook and language level however were possibly an obstacle for them to

⁷¹⁸ TAM IV 99-100; Talbert 2000, 786-791.

⁷¹⁹ Crawford 2004, 100; Corsten 2006, 85-92; Fernoux 2004, 241.

⁷²⁰ Bekker-Nielsen 2008, 97-98.

⁷²¹ Fernoux 2004, 147-155.

⁷²² Corsten 2006, 85-92.

ascend imperial careers until the second century AD.⁷²³ This appears to be true for the case of Nicomedia, as the current state of epigraphic evidence indicates the presence of Nicomedian landowners rather than strong Roman-Italian landownership.

Returning to the question posed at the beginning of this section, it is now possible to suggest that incentive to increase agricultural produce by means of imperial estates seems scarce in Nicomedia in the current state of evidence. In any case, the Nicomedians had to cultivate a certain amount of agricultural products both for their own consumption and to pay taxes as they did under Hellenistic Kingdom of Bithynia. By the acquisition of Bithynian Kingdom and its organization as a new province, publicans and moneylenders started to exploit the wealth of the land. By the time of Augustus, two kinds of tax were levied in the empire. They were a land tax (*tributum soli*) levied in all provinces and a poll tax (*tributum capitis*) which was imposed at the same rate for rich and poor. The *tributum soli* was collected at different rates. One tenth of the total produce in Bithynia, Sicily, Sardinia, and one eighth of the total produce in North Africa were collected. As seen different tax rates applied in accordance with land use and soil productivity.⁷²⁴ There is no direct evidence from Nicomedia, but Dio Chrysostom reports that Nicaean levy was a tithe (one tenth of the total produce) collected by *publicani* under the Principate⁷²⁵, and as is known large parts of Asia Minor and Bithynia paid tax in kind such as grain, wool, hides, raw salt and salt meat.⁷²⁶

v. A Production Model and Some Quantitative Assumptions

Having examined physical setting, products, agricultural patterns and landownership, this section investigates how much the city produced. It is difficult to calculate, as there is no quantitative evidence in the city and ancient written sources.

⁷²³ Bekker-Nielsen 2008, 97-114.

⁷²⁴ Garnsey 2004, 245-247.

⁷²⁵ Dio Chrysostom, *Orationes* XXXVIII 26. "But if we recover the primacy, the Nicaeans relinquishing it without a fight, shall we receive the tribute they get now? Shall we summon for trial here the cities, which now are subject to their jurisdiction? Shall we send them military governors? Shall we any the less permit them to have the tithes from Bithynia? Or what will be the situation? And what benefit will accrue to us? For I believe that in all their undertakings men do not exert them idly or at random, but that their struggle is always for some end." Erdkamp 2005, 220.

⁷²⁶ Mitchell 1993, 249-250; Duncan-Jones 1990, 197.

Total areas and proportion of agricultural land	Nicomedia (Roman)	İzmit Mutasarrıflığı (1893)	Kocaeli District (1950)	Kocaeli District (2000) ⁷²⁷
Total Area	5000 km ² (calculated)	12,050 km ² ⁷²⁸	8436 km ²	3505 km ²
Agricultural Area	(maximum estimation) 2,500 km ² ½	4,090 km ² 1/3 ⁷²⁹	-	1,567 km ² c. ½

Table 4: Total areas and proportion of agricultural land.

Available sources give qualitative data, which include the name of the products and their quality but not the amounts that were produced. They only reveal that cereals, grapes, and beans were ‘abundant’ in Nicomedia. It is, however, possible to calculate the carrying capacity of Roman Nicomedia by relying on the figures from pre-industrial period. The examples provided by Gallant and Garnsey in their economic study of Attica and Classical Greece⁷³⁰, Engels’ work on Roman Corinth⁷³¹, and Roozenbeek’s unfinished thesis on Ephesus shed comparative light onto the case of Nicomedia.⁷³²

Arable land, which alters over time, is one of the most important elements in estimating the carrying capacity. In Italy, for example, marshy areas were much more extensive from the late Middle Ages onward than during Roman antiquity.

⁷²⁷ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 274. http://www.cedgm.gov.tr/icd_raporlari/kocaeliicd2006.pdf

⁷²⁸ Cuinet 1895, 304.

⁷²⁹ Cuinet 1895, 320.

⁷³⁰ Gallant 1991; Garnsey 1988.

⁷³¹ Engels 1990.

⁷³² This research on the economy of Ephesus was conducted by H. Roozenbeek at Leiden University in the early 1990s. However, it is the unfinished thesis and there is no other publication on it. His work, however, is mentioned in Pleket’s article titled “The Roman State and the economy: the case of Ephesus” in 1994. Thus, it is not to the present author’s knowledge how Roozenbeek made these calculations and reached the result.

Archaeological evidence also confirms that the use of marginal soils and deforestation to enlarge cereal cultivation in the late Republican period and the first century AD. Arable land was more available in antiquity than in later times. It is known that forests advanced again from the late Imperial period onward.⁷³³ As stated by Mitchell, the agricultural pattern changed from rough pasture, and grazing to settled arable farming and thus exploitation of the land generally increased in Asia Minor under the Roman Empire.⁷³⁴ Indeed, there is evidence for increasing grain produce and constraining wine-olive oil produce in Asia Minor as a policy during the Roman Imperial period. For example, this was attested under Domitian in Antioch, and in Cibyra in the time of Vespasian. Domitianus, consul at Smyrna had restricted viticulture in favour of grain in Ionia. Consequently, half of the vines were removed and Ionians went for a petition.⁷³⁵

The territory of ancient Nicomedia has been calculated as 5000 km². In order to estimate its carrying capacity, the amount of the land devoted to agriculture needs to be defined as far as possible. Despite the lack of such figures from antiquity, this can be roughly determined examining the travellers' accounts and some other secondary sources in the later periods.

Table 4 (above) shows total areas and arable land in the four different periods, in antiquity, the 19th century, and today. Under Ottoman rule, as Cuinet noted in 1893, İzmit had an area 4,090 km² of which one third was under cultivation.⁷³⁶ In 2000, the total area of the Kocaeli district was 3,505 km square, and nearly half of the total area (44.72%) was used for agriculture and 18.8 % of the district consisted of mountains. Sakarya County became a separate province in 1954. This explains the striking reduction in total area between 1950 and 2000. The general trend shows that the proportion of the land devoted to pasture was higher in the 19th century than in antiquity and in 2000. (For this issue, also see p. 29 and 128) Hence, it could conceivably suggested that a minimum one third and a maximum half of the territory of Nicomedia (2,500 km²) must have been under cultivation in antiquity, taking account of mountains and wooded areas known since antiquity and fertile areas especially the lower Sangarius, *Regio Tarsia* and northern part of the city.

For example, for Attica, Garnsey moderated the proportion of arable land at 35-40% as opposed to Jardé's pessimistic suggestion 20% and another exaggerated

⁷³³ Lo Cascio-Malanima 2005, 16, 30.

⁷³⁴ Mitchell 1993, 245.

⁷³⁵ Rostovtzeff 1926, 188-189; Cadoux 1938, 250.

⁷³⁶ Cuinet 1895, 320.

suggestion 50%.⁷³⁷ At Corinth, the city encompassed 825 km² in total, and only 207 km² was used as agricultural land.⁷³⁸ It seems Corinth possessed very little arable land in comparison to Nicomedia.

The First Calculation:

Table 5: Production figures (hectolitre/1000) of cereal crops in İzmit Mutasarrıflığı in 1893 (Cuinet 1895, 314).

Wheat	Barley	Oat	Rye	Maize	Melez	Millet	Kablıca	Rice	Vetch	Misc
291	104	154	62	780	60	183	80	167	57	70

Yield or production figure was another variable changing over time and making a decisive effect on the carrying capacity. Table 5 (above) derived from Cuinet's account shows agricultural produce in 1893 in İzmit. As is known, Cuinet's statistics have been drawn from Ottoman authority numbers and information.⁷³⁹ However, these figures only reflect production scale of the year 1893. Since there is no any other account published including production figures of İzmit from the previous years or centuries, only the figures from the year 1893 was taken into account for this research. Therefore, for the carrying capacity of İzmit, a comprehensive research in the Ottoman Archive in İstanbul is suggested for further research in order to make a comparison between production figures from different centuries, especially from the 18th century or earlier periods when maize was not a staple crop. Such empirical data derived from an archival research, however, subjects to the convertibility of yield measurements given in the Ottoman records (per unit) into the modern sense of standard weight measures.⁷⁴⁰

By using production figures from 1893, consumption figures can be calculated for the 19th century. After reaching the wheat produce, deductions for seed, rent, and tax, which show division of produce between state, city, and rural areas, can be applied. This demonstrates the carrying capacity of İzmit in the city in pre-industrial times.⁷⁴¹ Table 5 shows annual wheat produce as 291 hectolitres. 1 hectolitre is equal to 100

⁷³⁷ Garnsey 1988, 91-93.

⁷³⁸ Engels 1990, 27-28, fn. 29.

⁷³⁹ Cuinet 1895.

⁷⁴⁰ For example *kileh* which is approximately 36/5 kg, a dry measure roughly equaling a bushel, was used in the Ottoman records and the weight of *kileh* was varied from one place to another.

⁷⁴¹ Mitchell 1993, 254. Slightly different version of the diagram showing deductions, is presented by Hopkins; Hopkins 2004, 108-128.

litres, and 1 hectolitre wheat contains average bulk density 75 kg. (For average bulk density figures, see table 6, below).

Table 6: Average bulk densities of grains. (1 cubic meter (1 m³) = 1000 litres or 10 hectolitres). Actual values depend on moisture content, variety, quality, and contamination of the grains.⁷⁴²

Grains	Bulk density (t/m ³)	Bulk density (kg/hectolitre)	Bulk density (kg/l)
Barley	0.65	65	0.65
Oats	0.50	50	0.50
Wheat	0.75	75	0.75
Lupins	0.78	78	0.78

The calculation would be:

291 hectolitres (wheat produce) X 75 kg. = 21,825,000 million kg wheat.

If, as suggested by Mitchell and Hopkins, around half of this is deduced for seed (4.2, 20%), for tax (2.1, 10%), and for rents (4.2, 20%) = 10.5; the result makes 10,500,000 kg wheat for consumption.

Total wheat produce / total population in the 19th century İzmit=

10,500,000 / 222,760 people⁷⁴³ = **47 kg wheat per annum per person.**

47 kg wheat per annum per head is extremely low figure for consumption. One of the reasons of low wheat produce is maize which was a staple crop in the 19th century's İzmit. Another reason presumably is linked to the land use. S. Faroqhi states in her work on the Ottoman towns in the 16th and 17th centuries that İstanbul (Constantinople) exploited the land of İzmit to cultivate products, which were unable to grow in the imperial capital. Consequently, the wheat produce in İzmit and its territory has never been sufficient to meet the demand of İzmit. For that reason, İzmit was an exceptional case compared to other self-sufficient Ottoman towns.⁷⁴⁴ It therefore underlines that even if the city possesses a vast and fertile area, the land use is a key variable affecting the produce. Similarly, after the foundation of Constantinople (AD 330), production pattern of ancient Nicomedia must have changed due to the demands

⁷⁴² Table of average bulk densities of grain can be found:

http://www.agric.wa.gov.au/PC_91888.html?s=1001

⁷⁴³ Cuinet 1895, 307.

⁷⁴⁴ Faroqhi 1984, 97.

of the new capital. However, wheat must have been largely cultivated in Nicomedia (at least until AD 330) and the total produce must have been higher than the 19th century.

Wheat, therefore, only comprised a small part of the whole consumption of the city. Alternatively, a calculation based on all the cereal produce in 1893, which is recorded in table 5, can be seen below:

Cereal crops: 291 (wheat) +104 (barley) +154 (oat) +62 (rye) +780 (maize) +60 (wheat-rye) +182 (millet) +76 (whole wheat) +167 (rice) +57 (vetch) +69 (miscellaneous) = 2.002.000 hectolitres.

Total agricultural produce X Minimum hectolitre bulk density

2,002,000 X 65 = 130,130,000 kg. (Minimum)

Total agricultural produce / Total population in the 19th century İzmit

= 130,130,000 kg/222,760= **584 kg production per person.**

Total agricultural produce X Maximum hectolitre bulk density

2,002,000 X 75 = 150,150,000 kg. (Maximum)

Total produce / Total population in the 19th century İzmit=

144,000,000 / 222,760= **674 kg production per person.**

Range: 584-674 kg per annum per person.

Since total agricultural produce covers not only wheat, but also grains, which carry lower bulk density such as barley, millet, rye, oat, 65 kg, and 75 kg were accepted as minimum and maximum bulk densities specified in table 6 in this calculation. The range above, between 584-647 kg cereals per head for the consumption of the total population in the calculation indicates that Nicomedia's production is significantly higher than Mitchell's estimate for Central Anatolia in antiquity (450 kg wheat-equivalent).⁷⁴⁵ Existence of other cereals, e.g. rye, oat, millet, rice, and legumes e.g. chickpea and lentil might have been thought as supplementary for the needs in the 19th century. Even if it is speculated that the population figures were much higher up to 500,000 inhabitants in Nicomedia and its territory, the figure would be 280 kg per head which still places it well over the bread line 225 kg.⁷⁴⁶ This shows the level by which

⁷⁴⁵ Mitchell 1993, 255. Mitchell calculates Central Anatolia as 450 kg wheat per annum per head.

⁷⁴⁶ It is problematic estimating wheat consumption in antiquity. Comparison between the modern and ancient data shows that a reasonable average is 200 kg wheat per head per annum. Broshi however accepts that 250 kg per person per annum as approximate average consumption figure in Roman Palestine. It was accepted as 192 kg in Athens, 180 kg in Egypt For the comparison of consumption figures see, Broshi 2001, 105. Foxhall and Forbes suggest average wheat consumption as 212-237 kg wheat per year. Foxhall-Forbes 1982, 72. Mattingly and Aldrete show that annual allotment at Rome made 400 kg grain per head, and it was enough to keep two people in subsistence level (200 kg). Mattingly-Aldrete 1999, 178. Also, see Garnsey for the same suggestion (200 kg grain), Garnsey 1983,

19th century İzmit exceeded self-sufficiency. The problem with this calculation is that it fails to take land under cultivation into account. There was 4090 km² in İzmit in 1893 almost twice the amount of arable land estimated in Roman Nicomedia (2500 km²). Thus, it is difficult to make a conclusion by relying on these figures to establish carrying capacity in antiquity, since there are key variables, which are not comparable. Therefore, it is necessary to make a second calculation.

The Second Calculation:

In this calculation, the total land possessed in antiquity is used as the basis for calculation. Since no data including figures such as first fruit inscriptions or any other relevant evidence is available for Nicomedia (as seen in the case of Greece), cereal yield per hectare needs to be calculated on the basis of pre-industrial figures. Although detailed land use is not documented for 1893, and Ottoman İzmit makes up an exceptional case for wheat produce; governmental pressure to cultivate cereals and devoting the greater part of the arable land to growing cereals must have been the case in antiquity in order to pay the tax and meet local needs.⁷⁴⁷ Consumption pattern presents clear evidence to confirm this.

Though the first calculation considered only cereals, people in antiquity did not only consume wheat. Their diet contained legumes, vegetables, and fruits as well. Nevertheless, the scale of cereal consumption was very high. Xenophon and Galen's work not only help for production patterns for the city, also they give invaluable information about consumption pattern. Consumption pattern was closely related to what they produced. The diet of the Nicomedians can be reconstructed by analogy with the general consumption culture in antiquity and the observations of relevant ancient writers. Cereals together with beans and pulses were the basis of the ancient diet and provided the great proportion of the body's requirements, and proteins, vitamins and minerals. They constituted the *sitos*, while supplementary foods such as meat, fish, vegetables, or fruit were known as *opsa* in Greek and *pulmentaria* in Latin.⁷⁴⁸ Vegetables, fresh fruit, and legumes were the second part of the diet. Therefore, the dietary regime for the ancient peasant consists of approximately 65-70% cereal products, 20-25% fruits, pulses and vegetables, 5-15% oils, meat and wine.⁷⁴⁹

118. Hopkins 1980, 117-118. Therefore, 225 kg wheat per annum per person roughly can be suggested as bread line which is minimum need for annual consumption.

⁷⁴⁷ Rostovtzeff 1926, 188-189.

⁷⁴⁸ Wilkins-Hill 2006, 112-114.

⁷⁴⁹ Gallant 1991, 67-68.

From Xenophon's time to today generally the city possessed a wide variety of agricultural products. Both in antiquity and in the 19th century it can be clearly seen that almost all sorts of cereals, and legumes could have been produced on the land.⁷⁵⁰ When the dietary regime was applied on the production figures in 1893, the hegemony of cereal production and consumption can be observed while vegetable, pulses and fruits make up a very small portion (less than 10% in total).

Total cereal produce: 2,002,000 hectolitres = 130,130,000 kg

Total vegetable+pulse+fruit= 11,907,000 kg

Total produce: 142,037,000 kg.

Moderately, the land use in antiquity and in 1893 can be suggested as 80% for cereals and 20% for legumes. The farmers may have cultivated 3272 km² (80%) of 4090 km², that is 327.200 hectares for the cereal crops. The amount per hectare would be:

Total cereals yield X Minimum hectolitre bulk density

2,002,000 X 65 = 130,130,000 kg. (Minimum)

Total produce/Estimated cereal growing area = 130,130,000 kg/327,200 hectares

=398 kg per hectare cereal yield.

2,002,000 X 75 = 150,150,000 kg. (Maximum) / 327,200 hectares

= 459 kg per hectare cereal yield.

Range: 398-459 kg.

If this is compared with the productivity figures in later periods, the latter are seen to be higher. A table given by Emiroğlu, shows average wheat yield figures in Turkey in 1928-1958 were roughly 1000 kg per hectare, which is extremely high and generic to employ for Nicomedia.⁷⁵¹ 398-459 kg cereal yield seems relatively low, compared with the figures in Greece. Barbagallo's yield estimate was 390 kg wheat and 670 kg barley per hectare in Greece, Jardé estimated higher figures of 600-900 kg wheat per hectare and 1.020-1270 kg barley in Greece as whole based on comparison with harvest yields in 1921.⁷⁵² An average wheat and barley yield in Greece between 1922

⁷⁵⁰ Cuinet 1895, 363.

⁷⁵¹ Emiroğlu 1964, 6.

Wheat Cultivation and Yield in Turkey in 1928-1958:

Years	Area (hectare)	Yield (tonne)	Yield kg/ha
1928/32	2.801.000	2.373.000	1.180
1934/38	3.196.900	3.422.500	934
1949/50	4.477.200	3.871.900	1.156
1953/54	6.405.000	4.900.000	1.307
1958	7.450.000	8.550.000	871

⁷⁵² Garnsey 1988, 95. Also a table 4.7 shows that yields of the major crops 1911-1950 kg/ha Athens 629 kg in wheat 793 kg in barley 630 kg in broad beans and 539 kg in lentils. (p. 77)

and 1938 was 620 kg per hectares figures, which are considered low by Garnsey.⁷⁵³ Sallares, however, suggests that 650 kg per hectare in Greece was yield of exceptional conditions.⁷⁵⁴ On the other hand, a similar carrying capacity has been calculated by W. Jongman for Pompeii. Jongman employs the general production figures for ancient Italy suggested by Beloch, which is 400 kg wheat per hectare. He then considers the productivity of Pompeian land in comparison to the other parts of Italy and increases this to 500 kg cereals per hectare.⁷⁵⁵ Jongman's yield figure per hectare is very close to the range 398-459 kg, which is specified above.

All in all, if peasants exploited a maximum of half the total area of 500,000 hectares (5000 km²) for agricultural purposes in Nicomedia, the yields of the arable area would be as shown below:

250, 000 hectares of total area (1/2)

80% for cereal growing =200,000 hectares

The calculation would be:

Estimated cereal growing area X Cereal yield per hectare

200,000 X 398-459 =**79,600,000 - 91,800,000 kg cereals.**

Often subtracting the amount needed for seed 4.2, (20%), for tax 2.1 (10%), and for rents 4.2 (20%), the remainder available for consumption would have been in the range of 39,800,000 - 45,900,000 kg cereals.⁷⁵⁶

Further detailed work done by G. Stratil-Sauer is based on the 1927 census.⁷⁵⁷ According to figures given by Stratil-Sauer, the Kocaeli district produced 540 tons per 100 km² wheat, 55 tons barley, 50 tons oats, and 15 tons rye. Total produce therefore was 660 tons of cereals per 100 km².⁷⁵⁸ Estimated agricultural area in antiquity was 2000 km², and 80% of which was allocated for cereal growing. If they would exploit 2000 km², then estimated total produce could make 13,200 tons=13,200,000 kg. This

⁷⁵³ Garnsey 1988, 95, fn. 19.

⁷⁵⁴ Sallares 1991, 389.

⁷⁵⁵ Jongman 1988, 67, 81 and 135. Jongman accepts 400 kg net produce per hectare as an average for Roman Italy and considers that Pompeii was not average as the land was fertile.

⁷⁵⁶ Mitchell 1993, 254. Hopkins 2004, 108-128.

⁷⁵⁷ Stratil-Sauer 1933, 330-331, fig. 4. As seen in the map given by Stratil-Sauer the areas possessed by İzmit are less fertile in comparison to Adapazarı plain in terms of cereal produce; and only Adapazarı plain produced 1001-2500 tons wheat per 100 km².

⁷⁵⁸ Stratil-Sauer 1933, 326. (wheat) fig 1, 328 (barley) fig 2, 329 (rye) fig. 3, 332 (oat) fig. 5. In Kocaeli District, produce wheat of 101-400 tons per 100 sq km, barley mostly 15-29 tons per 100 sq km in some areas reached 60-119 tons sq km, very little rye range between 0-4.9 tons per 100 sq km. oat 60-119 tons per 100 sq km.

figure is much lower than cereal produce calculated between 79,600,000 - 91,800,000 kg above.

Table 7 (below) shows the total production of legume and pulses. If farmers used the rest of agricultural area, which was 81,800 hectares in 1893⁷⁵⁹, for cultivating legumes and vegetables, the calculation would be:

Total legume & pulses produce / estimated growing legumes & pulses area

9,836,112 kg/ 81,800 ha = **120 kg. per hectare**

For the rest of the area in Nicomedia:

20% of 250,000 hectare for pulses, legumes and vegetables=50,000 ha

Estimated legume&pulses growing area X produce per hectare

= 50,000 X 120 = **6,000,000 kg.**

Total Produce = 85,600,000-97,800,000 kg.

Table 7: Production figures (kg/1000) of legumes & vegetables in İzmit Mutasarrıflığı in 1893 (Cuinet 1895, 314).

Broad Beans	Chickpea	Lupine	Garlic	Onion	Bean	Lentil	Sesame	Flax Seed	Potato	Fresh Vegetables
62	70	69	2.769	2,168	261	132	18	759	1,967,950	2,223

The picture is about the cereals produce in Roman Period. As pointed out above, in the Hellenistic Period, probably the city was much smaller and less populated than in Roman times, but as a capital of the Hellenistic Kingdom of Bithynia, it possessed a big territory (43.000 km²) including very fertile areas, e.g. the Adapazarı, Geyve, and Bursa plains.⁷⁶⁰ Accordingly, even this glance left no room to suppose the similar cereal need in the Hellenistic period. The capital city and its large territory must have been quite self-sufficient, even potentially could export its agricultural sources. In the next section, estimates of the population and consumption pattern will shed light on the question of the self-sufficiency.

⁷⁵⁹ This proportion excludes the orchards, which contain almond, walnut, chestnut trees, and vineyards and other fruits produced.

⁷⁶⁰ For the calculation, Google Earth Professional was used. See the link: http://www.google.com/enterprise/earthmaps/earth_pro.html

II. Consumption Patterns of Nicomedia

i. Urban Population Estimates

First and foremost, this section estimates population figures in the light of available sources and compared with other case cities in antiquity. Having estimated figures for urban and rural population, production results, which were derived can be used for the estimation of self-sufficiency.

Nicomedia as a capital city of Hellenistic Bithynian kingdom, later *metropolis* of the province of Bithynia-Pontus and capital of the empire under Diocletian, acted as magnet for food by possessing strong demands.⁷⁶¹ Although demographic growth of the city through its historical development was not discussed in the first chapter, a general tendency can be observed for the population to grow. There must have been an increase in population during the colonisation period, which, was intensified in the 6th century BC. Greek colonies and non-Greek Bithynians started to live together in later Nicomedian territory. In c. 264 BC, the city of Nicomedia was founded, and started to serve as a capital. Despite the fact that Mithridatic Wars and civil wars affected the kingdom, it is clear that urban population increased under Roman rule, and peaked especially after Nicomedia became a capital city under Diocletian in AD 286. By the foundation of Constantinople, some of city dwellers must have immigrated to the new capital, hence there may have been some decrease in the population of Nicomedia in the fourth century.

There are many estimation figures to calculate population in antiquity. A leading study affecting many other studies on ancient demography is J. Beloch's book entitled *Die Bevölkerung der griechisch-römischen Welt* (1886). This work is heavily used especially by T. R. S. Broughton and Duncan-Jones.⁷⁶² To estimate ancient population density figures, Duncan-Jones both uses walled areas and makes a comparison between nineteenth-century cities and ancient cities. This method can be used for Nicomedia.⁷⁶³

To calculate an estimated figure of the walled area of Nicomedia there is one written source, which is the chronicle of Eusebius (written c. AD 325), as quoted by Michael Bar Elias, Jacobite patriarch of Antioch from 1166 to 1199.⁷⁶⁴ The important quotation for the size of Nicomedia says:

⁷⁶¹ Reger 2007, 468-9.

⁷⁶² There are also other estimation figures. One of them was examined by Broshi in the calculation of Jerusalem. Broshi applies an average of 40 to 50 inhabitants per dunam, which equals 1000 m² by based on number of excavated ancient cities around the Mediterranean. Broshi 1975, 5-6. The interior walled area was 2.321 m², thus it makes maximum 116.050 inhabitants.

⁷⁶³ Duncan-Jones 1974, 274-276. See also Scheidel 2001.

⁷⁶⁴ Fraser 1951, 103. The manuscript dated to AD 1598, consists of 777 pages of Syriac text.

“Alexandria the Great was built in Egypt in the seventh year of Alexander. He reigned twelve years and built twelve cities each bearing the name of Alexandria. These cities were traced by the illustrious Athenian geometers, Aristotle, Timoneos, and Pericles. “At Antioch there existed (or exists) at the middle of the demosion, on a column of Apollo, on a bronze stele an inscription reading as follows: Bartella⁷⁶⁵ is greater than Ephesus by 3,011 feet, Ephesus surpasses Nicomedia by 1,700 feet, Nicomedia surpasses Antioch by 1,820 feet, and Alexandria is greater than these four cities, for it measures 14, 987 feet”.⁷⁶⁶

This is an exceptionally useful indication for civic dimensions, which has been analysed by Russell who estimates and presents the figures in the table.⁷⁶⁷

In his calculations for Alexandria, Russell applies the Phoenician foot of about 0.35 meter and reached 5,200 m. He is surprised at the mention of Nicomedia here and additionally considers that Antioch’s size is small.⁷⁶⁸ He calculates the size of Ephesus as about 2,800 m. long and 345 hectares in size. Russell relies on *Notitia Urbis Alexandrinae* for the size of the city of Nicomedia, which is calculated as 228 hectares.⁷⁶⁹ To calculate the estimation, the size of the city is multiplied with 147.8 inhabitants per hectare, which is the population density figure found by Russell.⁷⁷⁰

The question must be posed what this size means in comparison to other cities. In the fourth century AD, Libanius mentions the city of Nicomedia in his *Monody of Nicomedia* and compares it with Rome, Antioch, Byzantium, and Alexandria in terms of

⁷⁶⁵ This must have been an Assyrian town located 13 miles east of Mosul, Iraq.

⁷⁶⁶ Fraser 1951, 104, fn. 3, Fraser translates the French version of the parallel text made by the Abbé-Chabot.

⁷⁶⁷ Estimated area of some east Roman cities. Cities and their sizes recorded in *Notitia Urbis Alexandrinae*. Russell 1958, 146, Table 149:

City	Feet	Metres	Hectares
Alexandria	14,987	5,245	660
Bartella	12,099		613
Ephesus	9,008	2,800	345
Nicomedia	7,308		228
Antioch	5,488		130

⁷⁶⁸ As a matter of fact since the city of Antioch on the Orontes encompassed the area between 900-1,200 hectares in the 4th-5th century, Russell suggests that the city might have been Pisidian Antioch.

⁷⁶⁹ It is not clear how Russell actually calculated the walled area from the feet figures. If it is Phoenician feet, that makes 7308 feet X 0.35 m. = 2557.80 m. If it is Roman feet, it goes as 7308 feet X 0.296 = 2163.17 m. He accepts Phoenician feet as 0.35 m. For Roman feet see Richardson 1985, 29-31, Nr. 65. Also, see table VIII in p. 31. Compare McKenzie 2007, 323.

⁷⁷⁰ Russell 1958, 68: “This survey of evidence about the density and size of city population in the Roman Empire does not con-firm the high estimates made by ancient and modern writers about those cities. The highest density was probably in Augustan Rome but even there it was probably not over 350 to the hectare and by the fourth century had dropped to below 200. Alexandria, even in a constricted position, still had but few more than 200, while Constantinople probably never had more than 150 to the hectare. Thus, it would seem that large cities or perhaps any cities crowded by environment might have 200 to the hectare. Medium-sized cities, well populated and prosperous, would fall below this according to circumstances and range between 100 to 150. The smaller places, particularly if surrounded by walls built in anticipation of later growth, might have a quite low density.”

beauty and magnificence.⁷⁷¹ Russell's tables enable the size of Nicomedia to be compared with other cities in Western Asia Minor, Egypt, Balkans, and Greece. As a result, Nicomedia was smaller than Rome, Alexandria, Constantinople, Antioch, Smyrna, Ephesus, Athens, Thessalonica; but it was bigger than Byzantium, Pergamum, Cyzicus, Mitylene, Nicaea, Miletus, Aphrodisias, and Leptis Magna.⁷⁷²

These figures discussed so far were based on written sources. What can be derived from archaeological sources and how much Russell's estimation of Nicomedia reflects the actual size of the city are the next questions. For the city walls of Nicomedia, C. Foss and N. Fıratlı provide important information. According to Fıratlı, the city walls start in the Paç Neighbourhood, at the Paç Mosque, and then follow the northern ridges. They end with a big tower on the north of Terzibayır. The walls turn to the west where their traces can be observed, and follow hills covering the north of the city and pass the modern cemetery in Bağçeşme. Then they pass the valley where Bağçeşme School was located as far as the Turgut Mosque. Finally, they pass southwest along the high ridges in Turgut neighbourhood. As far as the Old Military Hospital and dooryard of the Seka Paper factory where some parts of them can be viewed.⁷⁷³ Eastward on the İstanbul Road fragments of İzmit harbour walls have been noticed.⁷⁷⁴ After the construction of the underground passage, which connects the road to the city centre, western parts of the harbour walls were found but removed. Some parts of these walls contain Roman tile work. Fıratlı adds that the areas surrounded by the walls were not completely settled in Roman times. The purpose of the exterior walls, especially, was to protect the city on the north by standing on the ridges, which overlook the city. Roman and even Hellenistic fragments of the walls can be seen.⁷⁷⁵ The map given by Şahin, only shows the interior walls (figure 12, city walls, Şahin).⁷⁷⁶ Both the interior and exterior walls are shown in a city plan drawn by the present author (figure 13).

⁷⁷¹ Libanius, *Orationes* LXI 7-10. "What city was more beautiful? I will not say larger, for in size it was exceeded by four, but despised all that increase of extent, which would have wearied the feet of its citizens. In beauty also it yielded to these, and was equalled, not excelled, by some others."

⁷⁷² Russell 1958, Western Asia minor 80, Table 83; Greece and Balkans 77, Table 80; Egypt 79, Table 81; Africa 76, Table 79; Syria 82, Table 86.

⁷⁷³ Fıratlı 1971, 14.

⁷⁷⁴ For the plan of SEKA Rescue Excavation showing the fragments of eastern city walls see Dörner 1941, Beilage 1. These fragments sank into the ground after construction of İstanbul Road.

⁷⁷⁵ Fıratlı 1971, 14.

⁷⁷⁶ Şahin 1974, Karte II, p. 13.

Foss (1996) confirms Firatlı's description. Foss also stresses the point made by Firatlı that these long exterior wall ridges were built for defensive purpose as a shield both for the city and for its neighbourhood.⁷⁷⁷

On the basis of this archaeological evidence two maps can be drawn for the city of Nicomedia, one for the interior and another for exterior. In the map covering the interior the city walls enclose 232 hectares (2, 32 km²) which is nearly the same size given in the *Notitia Urbis Alexandrinae* (figure 14). The interior walled area seems to have been the habitable area as the exterior walls were designed for a defensive purpose. The exterior wall enclosed c. 500 hectares (5, 00 km², figure 15).⁷⁷⁸

The seating capacity of the theatre from the Roman period would be another indication of the size of the ancient population.⁷⁷⁹ According to recent archaeological research done by Kocaeli University the width of the theatre was 164 m, while the maximum height was 60 m. As a result, the theatre in the Orhan neighbourhood was, bigger than the ancient theatre at Ephesus.⁷⁸⁰ The seating capacity of Ephesus theatre is considered as 20,000 people.⁷⁸¹ The controversy on using calculations of theatre seating capacity to estimate population sizes, however, highlights that rural inhabitants and people from different cities would go to watch spectacles. Therefore, the theatre at Nicomedia only gives a sense of scale of capacity of the theatre, which is approx. 20,000 people.⁷⁸²

On the basis of the archaeological evidence and written sources the habitable area of Nicomedia can be accepted as 228 hectares and the urban population of Nicomedia can be suggested as 34,000 people under the Principate in accordance with Russell's suggestion (population density 149 people per hectare).⁷⁸³ If the urban population of the city was considered as the population under the Principate, one can assume that the city was smaller and less heavily populated in the late Republican Period given Mithridatic wars and civil wars, and exploitation of Bithynia by the

⁷⁷⁷ Foss 1996, 29-31. According to Foss' descriptions, there were substantial remains north-east of castle. These fragmentary parts end with a big tower, which is 10 m. It is not accessible as it was covered by Radar Station (today Martyr Coppice). After The Radar Station, the second part of the city wall can be seen in Turgut Neighbourhood. The final parts of the exterior city walls passed over the St. Pantelemon Monastery.

⁷⁷⁸ For the calculation, Google Earth Professional was used. See the link:

http://www.google.com/enterprise/earthmaps/earth_pro.html

⁷⁷⁹ Duncan-Jones 1974, 261.

⁷⁸⁰ Çalık-Ross 2007, 123.

⁷⁸¹ Trebilco 1994, 348.

⁷⁸² Duncan-Jones 1982, 261; Scheidel 2001, 60.

⁷⁸³ This density figure does not seem unreasonable or exaggerated, as Pompeii was estimated 160 by Russell, Ostia 390 and Alexandria 326 people per hectare. According to Mols' study about demography from the late medieval times to the 16th century indicates that lowest average densities for small towns were 100 per hectare. Russell 1958, 64, Engels 1990, 81-82; Mols 1955.

publicans. This points towards accepting Mitchell's population estimated for the city at 25,000 inhabitants with a population density of about 110 per hectare.⁷⁸⁴

Wilson recently criticized this method and pointed out the problems occurred while estimating city populations. According to Wilson, extrapolations from the area within city walls may not show extramural habitation or the walled area might not have inhabited throughly.⁷⁸⁵ Wilson also draws attention to the population density multipliers and their variability during the time.

As for the situation in Nicomedia, there are eastern and western cemeteries, which are archaeologically attested outside of the city walls. Moreover, there are tumuli found outer northern city walls.⁷⁸⁶ This indicates the absence of extramural inhabitation in Nicomedia. As to the walled area, this estimation does not take into account exterior walled area. Only the area circuted by the interior walls, was taken into consideration in estimating the population. The technique introduced by Wilson therefore is based on the census data for example from Egypt including household sizes and the number of houses or households in a town. He rejects using eighteenth or nineteenth century Ottoman records as density multiplier since they does not reflect possible levels of population. However, it should be noted that Wilson's objective here is to reveal distinctiveness of Roman urbanism. As he noted population densities vary due to features of different settlements types and this would be identifiable in the archaeological record in some cities e.g. Rome, Ostia, Pompey, and Timgad. Therefore, population density can be calculated by based on house sizes and room numbers. As is mentioned earlier, such archaeological data is not available for Nicomedia in order to calculate population density.⁷⁸⁷

It should be noted that Russell's estimates especially for the urban populations of Ephesus (51.000) and Pergamon (24.000) were accepted too low by some scholars.⁷⁸⁸ By contrast, Wilson argues Russell's density figures that population density was considerably higher in some of Roman Mediterranean cities than Medieval European cities. Russell's population density of cities was about 100-200 persons to the hectare and the densely populated city might have 200 inhabitants to the hectare, which is rare. However, the research based on on correlations of household counts and areas from the Roman cities in the Mediterranean demonstrates normal outer ranges of 100-400 people

⁷⁸⁴ Mitchell 1993, 243-244. According to Mitchell relatively few cities in Asia Minor would have passed 25,000 urban inhabitants and Nicomedia was one of them (others were Ancyra, Cyzicus, and Sardis).

⁷⁸⁵ Wilson 2011, 170-171.

⁷⁸⁶ Turgut-Aksoy 1996, 399-414.

⁷⁸⁷ Wilson 2011, 170-171.

⁷⁸⁸ See articles by White 1995, 27-81, Whittow 2001, 137-155, and Trombley 2001, 217-233.

per hectare and likely ranges of 150-250 people per hectare. For Asia Minor, Wilson prefers “a conservative population density” figure, which are 150 people per hectare suggested in Hanson’s article.⁷⁸⁹

Hanson’s article shows the improbability of some generally accepted large population estimates for cities such as Ephesus, Pergamon, and Miletus in Asia Minor.⁷⁹⁰ He rejects using primary and secondary sources as a base for estimating population and he establishes a ground on empirical data, attested ancient sites, included in the Barrington atlas.⁷⁹¹ In the method, which was introduced by Hanson, a computer program imposing a street grid and archaeological remains on the area circuted by walls was applied. For that reason, scaled and precise plans are necessary for this method. As there is no scaled plan of Nicomedia including the actual size of ancient buildings attested; this method was not applied to Nicomedia in his analysis. Another problem is the lack of archaeological evidence defining ancient streets and houses in Nicomedia. As a result, a broad population density range of 100 to 400 people to the hectare was considered as minimum and maximum figures for the cities in Asia Minor. Moreover, a refined range of 150 to 250 people per hectare was suggested as probable range of population density.⁷⁹² If Hanson’s refined range is applied to Nicomedia, it gives the range between 34.200-57.000 people. Population density figure, 150 people to the hectare, is compatible with the figure, 149 people per hectare, taken into consideration for Nicomedia by the present author. If the population figure were 34,000 inhabitants under the Principate, 57,000 people (250 people to the hectare) can be suggested as the population figure of the city under the Dominate when the city became one of mini-capitals of the empire. Given the minimum and maximum population density range (100 to 400 people), the population of Nicomedia would be in the range of 22.800-91.200 people. As a result, the population estimates of Nicomedia can be presented as 25,000 people in the late Republican period, 34,000 inhabitants under the Principate, and 57,000 city dwellers under the Dominate. Nevertheless, it should be noted that these population estimates are only the suggestions based on the historical and economic development of Nicomedia and political conditions in the Mediterranean under the Roman rule. There is no demographic and archaeological evidence or written source providing quantitative data to support such differentiation between the late Republican, the Principate, and the Dominate in Nicomedia.

⁷⁸⁹ Wilson 2011, 176- 177, 187.

⁷⁹⁰ Hanson 2011, 229-276.

⁷⁹¹ Hanson 2011, 236.

⁷⁹² Hanson 2011, 251-252. 254 Table 9.

ii. Rural Population Estimates

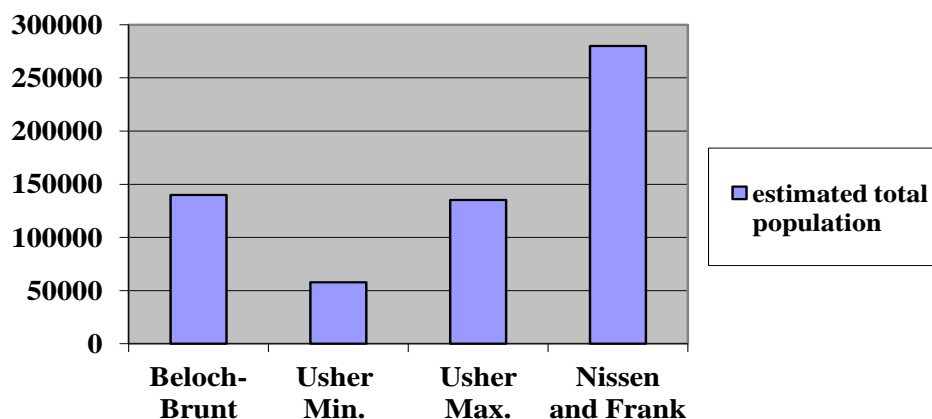


Figure 16: Estimated total population of the territory of Nicomedia, which is calculated by using density figures suggested by various scholars multiplied by the land area of Nicomedia. (Beloch-Brunt and Nissen-Frank and Usher)⁷⁹³

These population figures can be compared with the demographic figures of pre-industrial period (1890-1950), rather than accepting figures based on hypothetical estimates (see, figure 16). Although the population figures and the total area occupied in the pre-industrial period differ from antiquity, the demographic pattern is similar. In the pre-industrial periods, people settled mostly in the rural areas, and cities were less populated as was the case in antiquity. Figure 17, (below) compares the range between urban and rural population. It shows that there were eight to twelve folds between urban and rural population.

The maximum size of the urban centre of Nicomedia in antiquity was estimated as 5000km², and urban population was considered 34,000 inhabitants. Reckoned at eight fold rural to urban population, a minimum total population would be 272,000 inhabitants. A maximum total population makes 408,000 inhabitants, reckoned twelve fold rural to urban population. The closest figure on the bar chart is Nissen-Frank's population estimate of 280.000 people (5000 km² X 56).

⁷⁹³ Duncan-Jones 1974, 274-276. Beloch and Brunt suggest 24-28 people per km² for Italy, while Nissen and Frank estimate the average density, 56 people per km². Usher estimates population density as 30-70 people per square mile in Bithynia in AD 14, though he accepts western Asia minor 70-150 inhabitants per square mile. Usher 1930, 110-132; East 1948, 5 fig. 2.

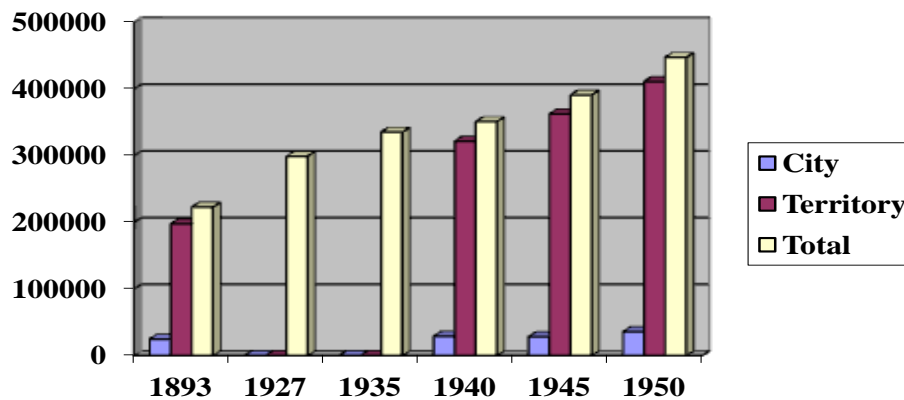


Figure 17: A comparison of urban and territorial census figures of İzmit in 1893 and 1927-1950.⁷⁹⁴

	1893 ⁷⁹⁵	1927 ⁷⁹⁶	1935 ⁷⁹⁷	1940 ⁷⁹⁸	1945	1950 ⁷⁹⁹
City	25,000	0	0	29,120	28,352	36,037
Territory	197,760	0	0	321,853	362,525	411,213
Total	222,760	299,000	335,292	350,973	390,877	447,250
	8 fold			11 fold	12 fold	11 fold
	Average: 8/12 fold.					

Similar work can be done with population density figures can be seen in table 8 (below). This gives a range between 36-75 inhabitants per km² in the İzmit central district including attached villages, and 18-56 inhabitants per km² in Kocaeli/İzmit Mutasarrıflığı. If the average density is calculated from these figures, the population of the city would be: 2, 28 km²⁸⁰⁰ X 56 (36+75) = 12,768 and the territory 4998 X 37 (18+56) = 184,926 people. While urban population is too low to be accepted, it can be seen that rural population is reasonably close to the minimum population calculated above, in total 197,694. As can be seen from the table, both the urban and the total area occupied in the 19th-20th centuries were considerably higher in comparison to ancient city.

⁷⁹⁴ In addition to this, Kaya gives population of İzmit city 20292 people in 1838, 39528 people in 1881/2-1893, 68173 people, in 1906/7 and 71335 in 1914. Kaya 2007, 59-80.

⁷⁹⁵ Cuinet 1895, 356-357. Gebze excluded which was not belonged to the İzmit Mutasarrıflığı in 1893.

⁷⁹⁶ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 503.

⁷⁹⁷ Umumi Nüfus Sayımı (General Census), 1954, 6.

⁷⁹⁸ There is no figure in 1940 census from the caza (county) of Akyazı.

⁷⁹⁹ Umumi Nüfus Sayımı (General Census), 1954, 18. (1940, 1945, and 1950).

⁸⁰⁰ 2,28 km² is calculated walled area of ancient Nicomedia.

Table 8: Census and population density figures of İzmit in 1893 and 1940-1950.

Census-Density Figures	1893	1940	1945	1950	Total Area	Population Density (km ²)
İzmit Central District	54,163	79,793	83,564	98,507	1,500 km ² (1893) 1,314 km ² (1940-50)	36 (1893) 61 (1940) 64 (1945) 75 (1950)
Kocaeli/İzmit Mutasarrıflığı	222,760	375,530	416,058	474,644	12,050 km ² (1893) 8436 km ² (1940-50)	18 (1893) 45 (1940) 49 (1945) 56 (1950)

To conclude based on available written and epigraphic sources defining the territory of the city (p. 105-109), Nicomedia possessed a maximum territory of roughly 5000 km² in antiquity. Thanks to the size records of cities in *Notitia Urbis Alexandrinae*, the interior walled area of the city can be calculated as 228 hectares (2, 28 km²).⁸⁰¹ The city walls which have been studied by Fıratlı, Foss, and Pogodin-Wulff enclosed an area of roughly 232 hectares (2, 32 km²). Therefore, this confirmed the record in *Notitia Urbis Alexandrinae*. Consequently, the urban population of 34,000 dwellers as suggested by Russell can be accepted. For the whole population a range of population figures from 19th century to 1950s were examined. Between eight and twelve times, as many inhabitants lived in the territory as in the city and this indicate the total population as a minimum of 272,000 and a maximum of 408,000 inhabitants (34,000 x 8 and 12).

⁸⁰¹ The exterior walled area is calculated as 5.000 km² and 500 hectares, which is twofold of interior walled area.

iii. The Results for Consumption Potency

The results, as shown below, indicate that 272,000 inhabitants would have had 169 kg grain per head and 408,000 inhabitants 113 kg per head available for consumption. As for the legumes, the results were 22 kg per person for 272,000 inhabitants and 15 kg for 408,000 inhabitants. Thus, even together with legumes the total amount cannot pass the bread line (225 kg wheat per person). The second calculation shows that the ancient city could barely have fed the total population. Without deductions for seed, rent and tax, the results increases the cereal amount per head, but minimum population figure of 272,000 inhabitants pass bread line.

Total Cereal Produce/Total Population= maximum 45, 900, 000 / 272,000= 169 kg.
/ 408,000=113 kg.

Without deductions for seed, rent, and tax: maximum 91,800,000 / 272,000= 338 kg.
/ 408,000=225 kg.

Total Legume&Pulse Produce / Population= 6,000,000 / 272,000=22 kg.
/ 408,000=15 kg.

As for the estimated population figure under the late Republican period, which is 25,000 people, it implies a total territorial population between 200,000 and maximum 300,000 inhabitants when multiplied 8 or 12 fold. Then the calculation results as 230 kg cereals and 30 kg legumes per head per year for 200,000 inhabitants, and 153 kg cereals and 20 kg legumes per head per year for 300,000 inhabitants. Without deductions, the result increases to 459 kg for 200,000 and 306 kg for 300,000 people. All these results show that the self-sufficiency of Nicomedia is questionable. A moderate suggestion is that the city by and large could barely feed the population. In the times of shortage which were frequent in antiquity grain had to be imported. Though there is no direct evidence proving import to the city, epigraphic evidence from the 2nd-3rd centuries presents frequent grain crises in Bithynia. Under Emperor Vespasian, a riot in Prusa is well-known from Dio Chrysostom's speech from the 1st century AD in which he had to defend himself that he even could not have produced grain as a marketable product in his estate, but cattle and wine.⁸⁰² Yet another illustration of grain shortages is the

⁸⁰² Dio Chrysostom, *Orationes* XLVI; Levick 2000, 118-119; Jones 1978, 19-23; Erdkamp 2005, 53; Rostovtzeff 1926, 187-8. As Rostovtzeff pointed out Greece and even Asia Minor were fed with grain from South Russia.

twenty-three *agoranomoi* of Prusias ad Hypium who had to supplement the grain supply at least six times.⁸⁰³ There is no specific evidence about grain shortages in Nicomedia. Yet, existence of the *sitones*, as a separate office from the *agoranomos* indicates the significance of supplying grain to the city.⁸⁰⁴ As to the population estimate taken into account for the Dominate, which is 57,000 people, one can easily see that this high population estimate and consequently the total population decreases the cereal amount per head when calculations were made.

What do these results mean in comparison to other cities? In his study of Roman Corinth, Engels used widely excavation results and total area (825km²) devoted to agriculture is 207 km², which is almost twelve times less than 2500 km² at Nicomedia. Corinth was nearly one fifth smaller than Nicomedia though it was populous. He accepted 438 kg whole, hulled barley per annum per person, which equivalent to daily consumption per head (1,2 kg per day=2600 kcal.).⁸⁰⁵ The results show that only 17,600 people could have been supplied by local cereal produce in approx. population of 100,000 (inhabited area 480 hectares).⁸⁰⁶ Thus, he concluded that only 17% of the total population could have been fed by the local produce.⁸⁰⁷ As grain figures in general are considered in Nicomedia rather than wheat or barley, it is reasonable to employ 438 kg of grain, which includes all cereals.⁸⁰⁸ It is also essential to note that calorie intake differs in the distribution of the population. Gallant asks how many calories the average human needs to consume each day in order to sustain a healthy existence.⁸⁰⁹ According to table 4.5, demonstrating daily calorie intake by gender and age, an adult female 2,200 kcal and an adult male should have taken 3000 kcal.⁸¹⁰ However, there is no evidence for the gender distribution of population in Nicomedia. As specified earlier, the aim of current calculations is to have an idea of approximate production and consumption

⁸⁰³ Ameling 1985, 6, 9, 13, 17, 19, 48.

⁸⁰⁴ TAM IV 262.

⁸⁰⁵ Engels 1990, 27, fn. 30. Foxhall-Forbes 1982, 72.

⁸⁰⁶ Russel 1958, 77-78.

⁸⁰⁷ Engels 1990, 27-28.

⁸⁰⁸ Gallant 1991, 72. Indeed, Gallant shows that “relatively lower levels of dental lesions and caries in antiquity may indicate that the consumption of pulses was higher than now.”

⁸⁰⁹ Gallant 1991, 62. Foxtall and Forbes collected all the ancient references on cereal consumption and converted these into modern form. Then they compared them to the figures on Modern Greek peasants. They reach a *choinix* of wheat per man per day was considered as an approximate amount. The *choinix* equals to 0.84 kg or 2803 kcal. However, the *choinix* was an amount that a man should eat. On the basis of the Modern Greek data, they reduce the figure for grain consumption to 212 kg per person per year since consumption of olive was also important. Foxhall-Forbes 1982, 41-90.

⁸¹⁰ Gallant 1991, 67-68, 73.

figures.⁸¹¹ 2,600 kcal/438 kg 'grain' is accepted as an average intake figure. Accordingly, the calculation would be as follows:

Net produce = 45,900,000 kg grain / 438 kg per person = 104,795 people approx. 40% of minimum population of 272,000 people; and approx. one quarter of maximum population of 408,000 people.

Without deductions= 91,800,000 kg grain / 438 kg per person= 209,589 approx. 80% of 272,000 people and approx. half of 408,000 inhabitants.

This indicates that Nicomedia was in a better situation than Roman Corinth. According to the calculations, Nicomedia's net produce could feed up to 25-40% of the maximum estimated population. Without tax, rents, and seed, it could have supplied 50-80% of the population from local sources. In the late Republican period, in which population figures are estimated as minimum 200,000, and maximum 300,000, net produce could feed up to 35-50% of the population. Without deductions, it could feed the minimum population totally, and 70% of the maximum population. It is very important to note here that from the beginning to the end of these conjectural estimates maximized margins have been allowed for all variables, e.g. in estimating total area, arable land, land use, total population and so on. Therefore, even in this case, the city apparently could not have fed the whole population. The conclusion implies that there was a good reason for approx. up to 30-50% of the Nicomedians in total to be involved in other economic activities.

There is another city, which possessed a large territory and shared similar self-sufficiency level with Nicomedia. Ephesus is known from written sources as a prosperous and self-sufficient city.⁸¹² Ephesus possessed quite extensive and fertile territory in the Caystros Valley. Roozenbeek presented an approximate calculation of the production capacity of this valley. He presumes that up to 50-75% of the population could have been fed by local grain. Thus the city had to import grain from nearby cities in the Eastern Caystros Valley and from Egypt. (It is not known whether the import was structural and permanent or incidental and famine or shortage-induced).⁸¹³

Similar work on carrying capacity has been done by Jongman for Pompeii, which was an average medium town. Jongman accepts a figure of 200 km² for the economic territory of Pompeii for his calculation and estimates its population as 36,000

⁸¹¹ See Frier 1999, 85-109.

⁸¹² Strabo XII 2, 10 and 8, 15.

⁸¹³ Pleket 1994, 119-120. Pleket suggests two reasons for grain import to Ephesus. First, existence of association of *hoi en ephesio prometai*, which were seemingly a guild of mensesores, was responsible for regular imports. Secondly, there was a regular sea route between Ephesus-Alexandria.

inhabitants. Having accepted productivity at 500 kg cereals per hectare, he calculates that 15,000 ha x 500 kg makes 7500 tons that could feed 37,500 people, if 200 kg were consumed per head per year. Jongman accepts that the average daily requirement of the Romans as 2000 kcal. per head which is covered by the consumption of 250 kg of wheat a year. Therefore, he concludes that Pompeii was self-sufficient, and would even have exported her grain to Rome. If this refers to an average year figures, then the city had an opportunity to obtain some grain in the time of shortage or bad year.⁸¹⁴

III. Conclusion

The city of Nicomedia had a favourable environment for agriculture in terms of climate and soil type. As seen in the first section the Mediterranean, and the Black Sea climate and deep clay soil type allowed the city to produce the crops mentioned in Xenophon. Ancient sources and travellers notes indicate continuity of these products, similar agricultural patterns in antiquity, and the 19th century. Soil type, rainfall level, and the climate must also have enabled the peasants to following annual cropping with very short fallow periods, or multi-cropping without fallow. The products listed by Xenophon allow one to define the rotation for Nicomedia. The main winter crops were wheat, barley and beans; and legumes must have been sown in spring, and replaced in summer by millet and sesame, which are lighter cereals.

Since there is no direct evidence about the extent of ancient yields, agricultural figures from pre-industrial period of İzmit/Nicomedia are a resort for estimation, as comparatively similar production patterns and physical setting remained constant. As calculated, the city could have possessed a territory of roughly 5000 km² in antiquity. Although figures for arable land are not very precise, if half (2500 km²) or even quarter of total area was under cultivation, this was a huge area in comparison to Corinth and many other cities. Therefore, Broughton's point that Nicomedia had "a large territory with great natural sources" is confirmed.⁸¹⁵ Though the city possessed a large territory, it was very populous as well. It means that there were a significant number of people to feed. There were two calculations, which facilitate estimating the produce capacity. According to first calculation, agricultural production ranged between 584 and 674 kg cereals, per person per year in İzmit in 1893. This amount shows that the city was

⁸¹⁴ Jongman 1988, 135-136. On the other hand, his autarky-plus conclusion for cereals has been highly criticized by N. Purcell and other scholars. Purcell 1990, 111-116; Franklin 1990, 469-470; Banaji 1989, 229-231. According to Jongman's work, only grain could meet the local demand, wine produce was not in the sufficient level and textile industry was not in the big scale. Thus, the general problem, which was criticized his minimalist approach to the economic activity of this ancient town.

⁸¹⁵ Broughton 1938, 773.

economically self-sufficiency in 1893 since the bread line is 225 kg wheat per person. However, this was extracted from 4090 km² agricultural area of İzmit Mutasarrıflığı (one third of total area of 12,050 km²) in 1893, and when the total population was 222,760 people. Ancient Nicomedia had a total area of only 5000 km², but an estimated total population (minimum 272,000 and maximum 408,000) that was higher than population in 1893. According to the second calculation, if Nicomedia exploited half of its territory, which made 250,000 hectares and if minimum 272,000 and maximum 408,000 are accepted as population figures, the results of net cereal yield show production below the bread line (113-169 kg). This narrowly exceeds the bread line, if none of the yield was taken away for seed, rent, and tax (225-338 kg). In this second calculation, a yield of 398 kg (or maximum 459 kg) per hectare was used which is derived from 19th century total production figures. As for the population estimations for the late Republican period, the results do not change the general view drastically. Finally, the calculation made based on Engel's Corinth model indicates that approx. up to 30-50% of the Nicomedians alternatively had to hunt for sources of income other than agriculture. According to all results, the city could barely feed its population either in the early or in the late Roman periods. There is no evidence that farmers used intensive farming or other measures taken to increase annual yield in Nicomedia, and it is not known if there were grain imports to the city as seen in the case of Ephesus. It is however explicit from the epigraphic evidence that grain shortage was a frequent case in Bithynia in the 2nd-3rd centuries.⁸¹⁶ Moreover, grain supply was considered important in Nicomedia.⁸¹⁷

It seems that production capacity of olive oil was also insufficient to meet the needs of the estimated population. As for the other components of the ancient diet, viticulture potentially must have met local wine consumption since grapes were abundant and produced a good sweet wine in Nicomedia.⁸¹⁸ Inscriptions found in İhsaniye, and Kandıra perfectly confirm wine production, which was on a festival scale and peculiar to Bithynia. Furthermore, İzmit had always been main supplier of grape for İstanbul in the 19th century and remains so today. Selling grapes must have provided significant income to the producers.

The results taken together indicate that Nicomedia was not a city that relied exclusively agriculture. Agriculture and viticulture together were part of the economic

⁸¹⁶ Dio Chrysostom, *Orationes* XLVI; Levick 2000, 118-119; Jones 1978, 19-23; Rostovtzeff 1926, 188; Erdkamp 2005, 53. Shortages in Prusias ad Hypium. Ameling 1985, 6, 9, 13, 17, 19, 48.

⁸¹⁷ TAM IV 262.

⁸¹⁸ Xenophon, *Anabasis* VI 4, 4-6.

basis of Nicomedia, but did not cover all its needs. This challenges the prevailing view on the self-sufficiency of cities, which reduces the role and scale of trade and trading elite in the cities. More importantly, as far as landowners and landownership pattern are concerned, the evidence currently shows that there were small and middle-sized properties sprinkled through the territory, and local landowners mostly did not hold important positions in urban life. If the city of Nicomedia could not make a profit from agricultural products and even needed to be supplied with grain from time to time, it is worth interrogating whether the inhabitants were interested in other civic resources and opportunities to earn money. Did they produce other products and services for external markets? Was the city a sort of the Weberian producer city, or a consumer city, or both?⁸¹⁹ The results above, undoubtedly encourages one to consider that the Nicomedians (approx. up to 30-50%) afore-mentioned had to seek alternatives. It is not difficult to envisage that Nicomedia as a port city, possessing rich timber sources, could provide alternative sources of income to her people. The fourth chapter on trade and overseas connection of the city will shed more light on all these considerations.

Finally, the results derived from these estimates must be interpreted with caution because they do not contain precise figures. However, it is important to attempt to envisage the carrying capacity of the territory. The case of Nicomedia should encourage further research questioning the minimalist approach to cities, and challenging the assumption that they were self-sufficient and their economic activities were limited to income from agricultural production. Having made calculations on any city, especially inland cities, one can make inferences about the economy of that city in light of all ancient sources. Further study, including a wide range of production and population figures from the archives and archaeological researches, with more focus on the key variables affecting agriculture between antiquity and the pre-industrial period is needed in order to be more precise.

⁸¹⁹ Another harbour city Leptiminus recently was examined by Mattingly shows characteristics of both consumer and producer types. Mattingly 2001, 81-84. For the reviews of producer or consumer city types, see, Mattingly 1997, 210-218; Mattingly-Salmon 2001, 3-12; Parkins 1997, 83-112.

CHAPTER IV

Trade, Traders and Connectivity of Roman Nicomedia

The purpose of this chapter is to examine distribution patterns and trading activities, reveal the connectivity and networking of the city and consequently present the scale and importance of trade in the economy of Roman Nicomedia. The chapter investigates two other elements on which the wealth of Nicomedia was based, its location on important roads and its harbour.⁸²⁰ Furthermore, Dio Chrysostom's statement from the 1st century AD that the city made revenue "first and foremost because of the sea" needs to be evaluated.⁸²¹ As discussed in the third chapter, Nicomedia cannot have been a totally self-sufficient city solely dependent on agriculture. This leads one to think of the necessary motivation for the Nicomedians to seek other sources of income. This chapter takes the point further and interrogates which type the city can be considered to be, e.g. a commercial city, a service city, one of the Weberian consumer/producer cities, or a mixture of all types.

There are two main sections in the chapter. The first section deals with what facilities were available for transportation (land, sea and river), thus which roads passed through the city, and which sea routes approached it. Finally, it evaluates Nicomedia as a service city, considering which facilities contributed to its economy and what its overseas connections were. Having examined the physical background that affected the civic economy, commercial commodities and trade are scrutinized in the second section. This section generally takes into consideration the economics of the routes, the connectivity and networks of the city. It deals with the question of what was traded, and the routes along which Nicomedia provided food, goods, and services, and the commercial value of resources exported from of Nicomedia was. Finally, it asks who benefited from these facilities, who the traders were, what their status was, and how much their status reflected, or affected the scale of trade. Moreover, it examines association of ship-owners as a trading institution in Nicomedia.

I. Roads, Transportation and Overseas Connection

i. Roads

Land and sea routes are the important physical elements that enabled the regional and inter-regional connectivity, communication, networking and economic

⁸²⁰ Broughton 1938, 773.

⁸²¹ Dio Chrysostom, *Orationes* XXXVIII 32.

activity of any city.⁸²²

There were three land routes extending south and east from Nicomedia (figure 18). The northern road started from Byzantium and Nicomedia, and passed Paphlagonia and Pontus via Pompeiopolis, Neoclaudiopolis, Neocaesarea and Nicopolis. This route was used by Mithridates, Lucullus, and Pompey in the first century BC.⁸²³ The road was connected to central Europe along the via Egnatia and the military road which ran west from Byzantium.

The second road started in Nicomedia and reached İznik, and then Dorylaeum (Eskişehir), Amorium, Konya and finally the Cilician Gates. This road is attested in the Antonine Itinerary and was probably dated either to the Antonine or the Severan period.⁸²⁴ The other is the later Pilgrim's Itinerary, which ran from Constantinople to Nicomedia, Nicaea east to Ankara and then south through Tyana (Bor) to the Cilician Gates. The road was the quickest and cheapest route for pilgrims travelling from Europe to the Holy Land and it became more important in the fourth century AD. The northern route, however, was the more convenient for the traveller from Europe aiming to reach Tabriz or central Asia.⁸²⁵

Two secondary roads reached the Black Sea on the north (figure 19). One of them started at Nicomedia and went to Şile on the Black Sea coast. There is a Roman bridge called 'Stonebridge' at Kutluca on this route. The bridge was identified by F. K. Dörner and by the 2007 Survey of A. Çalık Ross.⁸²⁶ To the west of ancient Nerola and is still in use today connecting the two regions separated by the Psil(l)is River (the modern Göksu).⁸²⁷ Dörner judged that the construction of the bridge dated to the early Roman Period. A coin type of the Claudian Period with the head of Britannicus on the obverse, and the name of the Governor C. Cadius Rufus and the name of the river on the reverse illustrates the construction of an arch on two pillars. It has been interpreted by C. E. Bosch as the Roman bridge over the Geudos.⁸²⁸ It shows the importance of the route under Roman period. In accordance with Roman interest in Bithynia, the bridge must have provided both economic and military benefit. The second road probably ran from Nicomedia through Calpe. The road to Karpis (Kalpe/Kerpe) is mentioned in the

⁸²² Lolos 2009, 264-5. Lolos' work examines the cities on the Via Egnatia, which facilitates economic growth.

⁸²³ Mitchell 1993, 127; Ramsay 1890, 48.

⁸²⁴ Dilko 1987, 23-26; Talbert 2010.

⁸²⁵ Winfield 1977, 152; French 1985, 26. Sir William Ramsay largely ignored this road in his survey of the country, because it had not been well explored. (Ramsay 1890, 44; Winfield 1977, 152.)

⁸²⁶ Dörner, 1941 33-35; Çalık-Ross 2007, 18, 114-116.

⁸²⁷ Dörner 1941, 33.

⁸²⁸ Bosch 1935, 197. Pliny, in *Naturalis Historia* V 148, mentions the Geudos as a river on the western part of Bithynia.

written sources under Diocletian.⁸²⁹ A map given by Şahin shows the road between Nicomedia and Kandıra.⁸³⁰ To the south there were two roads starting from Prainetos and Helenopolis, which ran to Nicaea. There was Başiskele Bridge between Nicaea and Nicomedia.⁸³¹ Eribolon (mutatio, Hisar), Libum (mansio, Senaiye), Liada (mutatio, Sariağıl) and Basilinopolis (near Valideköprü Çiftliği) were stations on this route.⁸³²

ii. River, Lake Transport and Canal Scheme

There is ancient evidence from Nicomedia for river and lake transportation. A funerary inscription found in the city belonged to a rafter (*schedionautes*) named Hermodôros, son of Moukianos.⁸³³ His operating area for rafting timber or other products was probably Nicomedia's harbour in the Gulf of Nicomedia, the Propontis, the Lake Sophon, and the River Sangarius. Strabo documents the practicality and inexpensiveness of timber flotation in the first century BC.⁸³⁴ Although the hinterland of Nicomedia possessed substantial forest reserves, Cuiet surprisingly speaks of the lack of exploitation of these forests. It should be noted that the lack of roads and tracks in mountainous region made it impossible to access and exploit timber sources.⁸³⁵ Therefore, the exploitation of rich timber or other sources depended on their accessibility. A distinctive feature of the four forested areas providing fine ship timber included by Theophrastus in the Hellenistic period was that there was easy access from source to the market thanks to the existence of rivers or a coastal location.⁸³⁶ Indeed, Dio Chrysostom's appeal, from the 1st century AD, from Prusa for concord completely confirms the importance of timber transport as he suggests improving their relations with Apamea, which is the nearest port. Dio clearly explained that "They (Apamea) need our timber and many other things and we have no other harbour to use for our

⁸²⁹ Acta Sanctorum 22. Aug. p. 522-523.

⁸³⁰ Şahin 1987.

⁸³¹ Şahin 1974, 73.

⁸³² Şahin 1987, 112-113 and 123; French 1981, 31-34.

⁸³³ Meiggs 1982, 336.

⁸³⁴ Strabo XII 3, 12. Exploitation of the forests of the Apennines would have been difficult and costly for Rome if there had been no Tiber with its tributaries. Moreover, another example from the east shows that it was a great facility for Babylon that timber logs from Mts. Lebanon and Amanus could be carried down the Euphrates.

⁸³⁵ Meiggs 1982, 393.

⁸³⁶ Theophrastus, *Historia de Plantis* 4, 5, 5. There is Mt. Ida, by the river Rhyndacus, Sinope, Amisus, and Cilicia in Asia Minor. Robert 1980, 35. Indeed, traveller George Perrot mentions transportation in Mt. Olympus (in Prusa), ten or twelve hours from the sea. He describes that people fell the timber and transported by oxcarts dragged by oxen or buffalos. When Hommaire Hell was talking about Bolu (Claudiopolis) he mentions the regions's necessary contribution for the Imperial Navy by providing timber and exporting Constantinople. He reports that everyone had to work for contribution. Any piece of wood up to 35 feet in length required two pairs of buffalos for transportation. Perrot 1867.

imports and exports”.⁸³⁷

Strabo confirms the navigability of the Sangarius in a passage: “...Thus increased, and now having become navigable, though of old not navigable, the river forms a boundary of Bithynia at its outlets”.⁸³⁸ Travellers’ accounts also confirm the navigability of the river, and its suitability for raft usage. Hacı Khalfa and Peyssonel record that the course of the Sangarius was wide enough and fast deep in the land.⁸³⁹ Boré described Russian ships at the mouth of Sangarius, again showing its navigability. He records that “...The water rolled quickly yellow and as wide at its mouth as the Seine in Paris”.⁸⁴⁰ In antiquity, the mouth of Sangarius must have been exploited for transportation. Burnaby also reports the Sangarius, as “a rapid stream, sixty yards wide and with steep banks”.⁸⁴¹ Observations of travellers attest the use of the river for timber rafting. In 1745, the French Consul Peyssonel gives a vivid picture of acquiring timber and how the use of the Kilez or Kerez Stream (known in antiquity) for floating the timber originated from Sophon Mountain.⁸⁴² Similar usage of the stream might have occurred in antiquity.⁸⁴³ There is a general pattern to the exploitation of timber in antiquity. Felling was conducted at the proper season. For most purposes, trees should be cut at the end of the year’s growth, which is in autumn.⁸⁴⁴ Felling time was also appropriate for floating them in the river whose current reaches its maximum level

⁸³⁷ Dio Chrysostom, *Orationes* XL 30.

⁸³⁸ Strabo XII 3, 7. “Between Chalcedon and Heracleia flow several rivers, among which are the Psillis and the Calpas and the Sangarius, which last is mentioned by the poet. The Sangarius has its sources near the village Sangia, about one hundred and fifty stadia from Pessinus. It flows through the greater part of Phrygia Epictetus, and through a part of Bithynia, so that it is distant from Nicomedeia a little more than three hundred stadia, reckoning from the place where it is joined by the Gallus River, which has its beginnings at Modra in Phrygia on the Hellespont. This is the same country as Phrygia Epictetus, and it was formerly occupied by the Bithynians. Thus increased, and now having become navigable, though of old not navigable, the river forms a boundary of Bithynia at its outlets”.

⁸³⁹ Robert 1978, 427-8.

⁸⁴⁰ Robert 1978, 415.

⁸⁴¹ Burnaby 2007, 46.

⁸⁴² Ulugün 2008, 78. “...in the coast of İzmit there are docks and quays made of stone and timber. Additionally, there are places that ships were taken there and they were used as slipways and timber store. These logs are brought from big forests bank of Sagaris River, which is far one day distant from İzmit. Since Sagaris meanders before reaching Black Sea, mountains and forests becomes away from 2 to 4 or 5 days, so that there are almost three hundred scattered small villages consisting of 10-12 houses. Peasants are like a slave who have to responsible for tree cutting. They carry these logs using ox carts, but there are such big logs that they could be carried by an ox cart of 16-18 oxes as roll of logs. Peasants throw logs to Kilez Stream which passes through from west to east and then reaches Gulf of İzmit. These logs were reached the gulf during the autumn and winter times by passing through the stream and then they were loaded on to ships.” Robert 1980, 89-90, Roberts work provides that rivers were used in other parts of Asia Minor for timber rafting.

⁸⁴³ Ulugün 2008, 112-114. John Galt reports that the peasants had to undertake tree cutting in the neighbouring forests for the navy, besides their own work.

⁸⁴⁴ Meiggs 1982, 331-332. For example, the oak, should be felled last since its leaves last. In accordance with the order’s requirements, the trunk was being cut off leaves and in the extraction process primarily oxen and mules were used.

between autumn and spring.⁸⁴⁵ Other streams in the territory of Nicomedia were not perennial. In autumn and winter, however, they must have been employed for transportation of goods as examined in the third chapter (p. 110-111). In this case, Hermodôros drove wooden rafts and he had to ply his trade in the various points.⁸⁴⁶

River and lake transportation were essential for the economy of Nicomedia not only for timber but also for other products. The city had difficulty in reaching the natural resources in its economic territory or hinterland. This difficulty is attested in Nicomedia in Pliny the Younger's letter, from the time of Trajan, referring to the natural resources beyond Sophon Lake (Sapanca) and the problem of transporting these resources.⁸⁴⁷ Pliny the Younger indicates that marble, grain, firewood, and timber were carried by boats to the end of Lake Sophon. Overland transport was then difficult and expensive from Lake Sophon to the gulf of İzmit.⁸⁴⁸ Therefore, in the letter to the emperor Trajan, he recommends that the Lake Sophon can join to the Sea of Marmara by a canal that would facilitate transport.⁸⁴⁹ It is important to define what products were considered, whether bulky goods such as marble and timber or light weight goods such as textiles as these products were not explicitly mentioned by Pliny's statement. Moreover, the location of a canal needs to be understood in respect to its role in land and sea trade. It also needs to be evaluated in connection with river transport in the city.

All the products mentioned are bulky items, e.g. marble blocks, firewood, wood and other building materials. Pliny the Younger by referring to the natural resources beyond the Lake Sophon (Sapanca) shows that the city had access to the lake surroundings. Grain must have been transported from the *regio Tarsia* and from the

⁸⁴⁵ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, streams in Kocaeli Peninsula 24, 119, 230; table of streams and their conditions for transportation.

⁸⁴⁶ Robert 1978, 426.

⁸⁴⁷ Pliny, *Epistulae* X 41.

⁸⁴⁸ Moore 1950, 97; Finkel-Barka 1997, 429.

⁸⁴⁹ Pliny, *Epistulae* X 41, trans. W. Williams: "There is a very large lake in the territory of the people of Nicomedia. Across it marble, grain, firewood, and timber are carried by boat as far as the road with little expense and effort, but by cart from there to the sea with great effort and at even greater cost... [Probably lacunae in the text]. This project calls for many hands. Original text in Latin: "Est in Nicomedensium finibus amplissimus lacus. Per hunc marmora fructus ligna materiae et sumptu modico et labore usque ad uiam nauibus, inde magno labore maiore impendio uehiculis ad mare deuehuntur... hoc opus multas manus poscit." The letter then continues "But those are readily available. For there is both a plentiful supply of men in the countryside and a very plentiful one in the town, and the sure prospect that they will all most gladly take part in a project which is of advantage to all. It remains for you, if you see fit, to send a surveyor or an architect, to make a thorough investigation to see whether the lake is at a higher level than the sea; the experts in this district claim that it is forty cubits higher. I myself learn that a ditch was cut through the same area by one of the kings, but it is uncertain whether it was done to drain off water from the surrounding fields or to link the lake to the river; for it is incomplete. It is also a matter of doubt whether the king was cut off by sudden death or whether the success of the enterprise was despaired of. But what spurs me on and inspires me (you will bear with my aspirations to advance your glory) is my desire to see what the kings had merely begun completed by your agency."

lower Sangarius in general, while timber and firewood came from forests in Sophon Mountain.⁸⁵⁰ The last item is marble and various suggestions need to be examined. Robert points out that black marble found near the eastern end of the lake in the Adapazarı region very likely occurred on the territory of Prusias ad Hypium⁸⁵¹, and there was quarry to the south of the Lake Sophon. This must be the quarry at Vezirhan (Bilecik) in the territory of Nicaea, only a short distance to the south-east of Nicomedia in the hills overlooking the Sangarius valley, which produced *breccia corallina*. Thus tributaries of the Sangarius River, and the Lake Sophon could facilitate transport of these marbles to the harbour at Nicomedia.⁸⁵² Consequently, Pliny aims to exploit easily and cheaply the resources of the territory and neighbourhood territory of Nicomedia.

It is essential how the location of canal could act on distribution of the resources to reveal its role in land and sea trade. An article written by P. Moraux examined the canal project and its feasibility in details.⁸⁵³ In response to Pliny's letter, the emperor Trajan supported the idea, but asked for more information. Sending an engineer to investigate, he demanded assurance that significant loss of water from the lake could be avoided; he wanted to know how much water would be taken and from where.⁸⁵⁴ According to Moraux, as Trajan warned Pliny, the feasibility of the project depended on the water quantities that made it into the lake from the various mountain streams.⁸⁵⁵ Thus, there were two key factors to be considered in the project. One of them was the altitude of the lake, and the other was the height of the land between the lake and sea. The lake is higher today than in Pliny's time.⁸⁵⁶ In his 61st letter, Pliny responded to the Emperor's question. He mentioned a river (possibly the Kerez/Kilez) which flows from the north-east of the Gulf near the lake; should it be possible to change the direction of the river-flow, the lake would constantly fill.⁸⁵⁷

⁸⁵⁰ Fernoux 2004, 263.

⁸⁵¹ Mango 1986, 86. Adapazarı black marble is quarried in Hendek and Harmantepe today, on the south-east border of Nicomedia; see M. Arikan, p. 692: <http://www.maden.org.tr/resimler/ekler/145.pdf>

⁸⁵² Robert 1978, 417. Lazzarini 2002, 60-61.

⁸⁵³ Moraux 1961, 181-214; see also Moore 1950, 97-111. Sherwin-White mentioned the project in Nicaea. Sherwin-White 1962, 118.

⁸⁵⁴ Pliny, *Epistulae* X 42. "That lake of yours can incite us to wish to link it to the sea; but clearly there must be a thorough investigation to find out how much water it collects and from what sources, in case, if let out in to the sea, it would drain away entirely. You will be able to apply to Calpurnius Macer for a surveyor, and I shall send from here someone skilled in projects of this kind."

⁸⁵⁵ Moraux 1961, 181-214.

⁸⁵⁶ Finkel-Barka 1997, 432, fn. 6. Indeed, the lake was said 40 cubits (17.76 m) above the sea level. Today, its elevation is 33 m and it is impossible for the lake to have drained to Cark Stream, as its elevation is also 30 m. Cark Stream has drained to the east of the lake throughout history and it caused sedimentation.

⁸⁵⁷ Pliny, *Epistulae* X 61. "You are indeed most far-sighted, sir, in your anxiety in case the lake, it linked to the river and so to the sea, drains away; I, however, believe that, being on the spot, I have found a means of forestalling this danger. For the lake can be brought as far as the river by means of a canal, yet

Pliny, therefore, proposes that the channel not flow into the sea, but rather connect to a stream between the lake and sea (figure 19). The loading of the goods from the canal into the river on the isthmus would be relatively easy. Consequently, the carriage of the goods for building and fuel had to be carried on wooden rafts.⁸⁵⁸ Trajan replied by giving Pliny the responsibility to conduct the best project he judged.⁸⁵⁹ After this correspondence, the outcome of canal scheme is not known. Pliny the Younger died in AD 112, and the emperor died five years later, and there is no evidence that the scheme was carried out.

The Canal Scheme is explicit testimony to Roman economic activity and to Roman engineering being undertaken for economic reasons. One also must bear in mind that the anticipated profitability of attempting such an immense project must have been high and the scheme was not just intended to meet the needs of the *metropolis* of Bithynia. It is likely that there must have been a significant economic potential to meet the demands of Rome or elsewhere. As Fernoux pointed out, this scheme promised economic benefit for the entire region, both in the short and long term, as the construction of the canal itself will have provided jobs for a rural and urban population. Furthermore, the scheme would have ensured long-term advantages for the economy and for trade.⁸⁶⁰ The scheme continued to be on the agenda of the Bithynian Kings, the Romans, and the Ottomans, and remains so even today because of its economic

not be let out into the river, but, by leaving a bank as it were, it can be at the same time both brought together and kept separate. In this way we shall ensure that it is not deprived of its water by being mingled with the river, yet that it should be in the same position as if it were mingled. For it will be easy to transport to the river loads brought down on the canal across the very narrow strip of land which will lie in between. It will be carried out in this way, if necessity forces us, and (I hope) it will not force us. For the lake is both deep enough in itself and at present pours a river out in the opposite direction. If the outlet is closed off on that side and turned aside in the direction we wish, it will only discharge the amount of water it carries at present, without any loss to the lake. Moreover, streams run across the tract through which the canal will have to be dug; if these are carefully collected together, they will increase the supply of water, which the lake will have provided. Again, if it is decided to extend the canal further and, by cutting it deeper, to bring it to the level of the sea, and to let it out, not into the river, but into the sea itself, the counter-pressure of the sea will protect and push back whatever comes out of the lake. If the nature of the ground did not permit us and of these schemes, yet it would be surveyor, whom you certainly should send out, sir, as you promise, will investigate and assess these and other schemes with far more skill. For the project is one worthy both of your greatness and your concern. In the meantime have written on your authority to that most distinguished man Calpurnius Macer, to send as capable a surveyor as possible.”

⁸⁵⁸ Moraux 1961, 181-214

⁸⁵⁹ Pliny, *Epistulae* X 62. “It is evident, my dearest Secundus, that you have spared neither forethought nor effort in the matter of that lake of yours, seeing you have worked out so many devices to ensure that it would not be in danger of being drained and would be of greater use to us for the future. Choose therefore the scheme, which the actual situation especially recommends. I believe that Calpurnius Macer will see to it that he supplies you with a surveyor, and those provinces of yours are not lacking in these experts.”

⁸⁶⁰ Fernoux 2004, 259.

significance.⁸⁶¹

iii. Overseas Connections and Connectivity of Roman Nicomedia

The Price Edict of Diocletian indicated the sea routes, which started at Nicomedia and reached Alexandria, Rome, Ephesus, Thessalonica, Achaea, Salona, Pamphylia, and Phoenicia (figure 20).⁸⁶² It shows the importance of Nicomedia as the starting point or destination of shipping lanes in the maritime trade of the Mediterranean. The list is fragmentary and the starting point of shipping lanes to Trapezus, Sinope, and Tomi is absent. After Rougé, Robert suggests that departure point for these ports was probably Nicomedia.⁸⁶³ Arnaud has recently suggested that the original routes had been from Byzantium to Trapezus, Sinope, and Tomis but the destination port became Nicomedia when Diocletian made the city his capital. This shows the fact that shipping lanes were already established before Diocletian.⁸⁶⁴

Nicomedia's well-protected natural harbour was as important for the city's connectivity as its roads and sea routes. Texier and Perrot saw remains of the harbour.⁸⁶⁵ Perrot noted moles, quays, and remnants of large blocks.⁸⁶⁶ In the western part of the city, colossal architectural structures were identified in the 2005 Survey. The area of the SEKA plant was probably located right behind the Hellenistic and Roman harbour.⁸⁶⁷ Libanius mentions the "commodiousness of the harbour" at Nicomedia in the fourth century AD.⁸⁶⁸

Calpe Harbour was also very important both for military and commercial purposes in the fifth century BC, connecting the city's hinterland with the Black Sea.⁸⁶⁹ The traveller John Galt (1812) stressed Kerpe/Calpe's potential as a commercial cargo depot for neutral ships when the Bosphorus was closed.⁸⁷⁰ However, it is not clear whether this small harbour kept its importance and was frequently used in transportation under Roman rule.

Thanks to its location and its harbour, the city must have played an important

⁸⁶¹ Finkel-Barka 1997, 429-442. Between Sapanca Lake and İzmit Bay, a small waterlogged trench has been documented and dated to the 3rd-1st centuries BC.

⁸⁶² Giacchero 1974, 220-227 and 31-312; Mitchell 1983b, 138.

⁸⁶³ Rougé 1966, 130; Robert 1978, 424, fn. 105.

⁸⁶⁴ Arnaud 2007, 321-336; see also Arnaud 2005. As examined by Arnaud, duration of voyage was the key to calculate freight rate. For that reason, direct lanes were cheaper than segmented routes, which take longer than direct lanes.

⁸⁶⁵ Texier 1862, 62.

⁸⁶⁶ Perrot 1867; Wilson 1960, 110.

⁸⁶⁷ Çalık-Ross 2007, 108.

⁸⁶⁸ Libanius, *Orationes* LXI 8-9.

⁸⁶⁹ Xenophon, *Anabasis* VI 4, 4-6.

⁸⁷⁰ Ulugün 2008, 114.

role in the distribution of the resources of the neighbouring cities. Broughton stresses that Nicomedia was not a free port in Dio's time which is the first century AD, and the city granted privileges to Nicaea, which imported goods through Nicomedia. Thus, city port was clearly engaged not only in exporting, but also importing goods.⁸⁷¹ It is obvious from Dio Chrysostom's speech that the city was powerful enough to offer or withhold benefits from neighbouring cities under the Principate.⁸⁷² This shows that custom tolls generated revenue for the civic economy.

Neighbouring cities also had access to the sea through subsidiary ports. Prusias ad Hypium in the east held Dia (Akçakoca) as an emporium.⁸⁷³ Prusa ad Olympium had access to the sea via Myrleia (Apamea)⁸⁷⁴, and finally Nicaea possessed Prusias ad Mare/Kios (Gemlik).⁸⁷⁵ Although this confirms the independence of the neighbour cities, those cities were in need of Nicomedia, the *metropolis* of Bithynia, and its large commercial market. Therefore, there are two sides to the distribution activity of Nicomedia. One is related to its own resources and the other to its neighbours' resources. As a centre of commercial distribution, the city not only acted as a distributor and transporter of goods but also provided artisans and labour for these products. The economic activities connected to the harbour involved goods and products, the transportation of commercial products by traders or dealers, and the employment of labourer-artisans.

A recent article published by Hanson sheds more light on the feature of the urban system and levels of connectivity and integration of Nicomedia.⁸⁷⁶ Hanson questions whether the entire urban system of Asia Minor might reveal about its wider connectivity, especially towards Rome. Therefore, he asks if the urban system of the Roman Empire function as a single entity.⁸⁷⁷ Distribution maps of the sites in Asia Minor show that the sites are weighted to the west and towards the Mediterranean and Rome. When a theoretical average radius of 23.7 km for a day's travel is applied, it can

⁸⁷¹ Broughton 1938, 800.

⁸⁷² Dio Chrysostom, *Orationes* XXXVIII 32. "On the other hand, you have it in your power to benefit the cities more fully and more effectively than the Nicaeans, first and foremost because of the sea, all the revenue of which the cities share even now, partly as a favour –though your city should grant favours officially and not to certain persons privately –partly also through their own smuggling operations, and partly on application on each separate case; and while you never refuse such applicants, still the very necessity of making application is irksome. If, however, you will actually allow the communities who day by day petition for what is urgent for their need the privilege of sharing in all these rights, is it not reasonable to suppose that you will stand higher in their estimation when you become their benefactors? And at the same time you will also increase the concord which will spread everywhere."

⁸⁷³ Robert 1980, 76-77.

⁸⁷⁴ Storey 1998, 35.

⁸⁷⁵ Wilson 1960, 88.

⁸⁷⁶ Hanson 2011, 229-276.

⁸⁷⁷ Hanson 2011, 232-233.

be seen that many sites were within a day's travel and they could have acted as market centres, service centres, and centres of administration and politics. Hence, it reveals that Roman Asia Minor was both internally and externally well connected to the rest of the Roman Empire.⁸⁷⁸ Moreover, when the radius around each site was imposed in Asia Minor, it can be observed that Nicomedia held the closest connection with Nicaea with 18.5 km, which is the minimum figure for a day's travel. Given 37 km radius, which is the maximum figure for a day's travel, Nicomedia was closely connected with Nicaea, Apameia, Cius, and further southwestern Asia Minor but not Paphlagonia and further east. Even distances between Nicomedia and Calchedon, and Nicomedia and Byzantium are far.⁸⁷⁹ A day's travel distance, therefore the connectivity highlights the importance of economic relations between Nicomedia and Nicaea, Apameia and Cius.

Hanson confirms that some large cities like Nicomedia, which were on the major road systems, would have had large populations. The position and size of all sites included in his study designates the significance of connectivity to maintain large sites as potential reasons for their prosperity. The urban system of Roman Asia therefore can be seen as part of a pan-Mediterranean system, part of the highly integrated and highly connected administrative and political system formed by the Roman Empire.⁸⁸⁰ The evidence and the analogy with Marzano's study of Britain and Spain also propose the integration of Asia with wider networks.⁸⁸¹ The result thus is compatible with central place theory, for sites such as Nicomedia apparently functioned as nodes of military and political control and as centres of administration, justice, and service.⁸⁸²

The harbour facilities of Nicomedia were indeed essential in determining the role of the city in Bithynia and the Mediterranean, and matching the concept of a service city suggested by Engels in his discussion of Roman Corinth.⁸⁸³ Although it has been criticized, his method is plausible in revealing the functions of cities in antiquity. He argues that there were two types of services provided by the city. Primary or attractive services involved religious, educational, cultural, and judicial activities that attracted rural inhabitants to the city. Secondary services include provision of food, temporary

⁸⁷⁸ Hanson 2011, 224, Fig. 9.4-9.7

⁸⁷⁹ Hanson 2011, 237. Bekker-Nielsen using both Roman literary references and comparative studies of transport in the 18th century provides a maximum figure of 37 km for a day's travel, either by foot or by pack animal. Fig. 9. 4 and 9. 5.

⁸⁸⁰ Hanson 2011, 259.

⁸⁸¹ Marzano 2011, 196-228.

⁸⁸² Hanson 20211, 263-266.

⁸⁸³ Engels 1990, 131. Engels stresses that Roman Corinth was a service city as many other ancient cities especially in the east. He concludes that in addition to Egypt, cities in Central Anatolia and Syria were also service cities. Reviews: Quaß 1996, 523-430; Saller 1991, 351-357; Wallbank 1991, 220-221; Evans 1992, 172-173.

accommodation, and the use of a public baths or latrines. Secondary services would not themselves attract people, but they were important facilities for traders, travellers, and tourists.⁸⁸⁴

Nicomedia provided important primary services.⁸⁸⁵ A schematic plan of the city based on written sources and archaeological evidence visualises its role as a service city (figure 13). In 29 BC, the emperor Augustus gave permission to Pergamon and Nicomedia to build a temple in the name of Rome and himself.⁸⁸⁶ The city took the title of *neokoros* (=νεωκόρος) three times and became a centre for the imperial cult in the province.⁸⁸⁷ Festivals of the Bithynian Assembly (*koinon*) took place here and attracted provincial inhabitants.⁸⁸⁸ The Demetria and Severia festivals were held in the Roman Period.⁸⁸⁹ Moreover, there were temples of Demeter (the city goddess)⁸⁹⁰, Isis⁸⁹¹ (especially important for sailors), Zeus⁸⁹², and Magna Mater.⁸⁹³ The ancient writer Libanius, from the fourth century AD, talks about Nicomedia as “the city of Demeter” and wrote that there was a columned road between the sacred land of Demeter and the ancient harbour, as the temple of Demeter was on the slope where the city was built.⁸⁹⁴ Nicomedia was also the capital of the province of Bithynia. Therefore, it also provided administrative and judicial services to petitioners from the whole province. As for the educational services, the city hosted Libanius, Greek-speaking teacher of rhetoric of the Sophist school, and Lactantius, a Latin speaking rhetor. The city was homeland of Arrian.⁸⁹⁵ Health services including large baths⁸⁹⁶, a nymphaion,⁸⁹⁷ and aqueducts⁸⁹⁸ are

⁸⁸⁴ Engels 1990, 43.

⁸⁸⁵ Libanius, *Orationes* LXI 8-10. “Its public buildings were splendid, its private contiguous, rising from the lowest parts to the citadel, like the branches of a cypress, one house above another, watered by rivulets and surrounded by gardens. Its council-chambers, its schools of oratory, the multitude of its temples, the magnificence of its baths, and the commodiousness of its harbour I have seen, but cannot describe. This only I can say, that frequently travelling there from Nicaea, we used on the road to discourse on the trees, and the soil, abundant in all productions, and also of our families, our friends, and ancient wisdom.”

⁸⁸⁶ Cassius Dio LI 20, 6-9.

⁸⁸⁷ Burrell 2004, 147-166; Harris 1980, 875-876.

⁸⁸⁸ Dio Chrysostom, *Orationes* XXXVIII.

⁸⁸⁹ Rigsby 1996, 442, Antonia Demetria under Elagabalus *RG* 553, 282-283, Valerianus *RG* 570, 405, Gallienus *RG* 572,415. Mysteries of Demetria can be observed. See *TAM* IV 42, 262. Severia Megala under Septimius Severus *RG* 540, 190.

⁸⁹⁰ Libanius, *Orationes* I 48.

⁸⁹¹ Pliny, *Epistulae* X 37.

⁸⁹² Harris 1980, 863.

⁸⁹³ Pliny, *Epistulae* X 49.

⁸⁹⁴ Libanius, *Orationes* LXI 7 and I 48; for the cult of Demeter in Nicomedia see Boyana 2006.

⁸⁹⁵ Rand 1971, 607-8.

⁸⁹⁶ Procopius, *De Aedificiis* V 3, 7. Public bath and agora were excavated in the rescue excavations. Çalik-Ross 2007, 103.

⁸⁹⁷ Firatlı 1971, 14. Nymphaion was regarded as one of the biggest nymphaions in Anatolia.

⁸⁹⁸ Pliny, *Epistulae* X 37; Çalik-Ross 2007, 98-100.

attested both in written sources and in the archaeological record.⁸⁹⁹ The theatre in the Orhan neighbourhood⁹⁰⁰, and circus⁹⁰¹, entertained both local and provincial inhabitants. The city also supplied a market for both merchants and villagers in its territory; the agora complex has been revealed in the rescue excavations.⁹⁰² Harbour, public bath, nymphaion, and agora were located close to each other to allow easy access for merchants, sailors, and inhabitants. The Agora was on the right hand side of the harbour and public bath was on the left. A harbour complex cannot be thought of without warehouses. Indeed, a large well-built building with thick walls and several storeys has been attested in the rescue excavation in SEKA plant where ancient harbour was located. Although Zeyrek and Asal claim that there is no direct finding, this building must have been (one of) warehouse(s) of the harbour as a list of wine prices (?), scales, bronze fragments have been found in the rooms of this building.⁹⁰³ Moreover, the existence of scales and the wine price list indicates that it could have also been a location of custom house. The testimony of Pliny's correspondence shows that the Nicomedians had started to "add a new forum to the old one" before his arrival.⁹⁰⁴ Bosch interprets the statue type of Hermes on coins of Antoninus Pius as a statue, which was erected at this time, presumably due to the new Agora.⁹⁰⁵ This may indicate increased need in the very intensive trading activities of the High Empire. Aforementioned ancient theatre was located on the north-east of this building complex. (Also see, p. 149)

The typology of the civic coins of Nicomedia supports the view of it as a service city and demonstrates not only essential religious aspects of seafaring and maritime trade but also shows features of the harbour at Nicomedia. From the second century AD, many port cities started to adopt the cult of the Egyptian gods, which were spread by seafarers. Pliny's account mentions the Temple of Isis in the city.⁹⁰⁶ This also occurs on the coins of Nicomedia under Antoninus Pius and Marcus Aurelius. The type disappears, and then re-appears on coins of Salonina in the third century.⁹⁰⁷ Isis Pharia standing, foot on the prow and holding a sail was depicted on coins of Antoninus Pius

⁸⁹⁹ Çalik-Ross 2007, 119. In survey 2006, twenty-three aqueducts were attested.

⁹⁰⁰ Çalik-Ross 2007, 122.

⁹⁰¹ Lactantius, *De Mortibus Persecutorum* 7-8, 10.

⁹⁰² Engel 1990, 43-50.

⁹⁰³ Şahin 1974, 14. Bittel-Schneider-Dörner 1939, 164-165, Image 31. Öztüre 1981.

⁹⁰⁴ Pliny, *Epistulae* X 49.

⁹⁰⁵ *RG* 528, 68; Bosch 1935, 244.

⁹⁰⁶ Pliny, *Epistulae* X 37.

⁹⁰⁷ Bosch 1935, 244.

(figure 21), Marcus Aurelius (figure 22), and Salonina (figure 23)⁹⁰⁸. Her gesture is an indication of the goddess's attribute as the inventor of sails, and she was worshipped as protectress of ships. The epithet 'Pharia' often applied to Isis probably refers to a cult place in her honour on Pharos Island. This type may have indicated the lighthouse in Nicomedia although it is not archaeologically attested. Isis Pharia appears on many coins. The pose mentioned above was depicted on coins of a number of maritime cities, including Byblos, Kyme in Aeolis, Corinth, Nicomedia, Phoea, and Anchialus in Thrace, Ephesos, Aspendos, and Amastris. The connectivity of port cities contributed to the spread of the Isis cult in the Mediterranean.⁹⁰⁹ The protection of the goddess must have been important for the Nicomedians in order to maintain shipping and fishery. The Ploiaphesia festival, during which a ship was dedicated to Isis with offerings at the harbour designed to obtain the aid of the goddess for good sailing and commerce for the coming year, was held at the opening of the year's sailing season. Cult officials such as *navarch* and *trierarch* took part in the ritual at Nicomedia, as well as at Tenos, Eleaea, and Seleucia.⁹¹⁰

Poseidon, as a sea god, was depicted on coins of Antoninus Pius, Marcus Aurelius, and Commodus.⁹¹¹ In addition to Poseidon, an increased interest in navigation can be observed on the coins. Dolphins, who guided sailors, are found in the galley types (Phillip II) and with Eros (Antoninus Pius).⁹¹² *Stolos* is another type, which also can be seen on the small number of civic coins. *Stolos* was regarded as a god of navigation and good journey.⁹¹³

To sum up, the city prospered thanks to the presence of its harbour and its distinctive position on sea and land routes. A high level of connectivity between the city of Nicomedia and other provinces was indispensable.

⁹⁰⁸ Antoninus Pius, The Ashmolean Collection, Env. No. Peus 366 15.10.2000; Marcus Aurelius *RG* 517, 86; Salonina *RG* 572, 421.

⁹⁰⁹ For Greek speaking resident traders who were the followers of Serapis cult in Carthage, see Rice 2010, 8. For the type of Serapis attested on the coins of Nicomedia, see *RG* 538, 169, *BMC* 185, 38 under Septimius Severus; *RG* 542, 205, *BMC* 187, 47 under Caracalla; *YKY* 115-117 under Gordian III.

⁹¹⁰ Handler 1971, 59-61, fn. 39. Funerary inscription found in Nicomedia carries name of priest and *nauarkh*, Aurelios Dionysios. *TAM* IV 215.

⁹¹¹ Cult of Poseidon at Nicomedia Sea Asheri 1978, 95 fn. 9; *Phyle Poseidonias* in the city *TAM* IV 167, 223, 260, 299. Antoninus Pius, *RG* 523, 54. Marcus Aurelius, *SNGAul.* 759; 527, 85. Commodus, *RG* 535, 145.

⁹¹² Phillip II, *SNGAul.* 843; *RG* 567, 387. Antoninus Pius, *RG* 523, 56. Bosch 1935, 243-244. There also other types in parallel with the animals of Poseidon. They are depictions of Hippokampos (Antoninus Pius and Commodus), Pegasus (Antoninus Pius) and horse (Antoninus Pius). Hippokampos, *RG* 534, 133; pegasus *RG* 525, 69; horse, *RG* 525, 70.

⁹¹³ Antoninus Pius *BMC* 181, 16; Marcus Aurelius *RG* 525, 65; *SNGAul.* 770. Julia Domna *RG* 541, 196.

II. The Economics of the Routes

i. Commercial Commodities and Trade

Trade in Timber

In antiquity, timber brought from the mountains to the city was used for shipbuilding, building, fashionable furniture, sculpture and in viticulture, posts for vines. Wood was also used for cooking, in the form of logs or charcoal, for metallurgy and for heating the baths.⁹¹⁴

Eustathius, in Dionysius Periegetes, reports that the Bithynians were once excellent sailors; that they say their land is very fertile and well endowed with forests; that they have many marble quarries, precious stones (mine) in the mountains and have many other sources of wealth.⁹¹⁵

As discussed in the third chapter, Nicomedia's timber sources were well known from the pre-Hellenistic period. This section therefore examines the usage of timber and the economic value of timber sources in Nicomedia. The abundance of different kinds of timber especially useful for shipbuilding was stressed by Xenophon.⁹¹⁶ Under the Romans, Pliny highlights the resources of timber and firewood from beyond Lake Sophon.⁹¹⁷ The Ottoman traveller Evliya Çelebi also writes in the 17th century that the mountains in the eastern part of İzmit were called the 'Sea of Trees' owing to the abundance of trees and the richness of the timber. He states that the tradesmen of İzmit in this period were mostly occupied with timber.⁹¹⁸ This area and the vast forests in Kastamonu Province, was called a 'Sea of Trees' (Ağaç Denizi), since it made up a single forest with an area of 2300 km² extending beyond the province of İzmit to other provinces.⁹¹⁹ Another Ottoman source is Katip Çelebi (1635-1648), who accompanied the Ottoman army and confirms that the 'Sea of Trees' was so-called because of the ampleness of the woodland area.⁹²⁰ In 1823, Dr. Robert Walsh mentions that the 'Sea of

⁹¹⁴ Çalık-Ross 2007, 18. Meiggs 1982, 203; Lee 2007, 37. Timber was required for fortresses, catapults and other types of siege engines. As learned from Xenophon, the Mossynoecians between Trapezus and Cotyora used wood not only for building house but also for wooden towers and palisades. See also related Xenophon's statements in *Anabasis* V 2, 5, 25-27.

⁹¹⁵ Eustathius ad Dion 793 in *GGM* II 355; Debord 1998, 163, Robert 1978, 424.

⁹¹⁶ Xenophon, *Anabasis* VI 4, 4-6. trans. C.L. Brownson. "...great deal of timber of various sorts, but an especially large amount of fine ship-timber, on the very shore of the sea. The ridge extends back into the interior for about twenty stadia, and this stretch is deep soiled and free from stones, while the land bordering the coast is thickly covered for a distance of more than twenty stadia (c. 3 km) width, and abundance of heavy timber of all sorts."

⁹¹⁷ Pliny, *Epistulae* X 41.

⁹¹⁸ Ulugün 2008, 40-41.

⁹¹⁹ Cuinet 1895, 385. The Sea of Trees is vast wooded areas of Bithynia made up the western edge of forests in Turkey and this range extends through the Black Sea littoral.

⁹²⁰ Ulugün 2008, 46. See also Robert 1978, 416.

Trees⁹²¹ supplied the timber needs of the Mediterranean and neighbouring regions for shipbuilding and architecture.⁹²² In 1893, Vital Cuinet mentions Calpe as main source of wooden products. He said that there is no certain data about the vast and conspicuous forests since there were no proper ways even to discover them in Kandere (Kandira) County.⁹²³

Trade between the Black Sea and the Mediterranean had already started at the time of Greek Colonisation (see, Chapter I, p. 69-74). Nicomedia had the great advantage of its harbour. Timber was commonly transported long-distance by sea, and timber exports took different forms, such as raw material and ready built ships.⁹²⁴ As transportation of this bulky item is difficult, most timber must have been exported as finished items furniture, ready building material, ships, and firewood rather than as the raw material. Consequently, it created manufacture around timber products. Demand for small wooden figures in architecture and as decorations provided a good income for artisans who might be called woodcarvers rather than sculptors.⁹²⁵ A funerary inscription found in the western necropolis of Nicomedia belonged to Eumoirios Papos of Arados (in Phoenicia), who worked as a *xyloglyphos* (woodcarver), and died aged 41. Two woodcarver's tools, a mallet, and chisel blade, were engraved on the stele and the inclusion of a cross proclaims that he was a Christian, probably dated to the third century.⁹²⁶ It is not surprising to attest a woodcarver from Arados in Syria as this region was rich in timber, especially cedar, which was exploited for shipbuilding. The abundance of wood stored in Nicomedia increased the trade of carpenters. Another epitaph found in Rome possibly dated to the first century of Maximus, who, at twenty-two, was an *oikodomos xyloergos*, a builder-carpenter. His hometown was specified as Astakos, which must refer to the gulf of Astakos.⁹²⁷ Wood, as shown, was one of the main products traded in Nicomedia. Moreover, the city apparently both received and provided labour and expertise of workmanship for woodworking.

There is a hint about exchange of timber for wheat in Boré's account. He observes at the mouth of Sangarius "...In exchange for wheat from Crimea, some small Russian ships there loaded the timber of the mountains, carried by the flow on long

⁹²¹ Walsh states that it contains oak, chestnut, lime, poplar and plane trees as well as fruit trees: walnut, plum, pear, apple, and quince.

⁹²² Ulugün 2008, 145.

⁹²³ Cuinet 1895, 385. The Sea of Trees is the vast wooded areas of Bithynia, which make up the western edge of forests in Turkey and extends through the Black Sea littoral.

⁹²⁴ Hannestad 2007, 94.

⁹²⁵ Meiggs 1982, 321.

⁹²⁶ Robert 1978, 413.

⁹²⁷ SEG IV 105; Robert 1978, 418. Maximus was son of Dionysios and Carpurnia.

journey...”⁹²⁸ It may be the case in antiquity that Nicomedia exported timber in exchange for wheat to meet the city’s needs in time of shortage. Robert’s work on Prusias ad Hypium helps to clarify the case of Nicomedia. Robert deduced that there was a strong link between the city of Prusias and its emporion.⁹²⁹ He has shown that the representation of the River Hypios on coins still evokes the forest exploitation in Prusias’ territory and the role of the river for transport and trade in timber.⁹³⁰ The testimony of travellers, who have reported so much about the forests around Prusias, explains the importance of trade in Prusias and the long distance travel of its citizens. Thus, Prusias traded with the Kingdom of the Bosphorus and the Greek cities of the coast of Russia. Although its territory was rich, the city did not export its fruits and the agricultural products to other countries. Prusias had no olives and its wine was produced only for local consumption. The most abundant renewable resource was its vast forests. However, inscriptions show frequent grain crises in Prusias.⁹³¹ According to Robert, grain, wheat, and millet were exported from the Russian steppes to Bithynia and other regions on the Black Sea coast in exchange for timber.⁹³² Indeed, Greece and Asia Minor were often fed with grain from South Russia in antiquity.⁹³³ Under Roman rule, the increasing urban population, and the presence of a Roman fleet in the Gulf created a demand, and there is no doubt that when Constantinople became the capital of the eastern empire, its population increased and there was a large demand for building-timber and fuel. The hinterland of Nicomedia probably was the primary supplier of timber for Constantinople.⁹³⁴

When it comes to later periods, the traveller Marcellus, describing rich flora and fauna of Bithynia in 1819, wrote that “Ancient Pontus Kingdom’s trade was based on only firewood/lignite and logs transported to İstanbul as today.”⁹³⁵ In 1893, Cuinet stressed the importance of forests in the county of Geyve, Adapazarı, and Kandıra east of İzmit, and the manufacture of coal deposits, which were sent each day from İzmit to İstanbul by boats or to Üsküdar directly by truck. An estimated 400,000 beech staves, in addition to the 6000 walnut planks and many linden, elm, beech, oak, beautiful pine, and fir woods were provided from the forests in İzmit and beyond. Statistical tables

⁹²⁸ Robert 1978, 415.

⁹²⁹ Robert 1980, 76-77. This is the key to the prosperity Prusias of its trade in the Euxine and its relations with western and northern coasts, with Tomis, Olbia, and the Cimmerian Bosphorus, as is indicated by inscriptions of Prusian merchants.

⁹³⁰ Robert 1980, 104.

⁹³¹ Ameling 1985, 6, 9, 13, 17, 19, 48.

⁹³² Robert 1980, 82-85.

⁹³³ Rostovtzeff 1926, 188-9.

⁹³⁴ Meiggs 1982, 393.

⁹³⁵ Ulugün 2008, 141. Meiggs 1982, 203.

specify the value of beech staves bound for various ports in Greece, and of planks of walnut for Greek ports and Marseille. Fifty thousand walnut timbers were exported per year from İzmit Harbour.⁹³⁶ Karasu, İncirli, Kerpe and other northern villages in Kandira, which are located on the coastline of the Black Sea, exported large amounts of timber beams, walnut-wood, and wood coal (firewood-lignite).⁹³⁷ Therefore, the main businesses of İzmit were wood and salt in the 19th century.⁹³⁸ (For salt, see discussion in p. 128)

Shipbuilding

As is examined, timber was a primary commercial commodity in Nicomedia throughout history. Nicomedia had a strong seafaring tradition along with its well-forested hinterland.⁹³⁹ The availability of timber sources in the city must have developed shipyards, workshops, and shipbuilding infrastructure in general. It is therefore needed to be defined the existence of shipbuilding in Nicomedia since it immensely affects the development of both the military and trade.

It seems that forests of Sophon/Samanlı Mountain on the south side of the Lake Sophon, and the wooded areas on the north of the city were mainly exploited in antiquity.⁹⁴⁰ The reports of 16th and 19th century's travellers to İzmit especially the Kandira region give a clear indication that the area contained forests abundant with fir, beech, and oak trees, providing the city with a plentiful supply of timber, which could be used for shipbuilding.⁹⁴¹ Today, beech-horn, beam-ash, tree-maple-chestnut, and oak species can be observed in Sophon/Samanlı Mountain range. Further south there are beech and chestnut coppice forests in Gölcük. On the northern side of the Gulf, first there is oak coppice, and then at higher altitude coppice forest consisting of oak, beech and hornbeam. On the southern side of the Gulf, in Karamürsel County, there is maquis thanks to the Mediterranean climate. Beech is to be found intensively on the northern slopes and flourished in the humid and deep soil type and rainy climate. Oak was distributed over the vast areas. Chestnut grows in the warm, deep, and humid soil in the valleys looking across the Black Sea.⁹⁴²

Theophrastus counts fir, pine, and cedar as the most useful trees for shipbuilding

⁹³⁶ Cuinet 1895, 316-317.

⁹³⁷ Cuinet 1895, 385.

⁹³⁸ Robert 1978, 416.

⁹³⁹ Meiggs 1982, 357.

⁹⁴⁰ Xenophon, *Anabasis* VI 4, 4-6; Pliny, *Epistulae* X 41.

⁹⁴¹ Cuinet 1895, 315-317; Ulugün 2008, 171: For example, in 1838, Eugene Boré mentions the fertile Ömerli ovası. From here to Şile, he counts oak, hornbeam, chestnut trees in the hills.

⁹⁴² Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 175.

in the third century BC. While the fir was used especially for triremes, pine was applied for merchant ships. He also draws a distinction between warships (in his time the trireme was standard) and merchantmen. Merchantmen had to stay at sea for long periods and strength was more important than speed. The effectiveness of triremes depended on speed and so they were built lightly, and tended to hug the coast.⁹⁴³ Fir was normally the first choice for shipbuilder, but pine, cedar, cypress, chestnut (skeleton of coracles), oak (naval construction-warships), elm (for planking) were also acceptable.⁹⁴⁴ In this case, timber for fine shipbuilding, according to Xenophon's account, must have been fir or pine, which was presumably used for shipbuilding in Nicomedia. Not only fir and pine, but also chestnut and oak must have been exploited in the city. Archaeological literature on the analysis of wood used in the construction of Roman ships sheds more light on the current knowledge of ancient shipbuilding. Pollen-wood analysis on the shipwrecks in the harbours of Pisa, Naples, and Ostia presents which species were employed in certain types of ships.⁹⁴⁵ For example, three Roman shipwrecks in Roman port of Neapolis reveal that abies and cypress for planking; picea/larix for ceiling and planking; oak, acer and elm for ceiling and frames, and walnut for the frames were used.⁹⁴⁶

According to a letter attributed to Brutus, "the Bithynians were to build, fit, and forward 50 merchant vessels and 200 warships with sailors, rowers, and food for 30 days."⁹⁴⁷ Bithynia seems to have made important contributions in timber supplies before Actium.⁹⁴⁸ The poet Horace shows the reputation of Bithynian hulls in the Roman world.⁹⁴⁹ There is important written evidence to draw attention to the shipbuilding in

⁹⁴³ Theophrastus, *Historia de Plantis* 5, 7, 1-3: "Fir, pine, and cedar were useful for shipbuilding; for triremes and long ships are made of fir, because of its lightness, and merchants ships of pine, because it does not decay: while some make triremes of it because they are ill provided with fir. The people of Syria and Phoenicia use Syrian cedar, since they cannot obtain much pine either; while the people of Cyprus use coastal pine, since their island provides it and it seems superior to their pine. Most parts are made of these woods; but the keel for the trireme is made of oak, that may stand the hauling; and for merchantmen it is made of pine." Hannestad 2007, 92.

⁹⁴⁴ Rougé 1981, 37.

⁹⁴⁵ Portus and Ostia: Boetto 2010, 112-128; Neapolis: Allevato-Ermolli-Boetto-Di Pasquale 2010, 2365-2375; Martinelli-Pignatelli 2007, 69-78.

⁹⁴⁶ Allevato-Ermolli-Boetto-Di Pasquale 2010, 2365-2372.

⁹⁴⁷ Broughton 1938, 584; Hercher 1965, 178-180. Although it is not clear whether the source is genuine, it presents Brutus' demand list. Even if it is not true, it was apparently written by someone, well informed with Brutus' actions.

⁹⁴⁸ Harris 1980, 877.

⁹⁴⁹ Horace, *Odes* I, xxxv. "O diua, gratum quae regis Antium,
praesens uel imo tollere de gradu
mortale corpus uel superbos
uertere funeribus triumphos,
te pauper ambit sollicita prece
ruris colonus, te dominam aequoris
quicumque Biythyna lacessit

Nicomedia. Arrian of Nicomedia mentions, among others, the building of a type of large merchant ship (*holka Nikomedis*) in the second century AD.⁹⁵⁰ He describes Trajan's naval force in his Parthian campaign and speaks of warships, which were bigger than triremes, with vast hull, and nearly equal in size to the large ships built in Alexandria and Nicomedia. Tonnet stresses that Nicomedia was a prosperous city, which built large merchant ships, and it was connected to the Greek world by the Aegean Sea, to the Black Sea by the lower valley of Sangarius; and by land, with the cities of Central Asia Minor and the border of Armenia.⁹⁵¹ Indeed, maritime traffic in Nicomedia was vividly described in the fourth century AD. Libanius mentions a number of merchant ships (*holkai*) passing through the port of the provincial capital in the fourth century AD.⁹⁵² There was a guild of *fabri navales* (ship's carpenters) in the large harbours.⁹⁵³ The existence of woodcarvers, carpenters, and Pliny's aim to recruit 150 builders (*fabri*) for fire brigade in Nicomedia shows the importance of the building sector and availability of masonry.⁹⁵⁴

A coin type minted under Commodus strikingly shows a bearded man seated to the right with short coat, his right hand about to strike with a mallet and holding a nail fixed on the prow of a ship with the left (figure 24).⁹⁵⁵ C. Bosch interpreted this type as an activity in the shipyard.⁹⁵⁶ However, Robert explains that it also must have been related to the Argonauts, since civic coins usually tend to describe many legends and tales from Ancient Greek mythology. Although the Nicomedians had no connection with the actual construction of the ship of Argo, seamen and maritime traders in the city could easily assume a connection to the Argonauts. Nicomedia, the former Astakos, was in the vicinity of Jason's expedition. Both interpretations show the significance of ship building activity in the city.⁹⁵⁷ The reputation and manufacture of shipyards in İzmit is well known in Ottoman times. The reports of 19th century travellers to İzmit indicate

Carpathium pelagus carina.”

⁹⁵⁰ Arrian, *Parthica*, *FGrHist* 19.

⁹⁵¹ Arrian, *Parthica*, *FGrHist* 19; Tonnet 1998, 12-13. See also Stadter 1980, 153-156.

⁹⁵² Libanius, *Orationes* LXI 7-8, 21; Debord 1998, 162. Libanius talks about destruction caused by earthquake in 358. He describes the port as abandoned, which was “full of cargo ships” before.

⁹⁵³ Rougé 1981, 25.

⁹⁵⁴ Pliny, *Epistulae* X 33-34; Van Nijf 1997, 176-179. Trajan, however, found the idea dangerous as it might be used in the political unrest that was prevailed before Pliny's arrival. The *collegia* of the *fabri* along with the *centonarii* and the *dendrophori*, making up the *collegia tria* were one of the most widespread organisations in Italy and the west. They were a sort of elite group of craftsmen-employers in the middle class and according to study *collegia* of *fabri* in Roma and Ostia played an important role in urban life. The *collegia* of the *fabri*, *centonarii* and *dendrophori* were a group of craftsmen and traders. *Centonarii* were supposedly involved because they produced blankets to extinguish small fires, and *dendrophori* may have been wood merchants. Van Nijf 1997, 20-22; Williams 1990, 98.

⁹⁵⁵ *RG* 536, 153.

⁹⁵⁶ Bosch 1933, 242.

⁹⁵⁷ Robert 1978, 420.

how essential shipyards were then and previously had been to the city.⁹⁵⁸ In 1832, David Porter is only one of the travellers who mentioned timber depots and shipyard in İzmit.⁹⁵⁹ Cuinet's account not only shows timber exports but also observed that wooden warships and merchant ships had been built in shipyards in Bithynia.⁹⁶⁰

The *Holkai* mentioned by Arrian were first designed in the 5th century BC⁹⁶¹, as commercial boats and cargo vessels of large dimensions, which represent the Greek variant of *naves onerariae*, large transport vessels propelled by sail. *Naves onerariae* were 'round ships' as their bodies were large and curved while war ships (triremes) were long ships (figure 25). The Roman lexicographers of the late Roman period list *holkades sitagognoi*, which were primarily used for the transport of cereals or, more frequently, the *myriophoros holkas*, which was also a type of transport vessel with a capacity of at least 10,000 measures of grain.⁹⁶² Thus, *naves onerariae* in Latin were cargo ships (ship of burden) carrying people, livestock, goods such as cereals, stone, timber, and wine.⁹⁶³ Transportation on such immense cargo ships increases financial risk.⁹⁶⁴ For a merchant it was better to transport his cargo in the different ships rather than on one cargo ship. To reduce the risk merchant ships were possessed by multiple investors.⁹⁶⁵

The depictions on the city's coins of galleys and prow are indicators of shipbuilding activity, abundant maritime traffic, and the importance of the harbour. A prow was depicted on coins of Claudius, Vespasianus, and Domitianus (figure 26) with a serpent or a shield.⁹⁶⁶ On a coin of Trajan Decius, Athena standing holds a prow in one hand and a shield in the other hand.⁹⁶⁷ On a coin of Commodus, she carries a prow in one hand and a spear in the other hand.⁹⁶⁸ A prow can also be seen on coins of Commodus while display an eagle and serpent struggling.⁹⁶⁹ On a coin of Antoninus Pius, Hermes holds his chlamys in one hand, and a prow was depicted near his feet.⁹⁷⁰

⁹⁵⁸ Çalık-Ross 2007, 18. Gölcük Naval Shipyard was established in 1929 in the eastern part of the city to build ships and maintenance. This shows the significance of both regions.

⁹⁵⁹ Ulugün 2008, 159.

⁹⁶⁰ Meiggs 1982, 393

⁹⁶¹ Braund 1994, 45.

⁹⁶² Bounegru 2006a, 1566-1567. For the construction of *navis oneraria* see Göttlicher 1977, 47-54.

⁹⁶³ Göttlicher 1077, 54; See also Casson, chapter 9 on sailing ships; for usage in troop transportation in late antiquity see Charles 2005, 289-297.

⁹⁶⁴ Mattingly-Aldrete 1999, 193.

⁹⁶⁵ Mattingly-Aldrete 1999, 185.

⁹⁶⁶ Claudius *RG* 518, 24; Vespasianus *RG* 518, 27; Domitianus *RG* 520, 33.

⁹⁶⁷ *RG* 568, 391.

⁹⁶⁸ *SNGAulN* 7107; *RG* 538, 143.

⁹⁶⁹ *RG* 534, 135-137.

⁹⁷⁰ *RG* 528, 68.

On a similar Hermes type, a prow also appears near his foot.⁹⁷¹ Heros was depicted on coins of Domitianus, Commodus, Philip II, Trajan Decius, and Etruscilla while climbing into the ship with his foot on the prow.⁹⁷² On coins of Marcus Aurelius, Nike was shown with a prow on the right (figure 27).⁹⁷³ Poseidon also includes a prow under his feet on coins of Marcus Aurelius and Severus Alexander.⁹⁷⁴ Finally, a prow appears under the feet of the city goddess (Tyche) on coins of Marcus Aurelius.⁹⁷⁵

Different types of ships, especially merchant ships, emphasise Nicomedia's role as a maritime city.⁹⁷⁶ Civic coins present merchant ships and warships (triremes). It is worth asking whether these depictions on the coins were reminiscent of shipbuilding in the city, therefore, these ships were the products of Nicomedia, or they were indicators of maritime and military feature of the city. The catalogues do not distinguish between trireme and merchant ships, but identifies them as galleys under sail, or oared vessels. Sailing ships/vessels were depicted on coins of Antoninus Pius, Marcus Aurelius, Commodus (figures 28-29), Septimius Severus, and Philip II.⁹⁷⁷ Among them, a couple of types struck under the reign of Maximus, Antoninus Pius (figure 30-32), Maximinus Thrax (figure 33) and Philip II (oared, figure 34) stand out.⁹⁷⁸ Here, a type of *navis oneraria* was apparently depicted. Other sailing ships depicted under Maximinus Thrax (figure 35), Septimius Severus (figure 36), Antoninus Pius (figure 37) and Commodus (figure 29) were seemingly merchant or fishing vessels.⁹⁷⁹ *Navis oneraria* apparently was depicted on the stele of ship-owner Kornoutos from Nicomedia dated to the 2nd-3rd century AD.⁹⁸⁰ Depictions of *naves oneraria* were also attested in Ostia as graffito dated to the 2nd and 3rd century AD in Casa di Giove e Ganimede⁹⁸¹, in Salerno as a relief on a

⁹⁷¹ Imhoof-Blumer 1, 139.

⁹⁷² Domitianus *RG* 520, 35; Commodus *RG* 536, 152; Phillip II *SNGAul.* 842; Trajan Decius *SNGAul.* 852; Etruscilla *SNGAul.* 854.

⁹⁷³ *RG* 528, 90.

⁹⁷⁴ Marcus Aurelius *SNGAul.* 759; *RG* 527, 85; Severus Alexander *RG* 554,288. On these coins generally the god is depicted standing up, naked, holding a trident in his right hand, and a dolphin in his left hand, with a rock or prow under his feet.

⁹⁷⁵ *RG* 528, 91-92. Here, Tyche is sitting on the rock and on her feet, prow was depicted.

⁹⁷⁶ Libanius, *Orationes* LXI 7-10.

⁹⁷⁷ Antoninus Pius *RG* 526, 74; *BMC* 182, 17; Marcus Aurelius *RG* 529, 103; Commodus The Ashmolean Collection Env. No. A.H. Baldwin BMS, 11.7.1938; Also *RG* 534, 139; *BMC* 185, 35; *RG* 538, 167; *BMC* 185, 36; Septimius Severus *BMC* 186, 43; *RG* 540, 189; Phillip II *SNGAul.* 843; *RG* 567, 387.

⁹⁷⁸ Maximus, The Ashmolean Collection Env. No. J. G. Milne, 13.1.1947; Antoninus Pius, The Fitzwilliam Collection Env. No. Mossop. Coll Glend 4/23, Pilot 365; *BMC* 1961.3.1.117, *BMC* 17; Cat. Nic. 17; Maximinus Thrax, *BMC* 1921 11 Spink 20; Phillip II *SNGAul.* 843; *RG* 567, 387.

⁹⁷⁹ Maximinus Thrax *SNGAul.* 796; *RG* 561, 345; *BMC* 189, 60; Septimius Severus *BMC* 186, 43; *RG* 540, 189; Antoninus Pius *BMC* 1921 11 Spink 20; Commodus *RG* 538, 167; *BMC* 185, 36.

⁹⁸⁰ *SEG* XXIX 1346; J.-L. Robert 1979, 415, no. 12; Robert 1978, 422. It is in Ankara now and provenance is unknown.

⁹⁸¹ Pomey 1997, 15.

sarcophagus dated to the 3rd century BC⁹⁸², in Ravenna as a relief on a gravestone dated to the 2nd century AD⁹⁸³, and on a stele in Carthage.⁹⁸⁴

Triremes are easily distinguishable. In one of examples, a galley moving towards the left with its rowers is seen on coins of Commodus.⁹⁸⁵ There are different scenes on coins of Antoninus Pius, Septimius Severus, Elagabalus, Maximinus Thrax, Maximus, Valerianus, and Gallienus where the numbers of rowers in the galleys are different.⁹⁸⁶ Depiction of temples with two or eight columns on some of galleys provides information about civic architecture. These types are seen on coins of Commodus (figure 38), Septimius Severus, and Maximus.⁹⁸⁷ As a result, there are written sources and numismatic evidence for merchant ships which were built in the city. Nicomedia therefore took advantage of constructing large cargo ships in transportation business in the Mediterranean. Timber sources and shipbuilding thus must have made a vital contribution to Nicomedia's connectivity and civic revenues.

Numismatic evidence, illustrating the triremes, however is not adequate to accept the construction of triremes in Nicomedia, even though the trireme building was attested in Bithynia.⁹⁸⁸ On the other hand, triremes shown on coins are reminiscent of the Roman fleet at Nicomedia. The city harbour must not only have been a naval base, but it was also a place for the mobilisation of the army during wartime, because it was much easier and cheaper to mobilise by sea than by land.⁹⁸⁹

The development of the coin types where the legend *Stolos* appears, is striking in this context. This type first appears under Antoninus Pius (figure 39), and continued under Marcus Aurelius and Iulia Domna.⁹⁹⁰ The legend *Stolos* accompanies the image of a naked man with a rudder or oar in the left hand and the right foot on a prow.⁹⁹¹ Bosch interprets this type as the personification of the fleet. There were three Roman fleet squadrons in Asia, stationed at Trapezus, Cyzicus, and Perinthus. These squadrons were often cruising around the Propontis and visited Nicomedia.⁹⁹² According to this

⁹⁸² Casson 1965, plate V, 1.

⁹⁸³ Casson 1971, fig. 163, 132.

⁹⁸⁴ Basch, 1987, 399, fig. 832.

⁹⁸⁵ Commodus *SNGCop.* 566; *RG* 534, 138; *RG* 537, 166; *BMC* 185, 35.

⁹⁸⁶ Antoninus Pius *SNGAul.* 751; *RG* 526, 75; Septimius Severus *RG* 540, 187, 188; *BMC* 186, 42; Elagabalus *RG* 552, 280; Maximinus Thrax *RG* 561, 346; Maximus *RG* 562, 356; Valerianus and Gallienus *SNGAul.* 858; *RG* 570, 406.

⁹⁸⁷ Commodus, *RG* 537, 165; *BMC* 185, 34; Septimius Severus *RG* 540, 187; Maximus *RG* 562, 355.

⁹⁸⁸ Broughton 1938, 584; Hercher 1965, 178-180.

⁹⁸⁹ Boyana 2006, 172.

⁹⁹⁰ Antoninus Pius *BMC* 181, 16; Marcus Aurelius *RG* 525, 65; *SNGAul.* 770. Julia Domna *RG* 541, 196.

⁹⁹¹ Boyce 1958, 70 and fn. 24. "*Stolos* regarded as the counter-part to a goddess he calls "Euploia" the goddess of navigation or fair voyage."

⁹⁹² Bosch 1935, 240 and fn. 130.

model, it was on such occasions that the city must have depicted warships on its coinage. Bosch takes the point further and asks whether Nicomedia itself was a fleet station. He suggests that Nicomedia must have had a separate fleet since the city was located on strategic land and sea routes. With the rise of danger from the east, especially from the beginning of the 3rd century onwards, Nicomedia became a base for the Roman emperors. The military-logistic role of the city began to increase under Trajan. Therefore, *Stolos* on the coins may be interpreted as symbolizing the creation of a separate fleet in Nicomedia and this must have occurred under Antoninus Pius as the type first appears during his reign. The subsequent re-appearance of *Stolos* reflects the achievements of the fleet. The reason that it appears on coins of Marcus Aurelius may well be the role the fleet played in the deployment of troops in the Parthian Campaigns. Again, its occurrence on coins of Julia Domna may have been related to Caracalla and his campaign to Parthia. In the middle of the third century, *Stolos* appear in another personification. A coin of Gordian III shows a frontal figure standing and veiled woman to the left, extending her arms on either side. There is a bowl in her right hand, and on the left an oared boat without a mast, so probably a warship. Gordian III spent the winter of AD 242/3 in Nicomedia before his campaign to the east.⁹⁹³ Bosch regards this type as a personification of the fleet since Gordian had crossed the Hellespont to march to Persia, and the fleet of Nicomedia must have been in action at this time.⁹⁹⁴ Another coin dated to the reign of Gordian III includes a warship with rowers and the emperor.⁹⁹⁵ A coin issued under Maximinus Thrax shows a galley (here a warship) towards the left, three soldiers and two military standards behind the soldiers.⁹⁹⁶ Therefore, warships and the *Stolos* type are interpreted as the civic representation of the fleet stationed at Nicomedia, which was established under Antoninus Pius due to the increased conflict with Parthia.

Quarries in/around the territory of Nicomedia

The Romans used the word ‘marmor’ in its very widest sense to cover any fine, hard stone that could be used for architecture or high quality building stone, e.g. breccias, granites, porphyries, diorites, basalts, and finer limestone. Marble is a limestone crystallized through heat and pressure. Nevertheless, antiquity was not concerned with geological distinctions.⁹⁹⁷ Research done by İ. Altınlı in the 1960s in the

⁹⁹³ Bosch 1942, 36.

⁹⁹⁴ Bosch 1935, 240-241.

⁹⁹⁵ YKY 125.

⁹⁹⁶ RG 561, 346.

⁹⁹⁷ Ward-Perkins 1992, 14.

İzmit-Hereke-Kurucadağ area showed that the city was the source of a broad and rich range of metal and minerals such as barite, lignite, copper, iron, limestone, and mineral springs.⁹⁹⁸

Indeed, some quarries have been exploited since antiquity. One of the marble quarries in İzmit today, at and around Kutluca village in Gebze County, is suitable for high polishing and can be used for cladding (figure 40).⁹⁹⁹ Kutluca quarry was 20 km away from İzmit's harbour and the road between Constantinople and Nicomedia, and was a good source of *occhio di pavone* (*marmor Triponticum*). In addition, a small quarry of *occhio di pavone rosso* and *pavonazzo* has been attested in Kutluca.¹⁰⁰⁰ Because of modern exploitation, ancient quarrying is difficult to observe, but Lazzarini notes that there were one small and one average size quarries, which were exploited rarely in Roman and Byzantine times. In the Diocletian price edict, the price of *Marmor Triponticum* is given as 75 denarii per square foot, a low price; the stone was easily extracted and transported.¹⁰⁰¹ Around the Kutluca quarry, there were five ancient villages Soka, Petrozetoï, Nerola, Prepa, Sirkanos, as well as the bridge on Göksu River, dated to the early Roman period, and the ancient road leading to Nicomedia.¹⁰⁰² In terms of transportation, water transport was preferable as long as it was practical. Overland, in general, the stone had to be carried by means of sleds and runners.¹⁰⁰³ It seems that water transport on Göksu River to Şile was impractical. The quarry is much closer to Nicomedia than Şile, and facilities for land transport were well established. As the quarry is located on the far side of Göksu River when approaching from Nicomedia, one of the purposes of the Roman bridge must have been to facilitate land transportation between the quarry and Nicomedia. Moreover, many fragments of sarcophagi apparently made of marble from Kutluca quarry are attested in the necropolis area.¹⁰⁰⁴

During the Survey of 2006, a stone quarry was located in the Kandıra region, 28 km to the north of İzmit and south of the village of Göğüşler in a location known as Küplük, which lies on the border of the village of Nasuhlar. Moreover, closer

⁹⁹⁸ Altınlı 1968, 19; Ward-Perkins 1980a, 23-69; 1980b, 325-338. Marble quarries are dispersed to Kocaeli and Armutlu Peninsulas.

⁹⁹⁹ Kocaeli Provincial Directorate of Environment and Forestry, Kocaeli Environment Report 2006, 298-302. Dolomitic limestone which is called Dolostone or dolomite rock can be vastly seen in the villages of Gebze, Kösel, Muallim, Demirciler, Tavşanlı, Tepecik, Mollafenari, Hereke and Tavşanlı Limestone and marl can be seen in the south-west, east and north-east of Gebze, and they are used in the cement, building and stone chips, also lime.

¹⁰⁰⁰ Lazzarini 2002, 63-65. Lazzarini found shreds of amphorae in the ancient debris. According to old quarryman, there were many ancient relics and Byzantine coins found in his work.

¹⁰⁰¹ Lazzarini 2002, 67.

¹⁰⁰² Dörner 1941, 34.

¹⁰⁰³ Ward Perkins 1992, 16, fn. 7.

¹⁰⁰⁴ The present author has observed this when she attended Surveys 2007 and 2008 in İzmit.

examination allowed it to be confirmed as an ancient quarry since there are hewn blocks and pieces of sarcophagi in the waste from the quarry. Therefore, it must have been a stone workshop specialising in sarcophagus production (figure 41).¹⁰⁰⁵ Land transport must have been preferred, since the secondary road running to Kandıra in antiquity possibly passed closely to the quarry.¹⁰⁰⁶ Surveys in 2006 and 2007 confirmed that the marble quarries in Kutluca and Kandıra seemed to have been exploited since antiquity. There is no direct evidence for the exact quarry exploitation methods in Nicomedia.¹⁰⁰⁷

Besides its own marble sources, other marble quarries were connected to trading activity in Nicomedia.¹⁰⁰⁸ One of them was the quarry in Vezirhan that produces *breccia corallina*.¹⁰⁰⁹ The *potamogallenos* marble listed in the Price Edict is to be identified with the *lithos sangarius*, a red fossiliferous marble quarried near Bilecik on the west bank of the lower Sangarius.¹⁰¹⁰ The *breccia corallina* and other stone quarries of modern Bilecik lay only a short distance to the south-east of Nicomedia in the hills overlooking the Sangarius valley. Though it is not the same quality as the Phrygian marbles, it was in considerable demand, particularly for columns.¹⁰¹¹ The marble must have been exported to Rome after the kingdom was bequeathed by Nicomedes IV in AD 74. A recent examination made by Lazzarini suggests that the Karasu, a tributary of the Sangarius, just 6 km away from the quarry was used for transportation. Via the Sangarius it reached Lake Sophon and was transported to the harbour at Nicomedia.¹⁰¹²

Besides the Vezirhan quarries, a little known black marble was extracted near the eastern end of the lake in Harmantepe/Hendek in Adapazarı.¹⁰¹³ Tributaries of the River Sangarius and the Lake Sophon could also facilitate the transport of this marble.¹⁰¹⁴ Furthermore, products of Proconnesus and Docimion were distributed via Nicomedia, which was an important overseas outlet for their exportation.¹⁰¹⁵

¹⁰⁰⁵ Çalik-Ross 2007, 121.

¹⁰⁰⁶ Ward-Perkins 1992, 17, fn. 14. There were several methods of transporting architectural elements, including columns and column drums. One method was to use the column as a roller, with a wooden frame around it and iron spigots in each end. A team of oxen was carrying the whole frame.

¹⁰⁰⁷ Ward-Perkins 1992, 16. However, there is considerable amount of literature on exploitation in other quarries. The method varied according to the geological nature of the deposits, and to the value of the stone. It involved tunnelling into the hillside, in order to follow a particular vein, as seen in the marble of Paros, known as 'lychnites' since it was extracted underground.

¹⁰⁰⁸ Pliny, *Epistulae* X 41.

¹⁰⁰⁹ Lazzarini 2002, 58.

¹⁰¹⁰ Ward-Perkins 1992, 61, fn. 4.

¹⁰¹¹ Ward-Perkins 1992, 67.

¹⁰¹² Lazzarini 2002, 60-62.

¹⁰¹³ Mango 1986, 86. Adapazarı black marble is quarried in Hendek and Harmantepe today, which is near the eastern end of the lake. However, it is located on the south-east border of Nicomedia. M. Arıkan, p. 692: <http://www.maden.org.tr/resimler/ekler/145.pdf>

¹⁰¹⁴ Robert 1978, 416.

¹⁰¹⁵ Robert 1978, 416.

The Marble Trade in Nicomedia

The emergence of Rome started changes in consumption and distribution patterns of marble. By the second half of the first century Luna marble was being used in Rome. The *Pax Romana* allowed a suitable environment for trade in general and marble trade especially developed during this period. Furthermore, the building needs of the capital required new sources and triggered long-distance trade.¹⁰¹⁶ From the early second century AD, marble from eastern Mediterranean, particularly from Proconnesus, replaced Luna marble. Especially in architecture and sarcophagi eastern marble started to become dominant, e.g. Proconnesian marble was employed in the temple of Venus and Rome. In the fourth century AD, however, there was a shift back to use of Luna marble as suggested by Walker.¹⁰¹⁷

When it comes to the administrative structure of the quarries, the major quarries were apparently in imperial or state control by the mid-first century AD. The quarries or part of them would be leased out to contractors, if not overseen directly by imperial officials. There were also many other local quarries, most of them remained in municipal or private control.¹⁰¹⁸ Another change was standardization of the material size. Sarcophagi and other architectural elements were usually shipped with the design already blocked out; some sculptures were also blocked out before shipment, others travelled as blocks. Exceptionally, the sarcophagi of Docimion quarries were sent out in a finished condition perhaps because long-distance overland transport was unavoidable and it was desirable to decrease the weight of cargo. Some quarries supplied not only the raw material but also artisans, e.g. sculptors, architects who were responsible for the finer finished work, as seen in the case of Docimion. Lastly, the new pattern created its own establishments for demand (consumption) and transport (distribution) of the marble such as the association (*synodos*) of Nicomedian sculptors.¹⁰¹⁹

In fact, as in the timber trade, the export of marble created an artisan group around it. Epigraphic evidence confirms this organization. An epitaph found in Interamna Nahars (Terni, Umbria) reveals Aurelios Androneikos, a dealer in marble, *lithemporos*, from Nicomedia and his wife Aiboutia Phortoina.¹⁰²⁰ It seems that he obtained Roman citizenship after AD 211 and must have conducted permanent business

¹⁰¹⁶ Ward-Perkins 1992, 20-22.

¹⁰¹⁷ Ward-Perkins 1992, 21, fn. 30.

¹⁰¹⁸ Ward-Perkins 1992, 24.

¹⁰¹⁹ Ward-Perkins 1992, 25-26. The quarries themselves were re-organized under formally appointed officials (imperial slaves or freedmen) who might then lease out to contractors the working of different parts of the quarries. The officials were accountable to the emperor, and it is from their accounting records. As seen in the case of Docimion the quarry was an imperial ownership and under its control.

¹⁰²⁰ *CIG* 6546b.

in Interamna as he took a Latin wife and he lived with his family. His business must have included afore-mentioned marble from Nicomedia and Nicaea, and perhaps some other marbles from Asia Minor. An architect who held double citizenship at Nicomedia and Tomi appears in the construction of a bath building at Olbia in South Russia dated to during the joint reign of Septimius Severus and Caracalla.¹⁰²¹ This obviously shows the close economic relationships between the two cities and the importance of Nicomedian masons. A decree found at Olbia dated to AD 200 provides honours for the Olbian Theocles, son of Satyrus. It records his service to the cities, from where foreigners come to Olbia, including Nicomedia along with Nicaea, Heraclea, Byzantium, Amastris, Tieum, Prusias, Odessus, Tomis, Istrus, Callatis, Miletus, Cyzicus, Apamea, Chersonesus, Bosphorus, Tyras, and Sinope. It seems that there must have been economic interests between cities.¹⁰²² Another Greek-Latin text from Leptis Magna was a dedication to Aesculapius, by a certain Asclepiades, marble worker, *marmorarius* from Nicomedia. The dedication must have dated to the co-emperorship of M. Aurelius and L. Verus (AD 161-9). It shows that many Greek-speaking artisans were involved in detailed architectural work within the Severan building programme. Ward-Perkins considers that it was the Proconnesian marble.¹⁰²³ Moreover, a group of Nicomedian sculptors working at Nicopolis ad Istrum (near Tarnovo, Bulgaria,) are known. Altar to Hercules was dedicated on behalf of the craft-association (*synodos*) of the Nicomedian sculptors by two of its members, Maximus and Neikon, dated to the middle of the second century AD.¹⁰²⁴ Nicopolis was a Trajanic foundation and work on the public buildings in the centre of the city was well advanced by the middle of the century.¹⁰²⁵ Ward-Perkins notes that 'Asiatic work preferred at Nicopolis, but local limestone was used in this altar.'¹⁰²⁶ It seems Nicomedian sculptors or stone-carvers were brought to Nicopolis for the finer detail work and they used local limestone. Near the village of Tirgusor (30 km north of Costanza, Romania), a Mithraic relief of Proconnesian marble, depicting Mithras slaying the bull, was found together with other Mithraic sculpture in a grotto. According to the inscription, it was a dedication of the grotto by Flavius Orimus, steward of Flavius Macedon. It carries the signature of a Nicomedian sculptor named Phoebus. A relief carrying the name of the sculptor is also

¹⁰²¹ *IGR* I 854. The name of the architect cannot be read, it is missing in the inscription.

¹⁰²² *IosPE* V/2 40.

¹⁰²³ *IRT* 264; Ward-Perkins 1992, 95-105; see also Taylor 2004, 240 and 262.

¹⁰²⁴ Ward-Perkins 1992, 34; in *IGBulg* II: 674.

¹⁰²⁵ Poulter 1995, 10-11, 24.

¹⁰²⁶ Ward-Perkins 1992, 34; in *IGBulg* II: 674.

rare in the Western Black Sea region.¹⁰²⁷ Ward-Perkins suggested that the architect had been in touch with the association of Bithynian sculptors and marble workers and the marble had been brought from Proconnesus. He detected a school of sculptors from Bithynia whose action is visible in Leptis Magna in Tripoli, Rome and Porto, at Dion in Macedonia, at Nicopolis in Thrace, in Tomis in Dobrudja, at Tavium in Galatia and finally at Tyana in Cappadocia (figure 42).¹⁰²⁸ A stone workshop was found in the 2006 Survey in a Nicomedian quarry north of İzmit. The workshop allowed the exploitation of the marble through specialised sarcophagus production.¹⁰²⁹

This leads one to think how much marble transported by Nicomedia was connected to the above-mentioned Nicomedian marble workers/sculptors and dealers. As seen in Lazzarini's diffusion map, *occhio di pavone* (*marmor Triponticum*) from Kutluca quarry was attested in primary and secondary use in different parts of the Mediterranean.¹⁰³⁰ Lazzarini mentions that *occhio di pavone* was used at Rome in the Severan period where slabs are found *in situ* in floors of the Horti Lamiani and a building found under the hospital of S. Giovanni, in the Schola Traiani, in a building near Porta Marina, and in the floor of a nymphaion. Slabs are also present in storehouses at Ostia and in a tomb from Montoro in Umbria (possibly 4th century AD). It is attested in a Roman trabeation at Caesarea Maritima. The testimony of inscriptions also indicates marble trade between Italy and Nicomedia. Besides primary usage in Roman times, Kutluca marble is attested in Abu Mina, Wadi Natrun, İstanbul, Ephesus, Cos (Chora), Pergamon, Kavala, Thessaloniki, Philippi, Nea Anchialos, Amphipolis, Delphi, Hosios Lucas, Corinth, Nicopolis, Ravenna, Leptis Magna, Carthage and Cyrene (Libya), where it was used during the Byzantine Period. Furthermore, some reused stones from later periods may have been carried away from Roman buildings. Therefore, in secondary use, the marble is attested in Cairo, İstanbul, Philippi, Halkida, Venice, Bari, Arezzo, Tripoli, Kairouan, and Tunis. This stone was used, reused, and distributed to the different parts of the Mediterranean in the Byzantine period probably up to the 10th century.¹⁰³¹

¹⁰²⁷ CIMRM II 2306-2307; Ward-Perkins 1992, 34, Nr. 6.

¹⁰²⁸ Robert 1978, 416. For example a *lithemporos* (marble dealer), Markos Aurelios Xenonianos Akylas from Bithynia attested in the Horrea Petroniana at Rome. The inscription was found near marble quarter at Aventine. SEG IV 106.

¹⁰²⁹ Çalık-Ross 2007, 121.

¹⁰³⁰ Lazzarini 2002, 64 Fig. 14. Diffusion of *Occhio di Pavone*. Lazzarini suggests that *occhio di pavone* in Kutluca quarry is *Marmor Triponticum* (which among the Black Sea, Propontis and the Lake Sophon), not *Marmor Sagarium* as the quarry is far away from the River Sangarius. He attributes *Marmor Sagarium* to the quarry in Vezirhan, which is *breccia corallina*.

¹⁰³¹ Lazzarini 2002, 63. Asgari 1973, 478-480. A shipwreck was found 400 meters off the Kumbaba Beach in Şile on the Black Sea coast. Asgari dated to cargo to the beginning of the second century AD,

Other marble quarries contributed to trading activity at Nicomedia. *Breccia corallina* from the quarry in Vezirhan was possibly distributed via Nicomedia.¹⁰³² From the diffusion map, it can be seen that *breccia corallina* is attested in Herculaneum and Pompeii, dated to first century AD.¹⁰³³ This marble is more widespread than *occhio di pavone*. It is attested in primary use in Roman times in Ancyra, Pergamon-Asklepeion, Smyrna, Ephesos, Samos-Pitagorio, Gortyn, Aquileia, Pordeone, Rome, Ostia, Minturno, Verona, Arezzo, Lecce, Pompeii, Herculaneum, Syracuse, Paestum, Bulla Regia, Catania (Sicily), Leptis Magna, Sabratha, Carthago, Utica, Argos, Caemenelum (Nice), Urbisaglia, Paestum, and Cyrene. Moreover, it was found in Miletos, Philippi, Amphipolis, Thysdrus, Hierapetra, Kom El-Dikka (Alexandria), Caesarea Maritima, Tunis, Altino, Pavia, and Orange. Primary usage of this stone, for example, includes slabs in *opus sectile* at Casa del Centenario, in the warehouse of Granai del Foro at Pompeii, and the Termopolium of the Collegium of the Augustales, Casa degli Cervi, at Herculaneum. At Leptis Magna, many columns of this breccia can be seen in the Baths of Hadrian, the Women's Baths, the Severan Forum, and the Basilica Ulpia, and is found in the Antonine Baths at Carthago.

According to recent archaeological fieldwork conducted in Castel Porziano at Rome, a large public bath of Severan date (c. AD 200) contains a 10% proportion of coloured marbles, including *occhio di pavone rosso* imported from Kutluca and *breccia corallina* or marmor Sagarium from Vezirhan.¹⁰³⁴ *Breccia corallina* was employed at La Storta at Rome, in a large Roman villa in the east of Casale Colle Fiorito and in another Roman villa at Piansaccoccia¹⁰³⁵, as building material in Porta Pia (Rome)¹⁰³⁶, for columns of upper storey in the Atrium Vestae at Rome¹⁰³⁷, and in a Roman villa on the east bank of the Cremera.¹⁰³⁸ Moreover, it can be seen in the Roman building on the north-west of the farmhouse at Casale degli Archi in Sutri (Etruria)¹⁰³⁹, as veneer marble in the large Roman villa at Gabii¹⁰⁴⁰, and in another Roman villa on the Via

especially a sarcophagus lid confirms produced for export in quarry-state. Beykan 1988, 127. The cargo of Şile shipwreck carries raw material, half-finished and finished marble products belonged to Proconnesus and other unidentified quarry. According to Beykan, the ship apparently came from Proconnesus to unknown port and sank near the coast having passed the Bosphorus. It may be suggested that unknown source of *breccia* in the cargo may well have been Kutluca marble.

¹⁰³² Lazzarini 2002, 61. Fig. 7. Diffusion of *Breccia Corallina*.

¹⁰³³ Lazzarini 2002, 60-62.

¹⁰³⁴ Claridge 2008, 7-8.

¹⁰³⁵ Kahane-Andrew 1977, 150, 170.

¹⁰³⁶ Gilkes-Passigli-Schinke 1994, 123.

¹⁰³⁷ Ashby 1902, 285.

¹⁰³⁸ Kahane-Threipland-Ward-Perkins 1968, 76.

¹⁰³⁹ Frederiksen-Ward-Perkins 1957, 181.

¹⁰⁴⁰ Kahane 1973, 30.

Gabina near Rome.¹⁰⁴¹ A high-relief colossal statue of an oriental barbarian wearing Phrygian cap found at Alexandria was probably made from *breccia corallina*. It was used between the first and the third century AD.¹⁰⁴² *Breccia corallina* together with Proconnesian and Docimion marble is attested in another bath at Isthmia in Greece probably built in the 2nd century AD.¹⁰⁴³ It seems that it was widely used in Ephesus, Rome, Leptis Magna, and Carthage. The evidence, confirms the presence of Nicomedian marble workers and artisans in Italy, the Balkans, and North Africa.

As a result, the context of findings shows that the marble was used in the religious, commercial, public, and private buildings reflecting Roman imperial and elite taste. Ward-Perkins suggests that Nicomedia was one of the principal export outlets for the products of the Docimium quarries¹⁰⁴⁴, and the city monopolized regional marble trade including that from the Troad and Proconnesus.¹⁰⁴⁵ Ward-Perkins, first, draws attention to the superior position of Nicomedia to other cities on the Gulf coast. The city was capital of the province and later capital of the eastern empire. Its location on the roads opening to Asia Minor, Aegean and the Black Sea and well-protected harbour made it an excellent outlet position for imperial monopoly products.¹⁰⁴⁶ The harbour city was at the hub of the commercial organization and played an important part in the arrangement of shipments to the Black Sea, the Levant, Egypt, Tripolitania, and the Northern Adriatic. Secondly, he admits that Proconnesus marble was quarried and shipped in the territory of Cyzicus. A recent excavation near the quarries indicates that products were processed on the island before shipment. However, he claims that evidence for the Bithynian marble workers demonstrates that Nicomedia acted as an outlet for marble in the western Asia Minor and Nicomedian artisans were active in its trade. Ward-Perkins questions how this commercial organization worked out in practice. He aimed to explain whether this system was established only to meet the demands of imperial authorities or whether there were also certain commercial agencies by which the city or individuals were able to invest in order to meet its need.¹⁰⁴⁷ Proconnesian marble was close to a deep-water harbour and this made it one of the cheapest and most widely popular marbles. Nevertheless, there is no direct evidence how and by whom it was shipped once the marble had reached the sea. To reveal the

¹⁰⁴¹ Kahane 1972, 112.

¹⁰⁴² Bailey 2003, 255-257.

¹⁰⁴³ Blackman 1996-97, 21.

¹⁰⁴⁴ As Docimion quarry was much closer to the Meander and very far from Nicomedia, exploitation and transportation of this precious marble via Nicomedia seems unlikely.

¹⁰⁴⁵ Ward-Perkins 1992, 67.

¹⁰⁴⁶ Ward-Perkins 1992, 27.

¹⁰⁴⁷ Ward-Perkins 1992, 40-41.

role of Nicomedia as an outlet for marble trade he both presents epigraphic and archaeological evidence. He concludes that the majority of architectural material is ‘Asiatic’ in content and style. However, usage of Proconnesian marble is obscure, as seen in Severan Forum at Leptis Magna, which has ‘Asiatic’ entablature, but made of local limestone. He suggests that Tripolitania, Pamphylia, and the coastal cities of the western Black Sea, in the province of Lower Moesia used their own building material in early first and second century AD. Then these three areas started to use the new building-material, which was imported from Proconnesus.¹⁰⁴⁸

Ward-Perkins’ hypothesis on the usage of Proconnesian marble and the dominant role of Nicomedia as an outlet is influential, but questionable as there is no relevant archaeological evidence to support the idea that Nicomedia played a role in organising the imperial monopoly marble trade. On the other hand, it is clear that Nicomedia exported *breccia corallina* quarried from Vezirhan, and its own marble, *occhio di pavone* extracted from Kutluca. The associations of sculptors and Bithynian marble workers attested in epigraphic sources show that the city provided important labour and expertise of workmanship for the buildings and works of art, which used Proconnesian and other marbles. Moreover, Ward-Perkins’ observations about the role of Nicomedia in the transportation of Proconnesian marble seem logical since the city was strong in maritime trade and was able to build its own cargo ships. As a result, the city derived revenue from workmanship, transportation, and export from the Kutluca, Vezirhan and possibly the Kandıra quarries. As a provincial capital, it must have played an essential outlet role in marble trade, more explicit evidence is lacking for this.

Trade in Wine and Fish Products

As suggested in the third chapter, Nicomedia potentially must have produced wine not only for local consumption but also for export (p. 119-120).¹⁰⁴⁹ In the southern territory of Nicomedia five villages, *Zbalenoi*, *Baitenoi*, *Gaurianoï*, *Lakkenoi*, and *Troialenoi* near Ihsaniye, ancient Eribolon held biannual wine festivals, which probably supported the local market on the road from Nicaea to Nicomedia. In relation to wine production, there must have been amphora manufacturing in the city. The sarcophagus

¹⁰⁴⁸ Ward-Perkins 1980b, 329-334. Ward-Perkins 1992, 33, Nr.1. An inscription found near the quarries reveals an association of sculptors and marble workers at Proconnesus with the name of imperial procurator.

¹⁰⁴⁹ Fernoux 2004, 236. *TAM* IV 15-18; *oinoposiarches*, *TAM* IV 20.

of a *kerameus* is attested in Nicomedia, but this does not allow any certain inference.¹⁰⁵⁰

As well as wine presses, amphorae found in İzmit are also on display in the İzmit Museum (figure 43). Although there is no information about amphorae in the museum, their typology can be roughly determined. First, two amphorae are seemingly Class 47, which is frequently attested in the eastern Mediterranean. It is likely that these had Aegean (Rhodian?) origin and were used for carrying wine and dated to c. 3rd century AD.¹⁰⁵¹ The third amphora seems to be Class 44; presumably, carrying olive oil, which originated on the Greek islands, the south-west coast of Asia Minor, or Northern Syria particularly from Antioch and dated to the early fifth to the mid seventh centuries. This type occurred in İstanbul and around the Black Sea.¹⁰⁵² The fourth amphora can possibly be determined as Class 5 for the handle. Its origin is Campania, Etruria, or Spain and it occurred in the eastern Mediterranean from to late second century to early first century BC. It was produced probably to transport wine, but in Cavelière wreck olives were found in the amphora.¹⁰⁵³ The fifth amphora in the image was probably Aegean in origin and dated to the 3rd - 1st century BC. It was used for wine although again the origin area was Italy, Sicily, and Spain.¹⁰⁵⁴ The sixth amphora is apparently Class 2 and similar to the fifth amphora. In the Bodrum Archaeological Museum, amphorae, which are similar to 1-2 and 5-6, can be seen.¹⁰⁵⁵ In addition, amphorae originated from Lesbos, Thasos and Khios currently in the Bandırma (ancient Daskyleion) Archaeological Museum are similar to 1-2 and 5-6.¹⁰⁵⁶ As a result, it seems that the majority of these types have Aegean origin and were used for carrying wine. They illustrate the range of imports to Nicomedia from the Hellenistic period onwards. In fact, rescue excavation in the harbour complex (SEKA) in İzmit reveals wine measures engraved on marble and pieces of a weighbridge.¹⁰⁵⁷

Besides wine and olive oil, fish products were also important.¹⁰⁵⁸ Nicomedia's location on the Kocaeli Peninsula gave it advantages over other inland cities in terms of fishery. There were four different fishing opportunities in the territory of Nicomedia:

¹⁰⁵⁰ TAM IV 339; Perrot 1876, 411, Nr. 5. Fernoux 2004, 262; Hayes 1972, 92-93. Fernoux notes that J. W. Hayes suggests manufacture of *terra sigillata*. The present author has not seen such interpretation in Hayes' work.

¹⁰⁵¹ Peacock-Williams 1986, 194-195.

¹⁰⁵² Peacock-Williams 1986, 185-187.

¹⁰⁵³ Peacock-Williams 1986, 91-92.

¹⁰⁵⁴ Peacock-Williams 1986, 84-85.

¹⁰⁵⁵ Museum Inventory Number, 162, 389, 292. Alpözen-Özdaş-Berkaya 1995.

¹⁰⁵⁶ Atila 2005, 69-80.

¹⁰⁵⁷ Öztüre 1981. All these findings along with many others were moved to İstanbul Archaeological Museum, as there was no archaeological museum in İzmit at that time.

¹⁰⁵⁸ Stolba 2007, 149.

the Propontis, the Black Sea, the Lake Sophon, and the Sangarius River.¹⁰⁵⁹ Livy mentions that the Sangarius River supplied a large amount of fish.¹⁰⁶⁰ Libanius vividly describes fishing in Nicomedia in the fourth century AD.¹⁰⁶¹ Today, *Leuciscus cephalus* (barbel, chub), *Rhodeus amarus* (bitterling), *Cobitis vardarensis* (loach), *Neogobius fluviatilis* (the monkey goby) and *Pachygrapsus marmoratus* (marbled crab) are available in the mouth of Sangarius.¹⁰⁶²

Fishing for tuna was particularly fruitful. One of the reasons that Miletos colonised the Propontis was the richness of its fisheries, especially in tuna.¹⁰⁶³ Intense fishing activity developed particularly in the south of the city, along the Gulf. On the other hand, Astakos took its name from the great numbers of lobster/crayfish (astakos) that were found in the shallow waters of the Gulf of İzmit. In fact, lobster or crayfish are seen on the coins of the city.¹⁰⁶⁴ Depictions of tuna fish on coins of Marcus Aurelius, Lucius Verus (figure 44), Commodus, and Septimius Severus (figure 45) from Nicomedia must have been good indications of fishery.¹⁰⁶⁵ Besides tuna, many depictions of fishing vessels are reminiscent of the fishing activity.¹⁰⁶⁶ Depicting tuna fish on the reverse is a common type in some cities such as Cyzicus and Byzantium in the Propontis¹⁰⁶⁷, Gades, Sexi, Salacia, Abdera, Itucci, and Malaca in the Iberian Peninsula, which were all famous with their tuna fishing wealth.¹⁰⁶⁸ Demir's work show that the trade in small fry, salsamenta or fish sauce (*garum*) was also one of the staples of the economy of Byzantium. Archaeological and modern data suggest that, in antiquity, as today, the main fish supply of the Black Sea, anchovy (hamsi) was caught, salted, and exported in abundance, especially from the Straits and the Trapezus. Moreover, there were good reasons to export anchovy, as it was abundant, of high quality.¹⁰⁶⁹

¹⁰⁵⁹ See territory of Nicomedia, Robert 1978, 425.

¹⁰⁶⁰ Livy XXXVIII, XVIII, 8.

¹⁰⁶¹ Libanius, *Orationes* LXI 7-10. "And yet mariners, or those who labour at the oar, and ensnare the fish with nets or hooks, naturally attract the observation of travellers".

¹⁰⁶² İlhan-Balık 2008, 77-78.

¹⁰⁶³ Opait 2007, 104.

¹⁰⁶⁴ *RG* 1908, 266; Head 1889, lxii.

¹⁰⁶⁵ Marcus Aurelius *SNGCop.* 559; *RG* 529, 102; Lucius Verus *SNGCop.* 564; *RG* 532, 119; Commodus *RG* 534, 140; Septimius Severus *RG* 539, 177.

¹⁰⁶⁶ Robert 1978, 420. Maximinus Thrax *SNGAul.* 796; *RG* 561, 345; *BMC* 189, 60, fishing vessel was depicted with dolphin and sea-monster (possibly a crab).

¹⁰⁶⁷ Jornet-Roberto-Maupoei 2005, 189-190. Lytle 2006, 105. *BMC Mysia*, 136-143, 189. Tuna was a badge of Cyzicus and it was also depicted on the obverse from the from the seventh century BC. *BMC Mysia*, 1-4. Tunny (pelamyd) on the coins of Byzantium, Tekin 1996, 476-477.

¹⁰⁶⁸ Jornet-Roberto-Maupoei 2005, 189-190; Villaronga 1994, 391, fig. 25-26.

¹⁰⁶⁹ Demir 2007, 57, 64. Evidence from Classical Athens refers that small fry both locally produced and imported small fry and an important food item of trade between the Black Sea and the Aegean in the Archaic and Classical Period.

Fishing activity and various fish species are also attested through travellers' notes. Evliya Çelebi (1631) counts seventy-eighty kinds of fish (this may be exaggerated) including carp, pike, and moonfish in the Lake Sophon.¹⁰⁷⁰ Bream was also attested in the Sangarius and the Lake Sophon.¹⁰⁷¹ Devedjian describes that around the lake there were plants and herbs in abundance, which was an excellent breeding ground for fish.¹⁰⁷² Pococke and Colonel Winterton mention different kinds of fish, especially carp, in the lake.¹⁰⁷³ In 1819, Marcellus describes dried cod being consumed locally and exported in Darica-Aritzou. He counts fish species such as mackerel, anchovy, and sardine in the Gulf. He suggests that fishery was a main source of income for local people in the 19th century.¹⁰⁷⁴

As is known from Polybius, salted fish is one of the products exported from the Black Sea to the Mediterranean.¹⁰⁷⁵ Fish can be processed in different ways, as dried and smoked fish, salt fish, fish paste, and fish sauce.¹⁰⁷⁶ Large and medium size of tuna, mackerel and sword fish were primarily produced salted fish and fish sauce. Smaller bluefish such as sardines and anchovies also produced fish sauces.¹⁰⁷⁷ Although little is known about how fish was transported and traded from the Black Sea and the Propontis, the salted fish products of the Black Sea were one of the most important goods during Hellenistic and Roman times.¹⁰⁷⁸ Written sources and numismatic evidence from Nicomedia and later İzmit show that the city had an access to many fish species such as tuna, cod, mackerel, anchovy, carp and sardine which were used to produce fish sauce and salted fish in antiquity. Archaeological evidence from Asia Minor throws light on some fish species which were exported from North-Western Anatolia. In Ephesos and Pergamon, fish species attributed to northwestern Anatolia were found in the excavations.¹⁰⁷⁹ According to this, bream in Pergamon and pikeperch, carp, bream and kutum in Ephesus were attested from the Hellenistic period to the Roman times.¹⁰⁸⁰ Fish

¹⁰⁷⁰ Ulugün 2008: Evliya Çelebi 43.

¹⁰⁷¹ Van Neer et al. 2004, 139.

¹⁰⁷² Robert 1978, 415, Devedjian 1926.

¹⁰⁷³ Ulugün 2008: Pococke 69; Colonel Winterton 106.

¹⁰⁷⁴ Cuinet 1895, 349; Ulugün 2008, 138.

¹⁰⁷⁵ Polybius IV 38, 4-5. "For as regards necessities of life, it is an undisputed fact that the most plentiful supplies and best qualities of cattle and the multitude of humans who are trafficked as slave labour, reach us from the places lying around Pontus, while out of their surplus these same places supply us plentifully with honey, wax and salt fish. From the surplus products of our own places, they receive olive oil and every kind of wine. As for grain there is give and take, sometimes they opportunely (or comfortably) ship supplies to us, at other times they receive supplies from us."

¹⁰⁷⁶ Opait 2007, 117-118.

¹⁰⁷⁷ Jornet-Roberto-Maupoei 2005, 195.

¹⁰⁷⁸ Opait 2007, 101 and 106.

¹⁰⁷⁹ Van Neer et al. 2004, 130-131.

¹⁰⁸⁰ Van Neer et al. 2004, 131, table 5.

remains originated from the northwestern Anatolia indicate multidirectional exchange patterns of Ephesus and Pergamon with different regions, and also long distance trade with northwestern Anatolia.¹⁰⁸¹ Although the origins of fish remains found in Pergamon and Ephesus are not specifically known, fish species such as pike, carp and bream were also available in the territory of Nicomedia as mentioned above. It is very likely that Nicomedia not only consumed fish products locally, but also exported them at least to the cities in Asia Minor.

While grain and olive oil production may have been insufficient to meet all local needs and there is some evidence for wine imports, Nicomedia had the capacity to produce the wine and fish as export items to external markets.

Slavery in Bithynia and Nicomedia

Slaves were used in agriculture, trade, industry, for hiring and as officer in services.¹⁰⁸² As pointed out by S. Alcock, the slave trade was one of multi-level activities, and Thrace, western Asia Minor, Syria, and Judaea were known as sources of slaves. The slave trade mainly flowed towards Italy and it met local and regional demands.¹⁰⁸³ Ancient written and epigraphic sources reveal slavery in Nicomedia. The aim of this section is to examine slavery, which was an important labour and income source in Nicomedia, and therefore it approaches slavery as one of the resources of the city. The volume of slavery in Nicomedia and its position as a source of slaves not only from its own territory but also as an outlet for the slave trade (slaves from Sinope, Amisus, Trapezus, and Cappadocia) as Ramsay suggested will be analysed.¹⁰⁸⁴

The earliest source referring to the prevalence of slavery in Bithynia is Herodotus. Apart from kidnapping and war, another source of slavery was the selling of their own children. Herodotus reports that the Thracians sold their children to merchants¹⁰⁸⁵, and as discussed the second chapter the Bithynians were of Thracian origin (see, p. 66-69). With increasing prosperity the Greeks of the colonies came to

¹⁰⁸¹ Van Neer et al. 2004, 139.

¹⁰⁸² Bolkestein 1958, 74-103.

¹⁰⁸³ Alcock 2007, 690.

¹⁰⁸⁴ Ramsay 1928, 119, fn. 2; Westermann 1955, 37.

¹⁰⁸⁵ Herodotus V 6, 1: "The Thracians who do not belong to these tribes have the customs which follow. They sell their children to traders. On their maidens, they keep no watch, but leave them altogether free, while on the conduct of their wives they keep a most strict watch. Brides are purchased of their parents for large sums of money. Tattooing among them marks noble birth, and they want of it low birth. To be idle is accounted the most honourable thing, and to be a tiller of the ground the most dishonourable. To live by war and plunder is of all things the most glorious. These are the most remarkable of their customs." Avram 2007, 246; Bolkestein 1958, 77. Thracians and Scythians as "man-hunters" in Gabrielsen 2007, 301.

own more private slaves, who were drawn partly from the native peoples of their neighbourhood.¹⁰⁸⁶ Athenaeus in the third century AD reports that the Bithynians were exploited as slaves by the inhabitants of Byzantium. It is therefore important to show the relationship between the two groups in later Nicomedian territory.¹⁰⁸⁷

In his *Hellenica* and *Anabasis*, Xenophon clearly indicates that his Greek contemporaries captured many slaves in Bithynia.¹⁰⁸⁸ These statements confirm that pre-Hellenistic Bithynia was rich in slave source and Xenophon's passages refer to what was later Nicomedian territory. As there was no political unity in the region, Bithynians must have been used as slaves both by the Greek colonies and later by the Persians. Braund documents slave raiding in Bithynia in Classical times.¹⁰⁸⁹

Slaves were among the export commodities in antiquity from the Black Sea to the Aegean world since the Greek Colonisation period. As Polybius indicated, "slaves reach us from the countries lying around the Pontos."¹⁰⁹⁰ Avram elucidates that letters on lead-plagues or shreds confirm that the Pontic area was an excellent source of slaves for the Aegean world since the archaic period. Thracian slaves are well attested especially in records from Athens. Many Thracian slaves were first sold on the markets of the west Pontic cities. A list from Rheneia, which includes Thracian slaves, is striking since the slaves bear ethnic names such as Scythians, Sarmatians, Maiotians, Kolchians, Paphlagonians, or Cappadocians. After having been sold in a city in the Black Sea, they were brought to Athens. Thus, the ethnic names give the regions (the location of the slave markets) where they have been sold rather than their real origin.

¹⁰⁸⁶ Hammond 2003, 123.

¹⁰⁸⁷ Athenaeus *Deinosophistai* VI 101; Wiedemann 1981, 88. "In his History of the Carians and the Leleges, Philippos of Theangela mentions the Lacedaemonion Helots and the Thessalian Penestai, and says that in the past, and indeed today, the Carians use the Leleges as their houseboys. Phylarkhos, in book six of his Histories, says that the Byzantines, too, had the same master and serf relationship towards the Bithynians as the Spartans had towards the Helots."

¹⁰⁸⁸ Xenophon, *Hellenica* III 2, 2-3. "And during most of the time Dercylidas was plundering Bithynia in safety and had provisions in abundance...asked Dercylidas for some of his hoplites as a guard for their camp and then sallied forth for booty, and "seized many slaves" and much property." Xenophon, *Anabasis* VI 6, 37-38. "...By so doing they "secured slaves" and sheep in abundance; and on the sixth day they arrived at Chrysopolis, in Chalcedonia, where they remained for seven days, selling their spoils." Xenophon, *Anabasis* VI 6, 1-4. "After this the enemy occupied themselves with their own concerns, especially removing "their slaves" and property to the remotest point they could; meanwhile the Greeks were waiting for Cleander and the triremes and ships which were, presumably, coming but every day they set forth with their baggage animals and "slaves" and fearlessly carried off wheat and barley, wine, beans, millet, and figs; for the country had all manner of good things, except olive oil."

¹⁰⁸⁹ Braund 2011, 112-133.

¹⁰⁹⁰ Polybius IV 38, 4-5.

For instance, one of the Istrianoi possessing a Thracian name (Bithys) indicates false ethnicity.¹⁰⁹¹

Avram came across only two Bithynian slaves who were emancipated in the Delphic sanctuary in the middle of the 2nd century BC. This sparse evidence is explicable if the epigraphic records of Bithynians were assimilated with those of Thracians. It is important to remember that Sinope, Amisus, Herakleia Pontika and Tieion (Tium) were important slave markets. Therefore, it is possible that false city ethnics derived from the name of Pontic cities covered the Bithynian origin of many slaves.¹⁰⁹² On the other hand, Badian interprets a dedicatory inscription attested in Delos dated to the second half of the second century BC as explicit evidence for the slave trade. A group called *oi katapleontes eis Bithynian emporoi kai naukleroi* dedicated a statue to Meleagros, son of Zmertomaros, who was a merchant/ship-owner from Nicaea.¹⁰⁹³ According to Badian, the slave trade could certainly be one dimension of this trade and publicans were involved in funding their transportation.¹⁰⁹⁴ Accordingly, there must have been slave trade between the Bithynian Kingdom and the Greek mainland.¹⁰⁹⁵

In the Hellenistic Period, the kingdom of Bithynia continued to serve as a source of slaves. In particular, loans led to the seizure of mortgaged lands and the sale of persons into slavery. According to Diodorus, in 104 BC the consul Marius asked for auxiliary troops from Nicomedes III. The king, however, replied that he could not support Marius as many Bithynians “had been kidnapped by the publicans and were serving as slaves in the Roman provinces”.¹⁰⁹⁶ In these severe economic conditions, Nicomedes IV’s will bequeathing his kingdom was necessary because of the debt to the Romans. This important passage from Diodorus clearly shows that Bithynia was a

¹⁰⁹¹ Avram 2007, 240-244. Avram mentions Braund and Tsetschladze’s work to make his assumption clear. According to their work, the Sea of Azov (Maiotis) and Crimean Bosphorus was the centre of trade in slaves. Surprisingly, four slaves of Protarchos on Delos listed, as Maeotians were not Maeotians.

¹⁰⁹² Avram 2007, 245-246. On the contrary to Paphlagonians slaves, almost all the Cappadocians are well attested by Attic tombstones. Avram suggest that Cappadocian slaves might have been transferred from this less urbanised area to the Aegean markets through land routes rather than sea route such as the harbours of Sinope and Amisus. Thus, it could illuminate why their ethnic origin was better preserved.

¹⁰⁹³ *ID* 1705; Debord 1998, 147-148.

¹⁰⁹⁴ Badian 1972, 87; Strabo XIV 668. Delos was one of the most important slave markets and according to Strabo, 10.000 slaves a day were sometimes sold on Delos.

¹⁰⁹⁵ Schumacher 2001, 51; Day 1973, 66.

¹⁰⁹⁶ Diodorus of Sicily XXXVI 3. “(Ch. 3.1) During Marius’ campaign against the Cimri, the Senate authorised Marius for summon support from overseas nations. Marius sent a request for aid to Nikomedes, king of Bithynia; but he replied that the majority of Bithynians had been seized by the collectors of Roman public taxes and were being held as slaves in the territories of the Roman Empire. The Senate passed a decree that no free ally should serve as a slave in the Roman Empire and that Roman governors should see to it that these persons be set free.” Broughton 1938, 541; also, see Westermann 1984, 66. Wiedemann 1981, 209.

source of slaves and, more importantly, that slaves were collected as tax in kind by the publicans and sold in the Roman provinces. It generally confirms Crawford's approach that slaves were one of the items extracted widely in the provinces under the Roman Empire. Indeed, in the second century BC, the peasant economy in Italy was badly threatened by slavery and the money gained from overseas wars and tax collection. As a result, Bithynia, before being a Roman province, was already a slavery source.¹⁰⁹⁷

On the other hand, Fernoux interprets Diodorus' anecdote as indicative that the publicans of the province of Asia could not act in Bithynia as such, in a nominally independent kingdom. Their action was illegal and the Senate decided to prohibit the enslavement of a person from an allied state. Nicomedes' response can be interpreted as a sign of his financial dependency on the Romans, as the king sent troops to Italy in 103 BC.¹⁰⁹⁸ It was the same ruler, Nicomedes III, who went to Delphi, following the dispatch of 30 slaves assigned to the various services of the sanctuary. In 94 BC, he was rewarded by Delphi with privileges granted to the king, the *proxenos* ensured the connection between Bithynia and the citizens of Delphi.¹⁰⁹⁹ Rostovtzeff interprets that slave raids would be actions of the Mysians with the blessing of the Roman authorities and publicans.¹¹⁰⁰ E. Badian suggests that the company lent money to the king, who had pledged his subjects and was therefore obliged to deliver them to the extent that he could not repay his debt.¹¹⁰¹ Another hint for Bithynia as a slave source is a poem of Catullus from the first century BC. Catullus mentions slave litter-bearers as a 'product' of Bithynia. There was nothing but slaves in this poor province. He could not generate income but at least managed to obtain eight litter-bearers.¹¹⁰²

Nicomedia was a populous city with approximately 34,000 urban inhabitants under the Principate. This must have created a large demand and the city itself needed a significant amount of slaves primarily for household tasks.¹¹⁰³ Further, Nicomedia as a service city had to have slaves in menial tasks, e.g. working in the baths, or carrying goods in the agora. Pliny mentions slaves in several cities, notably in Nicomedia and Nicaea, who had been condemned to the mines.¹¹⁰⁴ This may have been Mount

¹⁰⁹⁷ Crawford 2004, 100.

¹⁰⁹⁸ Fernoux 2004, 115-116.

¹⁰⁹⁹ Fernoux 2004, 62-63; Debord 1998, 147-148.

¹¹⁰⁰ Rostovtzeff 1941, 782.

¹¹⁰¹ Badian 1972, 87.

¹¹⁰² Catullus 10, 14-20; Cairns 2003, 178-180; Westermann 1955, 29, fn. 29. Ellis 1876, xlviili-li. Catullus joined the cohorts of Memnius who was a pro-praetor of Bithynia.

¹¹⁰³ Slaves in household Bolkestein 1958, 75.

¹¹⁰⁴ Pliny, *Epistulae* X, 31-32. "...There are several cities, principally Nicomedia and Nicaea, where persons, who have been condemned to a term of forced labour in the mines or to gladiatorial establishments or similar punishments, are performing the functions and carrying out the responsibilities

Sandaracurgium, which possessed a realgar (arsenic) mine.¹¹⁰⁵ This example shows the level of need for slaves in public life since both cities extortionately recruited prisoners into public slavery.¹¹⁰⁶ In another letter, Pliny mentions Callidromus who was hired by bakers in Nicomedia, but was an escaped slave who fled to a statue of Trajan in the end, as their patrons realized that he was fugitive slave, not a free man as he declared. The vivid story of Callidromus, (whether it is genuine or not) is a particular example of the geographic mobility of slaves. According to this, he was a slave of Laberius Maximus, (consul in 89 and later *legatus* of Lower Moesia in AD 100) and had been taken prisoner by Susagus in Moesia. He was then sent by Decibalus, king of the Dacians, as a gift to Pacolus, king of Parthia (c. AD 103-105). Having served many years in Parthia, he had managed to escape to Nicomedia, which was linked by shipping lanes with Lower Moesia and other regions.¹¹⁰⁷ Apart from Pliny's reference, there is epigraphic evidence about public slaves. For example, Gaius Tryphon Oikonomos (bailiff, housekeeper) was a manumitted public slave and became an *oikonomos* of a certain Tryphon.¹¹⁰⁸ Slaves were employed in industry and trade as well as agriculture. It is likely that the city was in need of slaves in shipbuilding activity, marble export and transportation, e.g. to form ship's crew.¹¹⁰⁹

Dio Chrysostom's speech, from the 1st century AD, on the involvement of urban elites in slavery as well as other businesses may elucidate the idea that the notables of Nicomedia also must have been involved in slavery.¹¹¹⁰ Although there is no direct evidence showing Nicomedia as an outlet for slavery, the existence of the harbour and the construction of big cargo ships which were also suitable for transporting people made Nicomedia a more suitable outlet for the slave trade than the inland Bithynian cities. D. Musti considers the Latin epitaph of Callinicus, aged 24, found in the port of Puteoli along with others from the eastern cities, to be evidence for the slave and grain trade between the Hellenistic East and Italy in the Late Republican Period.¹¹¹¹

of public slaves; like public slaves, they are even being given an annual stipend. Since I heard about this, I've been very hesitant about what I ought to do. But I thought it excessively severe to force men, many of whom were now quite old after such a long time had gone by, and who –it was said– were living temperate and virtuous lives, to undergo the punishment they had originally been condemned to; on the other hand I didn't think it correct to retain in public services persons who had been convicted". Wiedemann 1981, 158.

¹¹⁰⁵ Broughton 693-4; Strabo XII 3, 40. Strabo says that the mine was not far from Pimolisa (Pompeiopolis) in Paphlagonia.

¹¹⁰⁶ Similar case can be seen in Callistus who condemned to metallum in Sardinia. Millar 1984, 143.

¹¹⁰⁷ Pliny, *Epistulae* X, 74, trans. Williams p. 57-59, see commentary 123-124; Millar 1984, 134-135.

¹¹⁰⁸ *TAM* IV 276; *SEG* LIV 1245.

¹¹⁰⁹ Bolkestein 1958, 82-83. Casson 1971, 322-327. Appendix: The use of slaves.

¹¹¹⁰ Dio Chrysostom, *Orationes* VII 104, XXVII 8. Pleket 1984, 12, fn. 39; Brunt 1973, 9-34.

¹¹¹¹ *CIL* X 2205; Musti 1980, 203.

Aezanitan and Nicomedian *enporos* (merchant) and his brother who was also an *enporos* attested at Tomi, had business in the south of Phrygia and the Euxine.¹¹¹² He may have been involved either in the slave trade or in the wool trade as Aezani and its territory were sources for both. In general, Nicomedia must have been a market and outlet for slave movements from the east to the west.

ii. Traders and Ship-owners of Nicomedia

The map prepared on the basis of Ruge's list in *RE*¹¹¹³ and some later discoveries indicate that there were Nicomedians at Heracleia Pontica, Cyzicus, Smyrna, Neoclaudiopolis, Perinthus, Pergamon, Ancyra, Corycus, Salamis, Aperlae in Lycia in Asia Minor. Nicomedians were found outside Asia Minor at Thera, Delos, Thasos, Mitylene, Cos, Aptara of Crete, Athens, Oropus, Helikon, Kletor, Gythion, Eleusis, and Taenarum in Greece. Moreover, they occur at Philippopolis, Nicopolis ad Haemum/Istrum, Theb, Alexandria, Plumtonwall (Britannia), Tomi, Olbia in the Black Sea, Rome, Mantua, Ravenna, Naples, Misenum, Puteoli, Baiae, Interamma, Brixia, Aquileia of Cisalpine Gaul, Senia of Dalmatia; Burdigalae (Bordeaux), Cemenelum (near Nice), Alicante, Forum Iulii in Gaul and Mogontiacum in Germany (figure 46).

These Nicomedians belonged to different professions, and the most important of which were traders, e.g. the stone merchant, the ship owners. As Broughton emphasised "a few great ports like Nicomedia sent their merchants over wider areas".¹¹¹⁴ In fact, Nicomedian ship-owners and traders and their overseas commercial network are well represented by inscriptions found both in Asia Minor and in different parts of the Mediterranean (figure 47). They show how far the commercial connections of the city extended.

Asia Minor and Islands

This section examines who used the routes mentioned in the first section and consequently what their statuses were. *Naukleroï* are found in Nicomedia and its territory. The epitaph of Telesphoros, *bouleutes* and *naukleros*, and his family was found in Kerpe.¹¹¹⁵ Sabeinianos a *naukleros*, aged 53, was found in Çavuşluköy-İzmit.¹¹¹⁶ Kornoutos, son of Phoibianos (from the 2nd-3rd century AD)¹¹¹⁷, Apphous

¹¹¹² Robert 1978, 424.

¹¹¹³ Ruge 1936, 483.

¹¹¹⁴ Broughton 1938, 875-6.

¹¹¹⁵ *TAM* IV 304; *SEG* XVII 828; Robert 1978, 422.

¹¹¹⁶ *TAM* IV 297.

Apph[ous] Menandros¹¹¹⁸, Ioustos Stratianos, aged 80¹¹¹⁹, Hermaphilos Khrestionos¹¹²⁰ and Hieron, son of Asklepiados, were *naukleroï* attested in Nicomedia.¹¹²¹ The discovery of a burial chamber in the Roman necropolis of Nicomedia reveals a *naukleroï* family who were Romulus and Loteios, and their father and grandfather.¹¹²² The family was rich and prominent holding permanent connections. The sarcophagus indicates that they were wealthy enough to have an expensive one. Nevertheless, they did not belong to the local town council nor did they hold any of the magistracies.¹¹²³ A stele found in the western necropolis carries the name of M. Gabillios Roupfos who was a *naukleros* or *kybernetes*. The inscription is not complete, but the relief shows that the person who possessed the stele was concerned with a kind of maritime activity.¹¹²⁴ Finally, a Nicomedian wool merchant (*eriopoles*) was attested in the city.¹¹²⁵ Galatian wool was famous as mentioned by Pliny the Elder in the 1st century AD.¹¹²⁶ Business of this merchant may have been connected to Galatia, as there is no particular mention about wool as a raw material in Nicomedia.

There were shipping lanes between Nicomedia and Ephesus, and Nicomedia and Pamphylia.¹¹²⁷ Numerous inscriptions carrying the name of the Nicomedians found in Asia Minor and the islands demonstrate connectivity and trade along the shipping lanes. The *naukleroï* include Diogenes son of Diogenes in Smyrna¹¹²⁸, Asklepiodotos Eutychos in Ephesus¹¹²⁹, and Diokles Khrestos, who settled in Cyzicus and died in Gythion in Achaëa.¹¹³⁰ His existence as a settler in Cyzicus shows the commercial connection between the two port cities of the Propontis. The epitaph of Reginus, son of Pollio was found at Corycus where he had settled, his maritime activity (*nauarkhis*) must have been connected to protection of *naukleroï* and sea traders from piracy in Cilicia, and he was called 'a friend of Corycus'.¹¹³¹ Another Nicomedian attested in the same place is M. Aurelios Khrestos from the *phyle Asklepios* in Nicomedia. He was

¹¹¹⁷ SEG XXIX 1346; J.-L. Robert 1979, 415, no. 12; Robert 1978, 422. It is in Ankara now and provenance is unknown.

¹¹¹⁸ TAM IV 110.

¹¹¹⁹ TAM IV 197.

¹¹²⁰ TAM IV 127; Robert 1978, 422.

¹¹²¹ TAM IV 195.

¹¹²² SEG XXXII 1257. Şahin-Sayar 1982, 45-47.

¹¹²³ SEG XXVII 828.

¹¹²⁴ TAM IV 120; Robert 1978, 423; Şahin 1974, 45, Nr. 20.

¹¹²⁵ TAM IV 174.

¹¹²⁶ Pliny the Elder, *Naturalis Historia*, 29, 33.

¹¹²⁷ Giacchero 1974, 220-227 and 31-312; Mitchell 1983b, 138.

¹¹²⁸ Robert 1980, 42. Robert adds that the origin of the epitaph cannot be known precisely.

¹¹²⁹ *IK Ephesus* IV, 2255e. Original provenance is not known, it is in the Selçuk Museum.

¹¹³⁰ *IG V* 1, 1190; Broughton 874.

¹¹³¹ *MAMA* 672, Robert 1978, 423. *Nauarch* (admiral) and priest in Nicomedia TAM IV 215. See, Chian *nauarch* and president of the association of merchants in the agora. Pleket 1984, 11.

both Corycian and Nicomedian, except citizenships there is no indication of his profession or commercial activity.¹¹³² However, the epitaph referring to him and his family indicates that he settled there and it is likely that there was a business contact or other maritime activity as seen in the previous inscription found in Corycus. A funerary monument found at Kekova, ancient Aperlae in Lycia, names a *kybernetes* Aurelios Markianos who was a Nicomedian and Byzantine. The funerary monument belonged to the Meltine Alexandros and his family.¹¹³³ He must have had business relations with Byzantium that gave him the citizenship and his activity extended from the Black Sea to Lycia.¹¹³⁴ An epitaph of Hermodoros including an epigram was found at Thasos.¹¹³⁵ Robert interpreted him as a Nicomedian *naukleros* who died at the island.¹¹³⁶ Another maritime merchant was attested not in an epigraphic source, but in a famous passage in Justinian's Digest (AD 529-565), which includes a petition of Eudaimon, a merchant of Nicomedia to the emperor Antoninus Pius. According to this, Eudaimon complains that the inhabitants of the Cyclades islands have plundered his property, after his ship was wrecked in Icaria. In answer to his petition, Antoninus Pius states that this issue must be solved by the Rhodian maritime law, which was in effect for maritime affairs and the same rule was practiced by Augustus.¹¹³⁷ It is not only evidence for the survival of a ship-owner from the city, but it is also a distinctive example presenting the reception of the profession and its recognition in the imperial level. In addition, Aptara of Crete has a proxeny inscription that carries name of Dionysios Apatourgios of Nicomedia from the middle of the 2nd century BC.¹¹³⁸ This shows the commercial link started already between the island and Nicomedia in the Hellenistic period.

Balkans and the Black Sea

The Diocletian Price Edict provides information on a shipping route between a city whose name is absent and Sinope, Trapezus, and Tomis.¹¹³⁹ Although the evidence is fragmentary, it is very likely that there must have been link between Nicomedia and these coastal cities since Nicomedians are attested in the inscriptions found in the

¹¹³² Robert 1978, 423; *MAMA* 263.

¹¹³³ *CIG* III 4303h 4.

¹¹³⁴ Robert 1978, 423.

¹¹³⁵ *IG* XII 8, 680.

¹¹³⁶ Robert 1978, 423. It was dated by Robert before the AD 212.

¹¹³⁷ Chricop-Lindèn 2006, 171.

¹¹³⁸ *OGIS* 341, p. 544-545. Two notables Dintiporis, (a native of Thrace), and Dionysios, son of Apatourios of Nicomedia, were deputed by Prusias in Aptara in Crete.

¹¹³⁹ Giacchero 1974, 222-223.

Balkans and the Black Sea region. Contrary to Arnaud's suggestion¹¹⁴⁰, especially attestations in Tomi strongly refer a shipping lane between Nicomedia and Tomi.

Tomi (Constanza) reveals a trader on land and sea, called Asklepiades son of Menophilos a Nicomedian who was also an Aezanitan *enporos* (merchant) and set up the tomb for his brother who was also an *enporos* at Tomi. He had business in the South of Phrygia and the Euxine.¹¹⁴¹ The last inscription from the city is a Latin inscription found in Hassiduluk at Tomi. In the name list there are two Nicomedians, Lucius Antonius Capito and T(itus) Aelius Barbario.¹¹⁴² They probably were the members of association of ship-owners or traders.¹¹⁴³

Greece

There was a shipping route between Nicomedia and Thessalonica and Nicomedia and Achaëa. A Nicomedian named Diogenianus died after sailing to Aidepsus in Euboea.¹¹⁴⁴ Robert interpreted that Diogenianos must have been captain of the ship. Another epitaph belonged to Nicomedian *naukleros* Diokles died in Gythion (under Asia Minor).¹¹⁴⁵ There are epitaphs of two ship-owners in Phythiotic Thebes; one of them died aged 22.¹¹⁴⁶ Another metrical funerary inscription gives the name of Antonios Kentrikis who was from the Gulf of Astakos, and died in Athens, after escaping a storm.¹¹⁴⁷

In addition, a proxeny inscription found near Karnezi (around Kletor-Arcadia) lists three Nicomedians: Zoilos, Philon son of Katyros and Artemon son of Apollodotos.¹¹⁴⁸ These Nicomedians may have had commercial connections with Arcadia.

Italy, Gaul, Dalmatia, and Spain

In accordance with the shipping route between Nicomedia and Rome, and Nicomedia and Salona, many Nicomedians were attested in those regions. One item is the epitaph of a *kybernetes* Hieros, aged 65, in Baiae in Bay of Naples. Dionysis, his

¹¹⁴⁰ Arnaud 2007, 321-336; see also Arnaud 2005.

¹¹⁴¹ Robert 1978, 424.

¹¹⁴² *CIL* III Supp. 7532.

¹¹⁴³ Bounegru 2007, 39.

¹¹⁴⁴ *IG* XII 9, 1240.

¹¹⁴⁵ *IG* V 1, 1190; Robert 1978, 423.

¹¹⁴⁶ Robert 1978, 423.

¹¹⁴⁷ *IG* II² 8395; Robert 1978, 424.

¹¹⁴⁸ *IG* V 2 368.

son, made the epitaph with his own money.¹¹⁴⁹ This indicates that Hieros conducted his business with his family members abroad. Nicomedian ship-owners are attested in Ravenna, Salona, and Alicante. A *naukleros* from Nicomedia was in business in Salona, a major commercial city on the coast of the Adriatic Sea.¹¹⁵⁰ The Latin epitaph of another ship-owner has been found in Ravenna.¹¹⁵¹ The westernmost attestation of a Nicomedian ship-owner is from Alicante. These documents are not surprising because they confirm how the network of commercial Nicomedia was.¹¹⁵² An inscription found in Bordeaux (Burdigalae) must have belonged to a Nicomedian merchant.¹¹⁵³ Finally, it is worth mentioning archaeological evidence on trading activity between Nicomedia and Italy. A lead weight found with six others in the shipwreck in the sea off Kamarina bears the name of a Nicomedian *agoranomos* possibly under Commodus.¹¹⁵⁴ This wreck dated to AD 175-200, carried North African marble columns and Aegean amphorae and pottery. It seems that the ship departed from Nicomedia, and loaded Aegean wine on its route, and then North African marble extracted from Chemtou. Thus it was probably heading to Rome from Thabraca (Tabarka) port. Although, market-litra was employed in all lead weights in Nicomedia and Bithynia, Italian litra (*hemilitron*) was preferred as a weight standard here. It seems that officials have sought to facilitate exchange using Italian weight standards.¹¹⁵⁵

North Africa, Phoenicia and Syria

Another shipping route ran between Nicomedia, Phoenicia and Alexandria. In addition to a dedication to a marble worker from Nicomedia found in Leptis Magna¹¹⁵⁶ there were Nicomedians holding reserved seats among the names of merchants listed in the inscriptions on the amphitheatre.¹¹⁵⁷ This is a significant privilege for the merchants and it shows their influence and importance in Leptis Magna.

The evidence presented by region above confirms the dynamism of trading activities along the shipping lanes, and especially during the Antonine Period. The

¹¹⁴⁹ *IGRI* 417.

¹¹⁵⁰ *SEG* XXXIII 490. *Naukleros* Roupfos of Nicomedia.

¹¹⁵¹ *CIL* XI 105; *SEG* XXXII 1036, *Naukleros* Teimokrates Theomnestos of Nicomedia.

¹¹⁵² *SEG* XXXIII 835. *Naukleros* Volosios Syntrophos of Nicomedia. Bounegru 2006a, 1565.

¹¹⁵³ *CIL* XIII, 625; Levick 2004, 197.

¹¹⁵⁴ *SEG* LV 1383.

¹¹⁵⁵ Parker 1992, 94-95; Oleson 2008, 153. The existence of *hemilitron* as a small unit (between 250-300 gr.), reminds that besides pottery, there must have been some other lighter products disappeared in the cargo e.g. spices; or the products will be obtained in exchange of marble and wine in the arrival, must have included some precious but lighter items.

¹¹⁵⁶ Ward-Perkins 1992, 95-105; see also Taylor 2004, 240 and 262.

¹¹⁵⁷ Rice 2010, 8; Squarciapino 1966, 131.

mobility of merchants and ship-owners of Nicomedia was vast in period and space. Even in some cases, there was no connection between ethnicity and place of attestation. They were both Nicomedian, but possessed a second citizenship or lived away from Nicomedia and their epitaphs were attested in different places.¹¹⁵⁸ Shipping routes between the east and west and the north and south in the Mediterranean are an indication of networking among micro-regions. The trade of the city was directed to the worlds of the Black Sea, the Aegean Sea, and the Eastern Mediterranean, but also extended towards the central Mediterranean. The geographical location of Nicomedia determined that the city, at least in Roman times was involved in a transit trade that stretched in both directions between Anatolia, the Caucasus region, the Black and the Aegean Seas.¹¹⁵⁹ Along with the occurrence of ship-owners and traders in different regions, there are archaeological evidence to support regional and inter-regional trade as mentioned above. Diffusion of marble from Nicomedia and Nicaea, a lead weight in the shipwreck of Sicilian Kamarina carrying Numidian marble, and Aegean amphorae, and finally a group of amphorae largely carrying Aegean wine in the İzmit Museum confirm trade in marble, wine, wool, slave, and transportation of commodities from different regions conducted by the Nicomedians. Not only commercial but also social networking must have affected the world-views of the Nicomedians and their lifestyles with regard to religion, culture, and language.¹¹⁶⁰

The survival of epigraphic evidence throws a vivid light on the diffusion of the Nicomedians around the eastern Mediterranean. Distribution of the Nicomedians indicates accumulated wealth and trading, and thus an intensive economic life and high level of connectivity in the *metropolis*. Table 9 (below) including ship-owners, captains, sculptors, marble workers, architects, shows the diffusion of the numbers of the members of individual professions from Nicomedia attested so far outside of the city. It can be seen that ship-owners (13) along with merchants (5), sculptors (3), architect (1), marble worker (1) and captains (4) make up twenty-seven people who were involved in non-agricultural business. In addition to this, eight ship-owners, a ship-owner family and a wool merchant were attested in Nicomedia (see p. 201). When compared to present number of landowners (25) attested in Nicomedia, it shows importance of the

¹¹⁵⁸ Bounegru 2006b, 54. For example, Aurelios Markianos and Reginus son of Pollio.

¹¹⁵⁹ Bounegru 2006a, 1566.

¹¹⁶⁰ In terms of negative effect, Cicero mentions “corruption and degeneration of morals” in port cities in the 1st century BC. Cicero, *De Re Publica* II, 7-9. In fact, when Pliny speaks of a fire in Nicomedia, he counts two reasons for the damage; one is strong wind, and second one is “idle and motionless” Nicomedians who just watched the fire, did not help to extinguish it. Pliny, *Epistulae* X 33. Another passage from Pliny shows wasted money. Pliny, *Epistulae* X 37.

non-agricultural sectors in the city. More importantly, compared to current number of merchants and ship-owners of Nicomedia, the other cities in Bithynia were operating on a much smaller scale. According to Ruge's list fifty-two Nicomedians were attested abroad and twenty-eight of which were involved in non-agricultural sector; while only twenty-eight Nicaeans were found outside of Nicaea and couple of these attestations were related to commerce. Eight Prousiens (Prusias ad Hypium) were present abroad and only few of them were connected to trading activities. When it comes to other Bithynian cities such as Apameia, Kios, and Bithynium and Pusias ad Olympium, there are only few attestations.¹¹⁶¹ This result is especially unexpected for Prusias ad Olympium considering that the city exported its products abroad.¹¹⁶²

Apart from government officials, soldiers and members of other professions (see, appendix-1), the Nicomedians attested abroad without indication of their profession occur mostly on shipping routes in port cities and their inscriptions usually indicate the temporary presence of such persons in the place indicated, most probably for economic reasons.¹¹⁶³

Epitaphs of two Nicomedians are present in Mitylene¹¹⁶⁴, and in Cos.¹¹⁶⁵ Two epitaphs of Nicomedians are attested in Laconia at Taenarum.¹¹⁶⁶ Epitaphs of two Nicomedians were found in near Kastraki (Macedonia).¹¹⁶⁷ Another Nicomedian is attested in Mogontiacum (Mainz) on the land route connecting Nicomedia to European mainland.¹¹⁶⁸ Asklepiodotos Theodoros, aged 50¹¹⁶⁹, Zosimos¹¹⁷⁰, and the fragment of an epitaph was found on the Via Appia.¹¹⁷¹

In contrast to the epigraphic evidence presenting the Nicomedians abroad, there were not many foreigners attested at Nicomedia. This indicates strong influence of the Nicomedians outside of their city, while there were a smaller number of foreigners in the city. Known from his sarcophagus, Aurelios Bernikianos from Apamea (Syria) was one of the foreigners.¹¹⁷² He was from a Syrian family and very likely had business with Nicomedia. His family and wealth enabled him to climb into the highest social circles as

¹¹⁶¹ Fernoux 2004, 263, 267-273.

¹¹⁶² Dio Chrysostom, *Orationes* XL-XLI.

¹¹⁶³ Bounegru 2006a, 1559.

¹¹⁶⁴ *IG* XII 2, 386. Bia Biantos.

¹¹⁶⁵ *CIG* III 2517. *CIG* II 3142.

¹¹⁶⁶ *IG* V 1 1254.

¹¹⁶⁷ *IG* V 1 1264. Seueros of Nicomedia, aged 25.

¹¹⁶⁸ *CIL* XIII 4337.

¹¹⁶⁹ *IGR* I 205.

¹¹⁷⁰ *IGR* I 40, 260.

¹¹⁷¹ *IG* XIV 2225.

¹¹⁷² *TAM* IV 258; Şahin 1974, 58, Nr. 32.

phylarch of the most prestigious cult in the city, that of the goddess Demeter Polias. As already shown, there were commercial ties between Syria and Bithynia.¹¹⁷³ The epitaph of Papos of Arados the wood carver attested in Nicomedia confirms such contact. In accordance with epitaph of the *nauarkhides* in Corycus, the *kybernetes* in Lycia and the Nicomedians in Corycus and Salamis may also have been linked to the commercial activities with Syria and eastern Mediterranean in general.¹¹⁷⁴ Finally, a gladiator from Apameia¹¹⁷⁵, a soldier from a village in Dacia¹¹⁷⁶, and people from the Bosphorus Kingdom are the other foreigners attested in Nicomedia.¹¹⁷⁷

Table 9: List of ship-owners, captains, traders, sculptors, architect, and marble worker from Nicomedia attested in the Mediterranean.

Provenance	Ship-owner	Captain	Trader/Dealer	Architect/Sculptor Marble Worker
Smyrna	Diogenes Diogenes (Robert 1980, 42)			
Ephesus	Asklepiodotos Neikomedeus Eutykhos (<i>IK Ephesus IV</i> , 2255e)			
Cyzicus	Diokles Khrestos* (lived, <i>IG V 1</i> , 1190)			
Corycus	Reginus Pollio (<i>nauarkhides</i> , <i>MAMA</i> 672)		M.Aurelios Khrestos (?) (<i>MAMA</i> 263)	

¹¹⁷³ Fernoux 2004, 288-289.

¹¹⁷⁴ *SEG XXVIII* 1037.

¹¹⁷⁵ Ögün Polat-Şahin 1986, 111, Nr. 62, 4899.

¹¹⁷⁶ Ögün Polat-Şahin 1985, 120 Nr. 50, 4908. Protector Valerius Ursicinus. It should be noted that there were soldiers who served in legions in Numidia, Moesia Inferior, Egypt, Mesopotamia, Syria-Palestine, Cappadocia, Germania Superior, Scythica, and Cyrenaica attested in Nicomedia dated to 2nd and 3rd centuries AD. See Adak-Stauner 2006, 159-160.

¹¹⁷⁷ *TAM IV* 239.

Aperlea		Aurelios Markianos (<i>CIG</i> III 4303h 4)		
Thasos	Hermodoros (<i>IG</i> XII 8, 680)			
Nicopolis ad Istrum				Maximus and Neikon (sculptors, <i>IGBulg</i> II: 674)
Tirguşor (near Constanza)				Phoebus (sculptor, <i>CIMRM</i> II 2306-2307)
Tomi (Constanza)			Asklepiades and his brother (Robert 1978, 424)	
Tomi (Constanza)	Lucius Antonius Capito T(itus) Aelius Barbario (<i>CIL</i> III Supp. 7532)			
Olbia			Visitors (traders?) from Nicomedia (<i>IosPE</i> I/2 40)	Missed name of an architect , <i>IGR</i> I 854
Aidepsus- Euboia		Diogenianus shipowner? (<i>IG</i> XII 9, 1240)		
Athens		Antonios Kentrikis		

		shipowner? (<i>IG II² 8395</i>)		
Gythion	Diokles Khrestos* (died, <i>IG V 1, 1190</i>)			
Phythiotic Thebes	Hieron Pollionos Missed name (Robert 1978, 423)			
Icaria, Cyclad Islands	Eudaimon (Chricop-Lindèn 2006, 171)			
Baiae		Hieros (<i>IGR I 417</i>)		
Interamna			Aurelios Androneikos (<i>CIG 6546b</i>)	
Salona	Rouphos (<i>SEG XXXIII 490</i>)			
Ravenna	Teimokrates Theomnestos (<i>CIL XI 105</i>)			
Alicante	Volosios Syntrophos (<i>SEG XXXIII 835</i>)			
Burdigalae			Missed name (<i>CIL XIII, 625</i>)	
Leptis Magna				Asklepiades, marble worker, <i>IRT 264</i>)

iii. Definition of *Naukleros* and Status of Traders

The presence of Nicomedian traders, captains, and ship-owners in the Mediterranean illustrates their impressive commercial activity and the city's dynamic role in Roman trade. In Asia Minor, the islands, and other regions, and at Nicomedia itself, the presence of *naukleroï*, *kybernetes*, and *nauarkhides* has drawn special attention to the trading activities. Available timber sources and shipbuilding activity must have triggered and facilitated ship-ownership along with trading. The definition and status of these professions need to be scrutinized since the role of traders in the economic life of Nicomedia sheds more light on the analysis of Nicomedia as a producer or consumer city and its distribution patterns.

The roles of *kybernetes*, the *proretes*, and the *keleustes* in a ship's crew are known for the Classical period. The *kybernetes* was the helmsman controlling the rudder and steering the ship. In merchant ships, the *kybernetes* was the captain or the sailing master.¹¹⁷⁸ The *naukleros* was the (usually wealthy) ship-owner who could either sail with the ship or hire a *kybernetes*, or appoint a representative. The *kybernetes*, therefore, was a sailing captain who was only responsible for the transportation of goods, and he did not own the ship. It is possible that one individual could have been a naval officer, the *naukleros*, and the *kybernetes* at the same time. The owners of ships could have been private citizens or governments. Their crewmembers could have been in some dependent position, e.g. freedmen or slaves.¹¹⁷⁹ In the first century AD, the Roman Imperial navy shows an adaptation of Greek style and Roman characteristics. Therefore, the *naukleros* or his representative carried his own cargo in general. A professional captain, who had full command and control over the ship and crew for large ships, often was hired by charterers, merchants, and officials.¹¹⁸⁰ It seems that this situation appears to exist during the late Roman period, and also there is enough evidence for the late Hellenistic and under the Principate which confirms that sometimes a *naukleros* could be the same person as the *gubernator-kybernetes*. To conclude, there is no clear distinction of the *naukleroï* and their roles. Some say that they rented commercial vessels, and conducted the transportation of goods themselves.

¹¹⁷⁸ Rougé 1981, 158-160. The *proretes* at the prow was the second person who is responsible after the *kybernetes*. The *keleustes* was boatswain. This person was in charge of manoeuvring the ship and directing the oarsmen if the ship is set both sail and oar.

¹¹⁷⁹ Rougé 1981, 161.

¹¹⁸⁰ Casson 1971, 310-315. Casson explains that there were *gubernator* (executive officer and navigating officer); *proreta* (bow officer), *trierarchus* (commanding officer), *pausarius* (or *keleusta*) the chief rowing officer, *velarii* (sailmen), *faber* (ship's carpenter), *medicus* (ship's doctor) or *iatros*.

The main task of a *naukleros* in Ptolemaic Egypt was to assume the responsibility for the cargo carried, especially in the case of long distance transportation. He always sought transport contracts and long-term rental contracts. Others, however, consider that the *naukleros* was a merchant trading his own products with his own ship, which he deployed in inter-provincial trade activity.¹¹⁸¹

The distinction between *naukleros* and *navicularius* is more evident in the use of Greek and Latin under the Antonines. While the *navicularius* was a shipping contractor, subject to the *Corpus Naviculariorum* and obedient in the service of the *annona*, the *naukleros* was an independent contractor of the maritime service of the *annona*. He was not subject to the association and its functions (transportation taxes, payment of the crew, setting the stages of running of the vessel) merged with the office of *magister navium*. Thus *naukleros* represents the owner of a small ship and accompanying personal goods carried on his own account. Occasionally, he could be a big transporter who owned several ships and designated representatives to the solution of specific problems in transportation of goods. Eventually, the *naukleros* was involved in not only transportation but also trading activities in broader context.¹¹⁸² Nicomedian *naukleroioi* can be considered as both traders and ship-owners.¹¹⁸³

Pseudo-Plutarch states that people turn their first rate slaves (*spoudaioi*) into *georgoi*, *naukleroioi*, *emporoi*, *oikonomoi* and *daneistai*.¹¹⁸⁴ In fact, a wealthy father of a sophist at Byzantium possessed slaves who made revenue from the sea.¹¹⁸⁵ Not all *naukleroioi* were slaves, but rather they were men of relatively high status and wealth. The associations in the Greek cities under Roman rule show the same status, which was a cross-section of the middle class. Therefore, the members of *collegia* were from an intermediate level of society.¹¹⁸⁶ They were the *mesoi* for the Greeks. According to the Romans, *plebs media* (middle class) was used to refer them. There is no significant change or development in the status of traders/artisans provided by Roman authorities. The artisans and traders economically played an important role in the wide range of the social scale although many of them were seen as poor people by the senatorial elite. These people were well off in the local social scale. Some of them managed to be involved in wealthy elite and some artisans obtained the lower public offices, or

¹¹⁸¹ Bounegru 2006b, 34.

¹¹⁸² Bounegru 2006b, 34-37.

¹¹⁸³ Mattingly-Aldrete 1999, 184.

¹¹⁸⁴ Pseudo-Plutarch, *De liberis educandis* 7.

¹¹⁸⁵ Pleket 1983, 137; 1984, 15. They were called *thalattourgoi oiketai*.

¹¹⁸⁶ Van Nijf 1997, 20-22.

membership of a board of temple wardens or *bouleutic* status.¹¹⁸⁷ Indeed, one of them was Telesphoros who called himself a *naukleros* and *bouletutes* in Nicomedia. One distinctive feature of this *naukleros* is that he was member of the town council.¹¹⁸⁸ This is important, as the holder of a very large income was welcomed to the council, even though it was morally unacceptable in terms of status of the profession of shopkeepers.¹¹⁸⁹ Nevertheless, Pleket explains that as there is no other qualification (magistracies), Telesphoros most likely belonged to the ‘pedani’, the *inferiores*.¹¹⁹⁰

Besides Telesphoros, there are four Nicomedian *naukleroï* who held Roman citizenship.¹¹⁹¹ The Loteios *naukleroï* family also shows the profitability of this profession. In addition, a merchant (Aezanitan and Nicomedian at Tomi), a *kybernetes* (Byzantine and Nicomedian at Aperlae-Lycia), and an architect (Tomitian and Nicomedian at Olbia) who held double citizenships show their success in commercial business. Holding double citizenship was a significant advantage for traders by facilitating their trading activities. Traders who are abroad usually took the status of *xenoi* (non-resident foreigners) or *metoikoi* (resident aliens) in the cities. The recipients of grants of citizenship obtained economic rights allowing them to act certain economic activities e.g. exploiting civic resources, and to benefit from economic privileges. They also accepted economic plights, e.g. contributing taxes.¹¹⁹² Another privilege was obtaining reserved seat, as seen in the theatre at Leptis Magna (see, section II, ii). Epigraphic evidence therefore shows that the Nicomedian *naukleroï* were free people who traded with their own goods.¹¹⁹³ The majority of ship-owners attested abroad from the city show that they were fully involved in inter-regional trade rather than acting as a renter in the transportation activity.

It is worth questioning whether there is any link between Nicomedian ship-owners and landowners. There are two landowners named Asklepiodotos, one of whom was a presbyteros,¹¹⁹⁴ and a ship-owner Asklepiodotos Eutychos attested at Ephesus.¹¹⁹⁵

¹¹⁸⁷ Pleket 1984, 19-26. Pleket examines the examples from Asia Minor, attests a baker in Korykos who was a councillor, and another in Ephesus who was a member of the *gerousia*, artisans, and traders who were members of the *boule*, a goldsmith in Sardis, a purple dyer in Hieropolis. These people however were rare examples.

¹¹⁸⁸ *SEG* XXVII 828.

¹¹⁸⁹ Fernoux 2004, 288. Fernoux interprets that council membership of Telesphoros of Nicomedia shows the practice of *artes sordidae*.

¹¹⁹⁰ Pleket 1984, 14-16.

¹¹⁹¹ T(itus) Aelius Barbario and Lucius Antonius Capito at Tomi were attested. Also Aureilus Androneikos at Interamna and Aurelios Markianos in Aperlae held citizenship with the universal grant of citizenship with the *Constitutio Antoniniana*.

¹¹⁹² Hin 2010, 10.

¹¹⁹³ Pleket 1984, 14.

¹¹⁹⁴ *TAM* IV 243-244,

Aurelios Markianos (both Nicomedian-Byzantine) *kybernetes* is attested in Aperlae,¹¹⁹⁶ landowner Aurelios Markianos and an *agoranomos* with the same name also overlap in terms of nomenclature.¹¹⁹⁷ Another prominent person carrying the same name was Aelius Asklepiodotos, an *agoranomos* and *homonuarkhes*.¹¹⁹⁸ As mentioned, M. Aurelios Khrestos from the *phyle Asklepios* who was both Corycian and Nicomedian, is attested at Corycus.¹¹⁹⁹ This indicates that the Nicomedians carrying the name of Asklepiodotos, or people from the *phyle Asklepios*, were very active in trade, agriculture, and municipal duties. In addition, the name of Aurelios Markianos represents landownership, municipal duty, and trading in Nicomedia, Byzantium, and Aperlae.¹²⁰⁰ The Nicomedians carrying both names of Asklepiodotos and Markianos are attested in Rome, Puteoli and Senia (see, appendix 1).

The next question is whether ship-owners and traders of Nicomedia obtained a powerful and dominant role in the society. It seems that the Nicomedian *naukleros* Telesphoros who belonged to *bouleutic* class was possibly a rare example.¹²⁰¹ Furthermore, it is difficult to suggest that ship-owners solely constituted the trading elite in the city. It is taken for granted that merchants had more advantages than *naukleroï* when it came to penetrating the urban elite. Ship-owners always sought to be merchants, but the reverse did not happen.¹²⁰² Asklepiades, son of Menophilos, attested at Tomi, who was a Nicomedian and Aezanian trader, does not seem to belong neither to the urban *bouleutic* class nor to the lower echelon within that class.¹²⁰³ However, Levick points out that Menophilos is a high-class name.¹²⁰⁴ The testimony of present evidence therefore indicates that ship-owners and merchants of Nicomedia were independent in general and belonged to the upper-middle class. They bought and sold their goods, and possessed a relative prestige in the urban life of Nicomedia.¹²⁰⁵

Nicomedia had a junior and senior association (*oikos*) of *naukleroï*, which provides evidence for the role and influence of ship-owners in Nicomedia. The *Oikos*

¹¹⁹⁵ *IK Ephesus* IV, 2255e. The original provenance of the epitaph is not known, it is in the Selçuk Museum.

¹¹⁹⁶ *CIG* III 4303h 4.

¹¹⁹⁷ *TAM* IV 267; *SEG* LV 1378.

¹¹⁹⁸ *SEG* LV 1386. According to the inscription, possibly dated to AD 250, Aelius Asklepiodotos was an *agoranomos* and *homonyarkhes*.

¹¹⁹⁹ Robert 1978, 423; *MAMA* 263.

¹²⁰⁰ *TAM* IV 243-244, see indices for other Nicomedians named Asklepiodotos and Markianos.

¹²⁰¹ Pleket 1984, 15-6.

¹²⁰² Rougé 1981, 158-160. The term, *emporoi*, originally means sea traders and *emporïa* were the centre of maritime trade.

¹²⁰³ Pleket 1984, 15-6.

¹²⁰⁴ Levick 2004, 189.

¹²⁰⁵ Pleket 1984, 18-9.

ton naukleron, represents a well-defined type of professional association.¹²⁰⁶ Epigraphic sources in Roman times also indicate that the term of *oikos* used for the local meeting of the association (as a room, or sometimes to designate the association itself). The establishment of the association was linked to economic, cultural, and religious purposes and it was primarily a network for ship-owners sharing the same ‘nationality’ when they were abroad. The associations were not in charge of the activity of every single member, but each member could look after their own interest. A *Koinon* that was a professional association of ship-owners is known since the Hellenistic period. It is attested in major ports such as Athens and Delos from the fourth century BC to the first century BC.¹²⁰⁷

An association of *naukleroï* is attested in two inscriptions found in Nicomedia. Both of them dated to two consecutive years (from AD 69-70 to 70-71) are worth mentioning.¹²⁰⁸ One of these fragmentary inscriptions is related to a *presbyteros* association of ship-owners, *oikos ton naukleron*, dated to AD 69-70. In this honorary inscription, Publius Ailius Timotheus, chief priest (*archiereus*) of the city was honoured by *presbyteroi* of *oikos ton naukleron*.¹²⁰⁹ In the second inscription, a building dedication made by the association of *naukleroï* to the emperor Vespasian is recorded and dated to AD 70-71. According to the inscription, the ship-owners dedicated their *temenos* in which they must have worshipped in the Imperial cult.¹²¹⁰ Their adoption of Imperial cult as a ‘external sign of loyalty’¹²¹¹ may suggest that Nicomedian *naukleroï* sought to establish strong links with the ruler in order to be granted privileges or exemptions. A Latin inscription found at Tomi dated to the 2nd century AD, bears a list indicating that two Nicomedians obtained Roman citizenship. They probably were the members of an association of ship-owners.¹²¹² Inscriptions attested in the early Roman period suggest that association of ship-owners must have also existed under Hellenistic Bithynian Kingdom.

A hint about the influence of ship-owners in society can be found in Dio Chrysostom’s account from the 1st century AD. He complains that Nicomedia should give favours officially and not to certain people privately. Pleket interprets that the latter

¹²⁰⁶ Bounegru 2006a, 1560.

¹²⁰⁷ Bounegru 2006a, 1560-1561.

¹²⁰⁸ Bounegru 2006b, 47.

¹²⁰⁹ Robert 1974, Nr. 572; Şahin 1974, 32, Nr. 6; Bounegru 2007, 1560 fn. 21.

¹²¹⁰ TAM IV 22.

¹²¹¹ Van Nijf 2007, 19-20.

¹²¹² CIL III Supp. 7532; Bounegru 2007, 39.

‘pressure-group’ mentioned in Dio’s account was the Nicomedian *naukleroi* and that they possessed a significant role in the urban economic life.¹²¹³

Patrons of ship-owner associations must have been elected among the local politicians. However, it is not always possible to see these patrons as active traders in the sources, thus revealing the social status of members is difficult. As trade was considered as a risky and dangerous business, many upper-class rich city dwellers operated ships and conducted their trade via freedmen rather than with their family members.¹²¹⁴ In fact, according to Dio, the urban elite was involved in usury, leasing of tenements, slavery, and ships in Bithynia.¹²¹⁵ Thus, in Nicomedia, a port city whose inhabitants built and used cargo ships in transportation¹²¹⁶, trade must have provided a lucrative business to the elite. Ancient sources confirm that being a ship-owner was a normal occupation for the rich.¹²¹⁷ Tchernia examines the role of elites especially the senatorial aristocracy in long-distance trade. He argues that there was a separation of agricultural production and long-distance trade. Although some senators were involved in large-scale exports, majority remained landowners. However, landowning elite also increased their incomes further by lending surplus capital to merchants and traders, who were frequently their own freedmen. Elites consequently possessed a means of recovering prosperity from trade, from interest on the loans, which were made to traders, and from their share of their freedmen's inheritance. All of these therefore secured a large share of the profits, while minimising their coverage to risk. Tchernia examines some family trading networks over a number of generations in the Red Sea/India trade, and Baetica and presents that some wealthy families preferred to focus on money-making rather than becoming a local town councillor and holding official honours.¹²¹⁸

Even if Nicomedian traders were independent, they needed huge sums of money mostly held by urban elite. Possible dangers in the long distance transportation of commodities, e.g. disasters, storms, diseases, theft, triggered other means of transactions, such as monetary exchange, credit, barter, and futures (such as floating credit). Bankers and other rich persons were important for money supplies and lending money to entrepreneurs. The practice of loans was also widespread.¹²¹⁹ Maritime loans

¹²¹³ Dio Chrysostom, *Orationes* XXXVIII.

¹²¹⁴ Pleket 1984, 12; Levick 2004, 189.

¹²¹⁵ Dio Chrysostom, *Orationes* VII 104, XXVII 8. Pleket 1984, 12, fn. 3; Brunt 1973, 9-34.

¹²¹⁶ Arrian, *Parthica*, *FGrHist* 19; Tonnet 1998.

¹²¹⁷ Lucian, *Navigium* 13 and 18; Ptolemy, *Tetrabiblos* IV 2.

¹²¹⁸ Tchernia 2011, Chapter 1-2; Wilson 2011.

¹²¹⁹ Pliny, *Epistulae* X 54. Pliny speaks of loans from municipality in Bithynia.

generally assisted long distance trade both during the Roman Republic and probably during the Principate. Maritime loaning was practiced in such a way that the moneylender would have guaranteed financially the one way or return journey of a merchant. The merchant had to repay the loan upon the arrival of the ship. Because risk was high in such transactions, interest rates and eventual profits were also high.¹²²⁰ Indeed, a decree passed by the civic authority against the *ple(i)steriazontes* (*faeneratores*, moneylenders) to regulate transactions shows that the actions of moneylenders caused a riot in Nicomedia.¹²²¹ Independent merchants and ship-owners were possibly in the forefront of this riot, as the need for insurance was essential for their ventures. It should be noted that large cargo ships built and used by the Nicomedians meant higher risks in maritime trade. As a result, urban elite especially in harbour cities must have been engaged in ship-ownership and trading via freedmen or slaves as the profit is high. Thus, it can be concluded that the urban elite must have invested in ships in Nicomedia; or at least they lent money to independent *naukleroi*.

A closer examination sheds more light on the role of association of *naukleroi* in shaping the distribution pattern of Nicomedian commerce. Associations of ship-owners were attested in certain cities, including Ephesus, Smyrna, Nicomedia, Ostia, Tomi, Tarracina, Arados, Amastris, Alexandria, Arelate, and Narbo in the Mediterranean.¹²²² In this respect, the association seems to be peculiar to Nicomedia within the Propontis as there is no any other city held such organisation. This possibly may have led to a transportation monopoly or an increasingly superior position, and triggered the commercial network and agreement between Nicomedia and other cities on the coast of the Propontis. Bounegru stresses that inscriptions specifically show the existence of ship-owners associations at Tomi, Nicomedia, Amastris, which were peculiar to the north-west and west of the Black Sea and date to the Antonine period, and thus they differed from the *Corpus Naviculariorum*.¹²²³ This conceivably proves that there was a shipping lane between Nicomedia, Tomi, and Amastris before the reign of Diocletian. Bounegru interprets that the activity of ship-owners were on the regional level here. The presence of those associations shows the mobility of people and the existence of a

¹²²⁰ Katsari 2011, 182-184. Sirks 2002, 138-139, 142-143, 149.

¹²²¹ TAM IV 3. The names and status of those moneylenders are not mentioned in the decree. Van Nijf 1997, 15, fn. 55. Katsari 2011, 203. According to Harris' work, the rich inhabitants of the empire were not able to involve in money lending to large extent, as it was illegal in the early empire. After the death of Augustus, wealthy Roman citizens and provincials possibly were involved in usury or money-lending. Harris 2006, 8-17.

¹²²² Toutain 1968, 317.

¹²²³ Bounegru 2006a, 1560-1561. For a similar article published by Bounegru, see Bounegru 2010, 287-298.

‘commercial koine’ in the Black Sea and Aegean Sea in Roman times.¹²²⁴ The evidence presented in this chapter also shows that the association of Nicomedia was involved in inter-provincial trade, as seen in the case of the *Oikos ton Alexandreon* (the association of shipowners of Alexandria). More importantly as there is no attestation of the *Corpus Naviculariorum* in the eastern empire, as seen in the western empire, Bounegru suggests that the *annona* service temporarily or partially was one of the duties of the *Oikos ton Naukleron* in Nicomedia and other cities.¹²²⁵ It should be noted that even if ship-owners were involved in the *annona* service, they must have carried some items back and must have been involved in private orders.¹²²⁶

In the Antonine period, these associations were free and private. Only later did these associations become official institutions. While the state was in continuous growth, its control on the activities of associations started to become stricter in the third century AD. However, state control is not considered very stringent under the Principate though the independence of the associations is also obscure due to lack of evidence. From the fourth century AD, state control on the *Corpus Naviculariorum* in terms of responsibility for the public service increased, but association benefited from tax immunities as they had before.¹²²⁷ For example, the exemption from the *lex Papia Iulius Poppea* and *Ius Trium Liberorum* with special advantages provided to shipowners who ensured six years transportation of wheat to Rome. Nero also had exempted direct taxes (*census* and *tributum*) from maritime transportation.¹²²⁸ It seems there is an increase in ship-owner associations and strong influence in the transport of goods from the 4th-6th centuries AD. Gradual control and increase in the dependence of ship-owner associations and in maritime transport activity was not an obvious phenomenon imposed by the Roman authority. It was rather slow process taking place via granting benefits when entering the public service. These incentives regarding the maritime transport activity can be seen in the legal sources and confirm the increasing importance of the associations on the supply for large urban centres.¹²²⁹ The state control on Nicomedian *naukleroi* for the *annona* service is obscure. Within the *annona* service, existence of Nicomedian ship-owners in Tomi, Alicante, Corycus, and Ravenna might

¹²²⁴ Bounegru 2007, 191-195.

¹²²⁵ Bounegru 2007, 195.

¹²²⁶ Levick 2004, 188. However, coastal tramping with large cargo ships carrying mixed cargo would not have been suitable. Casson 1971, 172-172, Morley 2007a, 72.

¹²²⁷ Bounegru 2006b, 40-41.

¹²²⁸ Sirks 1991, 66-67. Moreover, under the reign of Claudius had given to those who had commercial ships with a capacity of at least 10.000 modii (about 68-70 tons) the right of citizenship. Suetonius, *Claudius* 18-19; Gaius *Institutes* 1, 32c; Ulpian 3, 6. Sirks 1991, 62.

¹²²⁹ Bounegru 2006b, 33-57.

have been related to army supply, as those locations were close to the legions.¹²³⁰ The prevalence of attested ship-owners dates heavily between the second half of first century AD and the first half of the third century AD. From this point of view, it is therefore difficult to observe independent Nicomedian ship-owners in the Mediterranean by the mid-third century. It can be suggested that the association of ship-owners predominantly started to serve the Roman state under Diocletian.

As a result, distribution pattern of Nicomedia rested on a triple base, the transport of its own commodities and those of its regional neighbours, e.g. wine, olive oil, marble, timber products, firewood, and slaves, inter-regional shipping of products from different regions, and transportation of the army supply (*annona*). The fifth chapter will examine the role of the Roman army on the economy of Nicomedia in detail.

III. Conclusion and Proposal for Civic Revenues and City Type

Table 10 (below) summarises the information assembled in this and the previous chapter on the production and consumption pattern and trade at Nicomedia. Like most other ancient cities, Nicomedia relied on agriculture to feed its inhabitants. Nevertheless, it must have imported grain in times of shortage, which seem to have been quite frequent owing to changeable conditions in the Mediterranean.¹²³¹ Grain imports are not directly attested, but *sitones* were separately appointed to deal with grain supply. Olive oil must have been imported to the city, as local production could not meet local demand. One of amphorae indicates oil import in late antiquity (see p. 192).¹²³² Although there is no direct evidence indicating oil import from Cyzicus, which is another port city on the Propontis coast, epigraphic evidence shows that there was a guild of oil sellers in this city.¹²³³ As is shown, there were Nicomedians settled in Cyzicus for trade and transportation. Therefore, it is likely that oil supply for Nicomedia was not difficult. The harbour at Nicomedia was a hub for the distribution of all goods,

¹²³⁰ According to Tacitus, Roman legions were located in the frontiers, which were Rhine, Danube, Pannonia, Syria-Euphrates, Africa, Egypt, Spain, Moesia, and Dalmatia. Tacitus, *Annals* 4, 5. His passage however refers to the situation in AD 23. As is known, three legions in Britain and two legions in Italy (II and III Italica) established in the second century AD. Webster 1998, 109, also see the second chapter on frontier systems p. 28-96.

¹²³¹ Pleket 1994, 119-120. For example, Pleket suggests two facts to support the view that Ephesus imported grain regularly. First, existence of association of *hoi en ephesio prometrai*, which were seemingly a guild of *mensores*, was responsible for regular imports. Secondly, there was a regular sea route between Ephesus-Alexandria.

There is no evidence for these in Nicomedia.

¹²³² Peacock-Williams 1986, 185-187.

¹²³³ Hasluck 1910, 272.

and this helped the city's needs to be supplied with relative ease. This must be the reason why the sources do not reflect grain crises or the shortage of other items in the city in contrast to Prusias ad Hypium.¹²³⁴

Nevertheless, the land possessed by the city did not allow them to produce a surplus or make a trading profit from agricultural products. As estimated in the third chapter approx. up to 30-50% of the total population seemingly had to be involved in other sectors in order to make an income. Indeed, the current figures showing the number of landowners (table 3), and ship-owners, captains and traders (table 9) attested illustrate dominance of the Nicomedians involved in non-agricultural sectors of the economy.

The table, below suggests that timber and timber products were the main export items. Among them, the construction of cargo ships seems to have provided a very important source of income. Nicomedia made use of constructing cargo ships, which especially useful for state orders, as an essential agency in transportation business. The spread of Nicomedian of ship-owners and captains, and especially the associations of *naukleroi* in the Mediterranean and the Black Sea confirms that they made great profit from transportation services. Epigraphic evidence related to ship-owners, their associations, traders, and artisans mostly date to the first and second centuries AD, and rarely to the third century. Coin types emphasise Nicomedia's maritime role, especially under Antoninus Pius and Commodus. Isis Pharia, Argo, *Stolos*, Poseidon, ship-prow, and merchant galleys stress the importance of shipping at Nicomedia and its dynamic role in maritime trade. They are particularly significant in the time of Antoninus Pius.¹²³⁵ As pointed out by Bosch the city flourished under Commodus, probably with the support of the emperor, and there was important public building activity in this period.¹²³⁶ Overall, the evidence indicates intensive trading activities and a high level of connectivity in the High Empire.

Another export item, marble was also important along with timber, but had rather secondary importance, as Nicomedian was overshadowed by Proconnesian marble, which was of good quality and easily shipped. The existence of associations of Nicomedian sculptors, however, confirms that the city provided artisans who worked

¹²³⁴ Ameling 1985, 6, 9, 13, 17, 19, 48.

¹²³⁵ Bosch 1935, 239-245.

¹²³⁶ Bosch 1935, 284. The great temple of Demeter and new forum were completed under Marcus Aurelius. Aurelius Victor, *De Caesaribus* 16, 12. A large public bath was built under Antoninus Pius. Bosch 1935, 209-212. A type from the last years of Commodus occurs only once in the entire Roman coinage in Nicomedia. It is the image of the wolf which is suckled by the twins. As the wolf was symbol of the foundation of Rome, it expresses that the wolf embraces and insure protection of provincial cities.

with Proconnesian and other marbles. Furthermore, the diffusion of Kutluca and Vezirhan marbles is impressively attested as an export product in Asia Minor, Italy, North Africa, Greece, and Balkans. Distribution maps of ship-owners, traders, artisans, and the diffusion of marble export and shipping lanes of Nicomedia show a high degree of overlap. These results prove that the city made its revenue primarily from the sea, as had already been observed by Dio Chrysostom in the 1st century AD. Nicomedia was also a slave source and possibly an outlet for the slave trade examined in the second section.¹²³⁷ Although there is no archaeological evidence for this, the Nicomedians must have exported wine and fish products. A small group of amphorae, however, also indicates wine and olive oil imports into the city.

The results show that trade, and especially transport played an important part in the economic basis of the city, therefore the city seems to have gained wealth from non-agricultural activities. If ancient cities are categorized only for a type to understanding the economic activities, it merely presents a one-dimensional approach. An ancient city can be a combination of agrarian, commercial, or producer-consumer city types.¹²³⁸

First, it can be said that Nicomedia was not an agrarian city, which derived its wealth only from agricultural activities. Its location on main trade routes and its dynamic role in regional and inter-regional trade and transportation shows that it was a commercial and a service city as examined in the first section.¹²³⁹ As for producer-consumer city types, the results do not suggest that Nicomedia was exclusively a consumer city. The city was a consumer city to some extent, as the role of agricultural life in the economy of the city cannot be underestimated. Even if the evidence suggests that local produce was not sufficient to fulfil all local needs, the city was at least dependent to a certain extent on local produce. On the other hand, economic activity of Nicomedia should mostly be considered within the typology of producer cities. Even though there is no quantitative data, it is very likely that the civic revenues generated from trade and services made the biggest contribution to the urban economy. As examined in the third chapter, there was no pattern of large landownership in Nicomedia given the present epigraphic evidence. Landowners, most of whom did not obtain

¹²³⁷ Xenophon, *Hellenica* III 2, 2-3; Xenophon, *Anabasis* VI 6, 37-38; Xenophon, *Anabasis* VI 6, 1-4; Diodorus of Sicily XXXVI 3.

¹²³⁸ Mattingly 2001, 82-83; Mattingly 1997, 206.

¹²³⁹ Engels 1990, 126. "Commercial cities located on major trade routes would also derive much income providing goods and services to long distance traders, travellers, and tourists. These functions enabled many cities providing these services to grow larger than cities providing services only to their local hinterlands."

Roman citizenship before AD 212, possessed small or middle-sized property.¹²⁴⁰ Thus entrepreneurs must have mostly invested in ships, as it was more profitable. The testimony of forty ship-owners, captains, merchants, and marble workers, indicates that there was a significant and relatively well-off group of people, who belonged to this upper-middle class. They were fully involved in trade and transportation for external markets. However, it is difficult to accept that these people alone formed a trading and manufacturing elite in the city within the producer model. Nevertheless, the evidence indicates that landowners were involved in transportation and trade. Although, there is no direct evidence, it is very likely that urban elite must have employed an agency to operate their business in the city. As Mattingly stresses, it is difficult to apply a single model to the all cities.¹²⁴¹ Roman Nicomedia fits into a combination of commercial city, service city, consumer city and producer city types. Finally yet importantly, Nicomedia was one of the cities, which conducted a mixed economy in antiquity. The next chapter will discuss the survival and circulation of coins as a final group of material that will shed more light on Nicomedia's trading activities and overseas connections.

¹²⁴⁰ Fernoux 2004, 160, 201, 251. Inscriptions belonging to twenty-four notables show they had Roman citizenship (Aurelius), *TAM IV* 37.

¹²⁴¹ Mattingly 2001, 81-84.

Table 10: Civic Revenues and Expenses of the city of Nicomedia.

Export	Import	Other revenues
Timber and finished products	Cereals in times of shortage (based on estimated figures)	Transportation Services (Association of ship-owners)
Marble (based on archaeological evidence)	Olive Oil (based on written sources and archaeological evidence) Wine (based on archaeological evidence)	Labour and masonry (Services of the Craftsmen e.g. association of sculptors, association of Bithynian marble workers)
Wine (potential and indirect epigraphic evidence ‘oinoposion’)	Custom dues (portorium)	All primary and secondary services as a service city, e.g. toll and fees.
Fish Products (potentially)		Tourism e.g. <i>koinon</i> festivals, petitioners from the province
Slavery (attested in written sources)		

CHAPTER V

The Survival and the Circulation of the Civic Coins of Roman Nicomedia

The production of coinage was an important political and financial activity for the Greek cities from the archaic period onward. When the Romans took over highly urbanised regions of the Eastern Mediterranean, they allowed subject cities to issue their own coinage until the late third century AD.¹²⁴² The aim of this chapter is to examine the survival, typology, and circulation of the coins of Nicomedia in order to shed more light on the economic activities of the city at local, regional, and inter-regional levels in the Roman period.

The chapter begins with a review of the long tradition of minting activity, including alliance (*homonoia*) coins of Nicomedia and *koinon* coins of Bithynia. In the second section, the investigation concentrates on the survival of civic coins and scrutinizes the factors affecting mint output, especially the effect of army's passages through the territory during the eastern campaigns. The final section examines the extent to which coin circulation helps one to trace the trading activity of the city, given that civic coins were used to meet local demand within the province, rather than for long distance trade. It asks whether the distribution of the civic coins of Nicomedia fits this pattern, or breaks the rules. Furthermore, it is worth asking how far the circulation of Nicomedian coins overlaps with the diffusion of traders, and ship-owners, with the distribution of marble exports, and with the shipping lanes examined in the fourth chapter. Although the focus is on Roman civic coins, the chapter also examines the circulation of Hellenistic coins to throw light on pre-existing economic contacts, constituted before the Roman period. Coin circulation is another way of observing connectivity of the city and its citizens. It provides evidence not only for commercial activities of traders, and for the movement of people from Nicomedia, but also for the movement of the army, which is highly mobilised group of the Empire. The city was subjected to army's passages, and it is likely that there was a Roman fleet stationed in its harbour. Moreover, the *annona* service seems to have been one of the duties of ship-owners association in Nicomedia. It is therefore possible to discuss both the economic reach of Nicomedia and the role of the army in the economy according to the considerations of Gren and Hopkins (see, chapter I, p. 53-64).

¹²⁴² Katsari 2011, 210. For economic importance of bronze coinage in the cities, see Martin 1996, 262-264.

I. The Mint of Nicomedia: Coinage in the city from Hellenistic Period onwards

The coins of Nicomedia can be analysed in three groups in accordance with minting activity. These are the coins of the Hellenistic Period (264/260-74 BC), the civic coins and alliance (*homonoia*) coins of the Roman Period (62 BC-AD 268), and *koinon* coins of Bithynia, and finally the coins of the period starting with emperor Diocletian up to the end of the late antiquity (AD 294 - c. 630).

The first coins were minted during the Kingdom of Bithynia.¹²⁴³ An important change, which occurred in 262 BC, gives some ideas about dating. The king of Pergamon, Eumenes I, won a battle against the Seleucid king, Antiochus I in 262 BC in Sardis, shifting the power balance in Anatolia. Following this, the Seleucids retreated from Anatolia by withdrawing to the south. Changing conditions in Anatolia made it possible for other kingdoms to mint their own coins and Nicomedes I was the first king to do so in Bithynia.¹²⁴⁴ Both silver and bronze were used in this period. Drachm and tetradrachm coins were minted on the Attic standard. Obverse types carry the portraits of the kings.¹²⁴⁵ The reverses depicted the Greek gods and goddesses such as Apollo, Athena, Pallas, Ares, Demeter, Dionysus, Heracles, Hermes, and Zeus.¹²⁴⁶

The second group is the Roman civic coins, which began in 61 BC with an issue naming the proconsul C. Papirius Carbo and ran through the emperor Gallienus' (253-268) and his wife Salonina's coins (AD 254-268). In this period, the reverse types generally bear depictions of deities such as Aphrodite, Apollo, Ares, Artemis, Asclepius-Hygieia, Demeter, Isis, Serapis, Heracles, Hermes, Hygieia, Cybele, Nike, Poseidon, Tyche, and Zeus, which gives about a notion of the religious life in the city. The animals depicted on the coins are horse, pig, hippocampus, eagle, goat, tuna, and serpent. As well as personifications of Eirene, the Demos, the Boule, Roma, *Stolos*, and *Homonoia*, there are depictions of arches, a lectisternium, altars, and temples, which give an idea about the architecture of the city. As discussed in the previous chapter prow, galleys, torches, and wreathes are also depicted on other types.¹²⁴⁷ The coins were in bronze without exception, with an increased ratio of copper in the alloy (brass) during

¹²⁴³ Mørkholm 2000, 205, 141; Howgego 1995, 47, 60; Radt 2005, 25.

¹²⁴⁴ Malay 1992, 20; Radt 2002, 27-8; Çalık-Ross 2007, 62-3. The year when Nicomedes minted the first coin roughly can be accepted as 264 *terminus ante quem*, and year 260 *terminus post quem*.

¹²⁴⁵ Wroth 1963, xxxviii-xliii. Portraits of kings will undoubtedly contribute to the works on sculpture during the Hellenistic period in Nicomedia.

¹²⁴⁶ See *SNGAul.* 1957; *SNGAulN* 1967; *SNGCop.* 1944; *SNG Fitzwilliam*; *SNGTüb.* 1985; *RG* 1908.

¹²⁴⁷ Types of Coins look *BMC* 1963; *SNGAul.* 1957; *SNGAulN* 1967; *SNGCop.* 1944; *RG* 1908; *SNGTüb.* 1985.

the first and second centuries AD. In the third century, it can be seen that quality of coins started to decline, and denominational countermarks were being struck on coins under Gordian III onwards. As for the weight standards of the civic coinage, there is a tendency for weights to decrease especially under Severus Alexander and later on.

In the same period under the Roman Empire, alliance (*homonoia*) coins were minted between Nicomedia and cities in Asia Minor. Merchants made their personal profit on the relationship between the notables and other economic and financial civic organizations. Consequently, notables were able to make economic decisions to ensure the prosperity of their city. The typology of the civic coins reflects these economic agreements.¹²⁴⁸ Thus, *homonoia* coins of Nicomedia should be examined in terms of economic activities. *Homonoia* (agreement/alliance) was made to resolve disagreements such as border conflicts; commercial and religious argument and ethnicity problems between cities.¹²⁴⁹ It also made for the occasion of common festivals between cities.¹²⁵⁰ Broughton and Magie point out that economic purpose was triggered by *homonoia* between cities.¹²⁵¹

Homonoia is seen during the reign of Commodus between Smyrna-Nicomedia (figure 48) and Laodicea-Nicomedia; and in the reign of Marcus Aurelius between Smyrna-Nicomedia. Such agreements were also made in the reign of Gordian III, between Nicomedia-Pergamon, Nicomedia-Perinthus, and Nicomedia-Smyrna.¹²⁵² According to Gren's approach Nicomedia made a greater number of trade agreements in the mid 2nd and 3rd centuries AD, when the army route from Nicomedia to the east became busy due to an increase in campaigns to the east. The roads where the troops frequently travelled played a part in the economic relations between Thrace and Asia Minor. The cities on this route became important, and many harbour cities lost their importance in the west because of trade routes moving to the northwest. Therefore, *homonoia* was made between Nicomedia and the West Anatolian cities, such as Smyrna, Pergamon and Laodicea due to port facilities and its strategic location.¹²⁵³

¹²⁴⁸ Fernoux 2004, 291.

¹²⁴⁹ Bosch 1935, 237. On the *Homonoia* coins of Nicomedia, generally, *Homonoia* herself is pictured frontally, standing up; the head is looking left, holding a patera in the right hand and a fertility horn in the left hand. This can be observed on coins of Commodus *BMC* 184, 30; Caracalla *RG* 546, 231; *SNGAul.* 775; *RG* 546, 232; Maximinus Thrax *RG* 560, 341; Maximus *SNGAulN* 7115; Gordian III *RG* 564, 371; Decius *SNGAulN* 7128; Commodus *RG* 533, 126; Severus Alexander *SNGAul.* 783; Salonina *SNGAul.* 864; *SNGAul.* 866; Severus Alexander *RG* 556; 304, 305; Maximinus Thrax *YKY* 111; Marcus Aurelius-Lucius Verus *RG* 531, 112; *SNGCop.* 561.

¹²⁵⁰ Klose 2007, 129.

¹²⁵¹ Broughton 1938, 872; Magie 1950, 639.

¹²⁵² Franke-Nollé 1997, 2040-2046; 1623-1638; 1722-1723.

¹²⁵³ Gren 1941, 30-32, 110; Broughton 1938, 860-862.

Although Gren's approach and 'decline' in the Western Anatolian cities were discussed in the first chapter (p. 61-64), it is still worth examining whether this was the case in Nicomedia. Thus a typological analysis needs to be presented.¹²⁵⁴

The *homonioia* was made between Smyrna and Nicomedia, and it is attested first time under Marcus Aurelius.¹²⁵⁵ There are seven different reverse types on the coins. In one of reverse type, while an Amazon taking the double axe represents Smyrna, Tyche of Nicomedia has been depicted with a rudder in her left arm, a prow at her feet (figure 48).¹²⁵⁶ Here, the city of Nicomedia apparently represents a maritime city. Under Gordian III, the type is the same as aforementioned reverse type issued under Commodus.¹²⁵⁷ The agreement between Smyrna and Nicomedia must have been related to an economic purpose.¹²⁵⁸ As is known from epigraphic evidence, Smyrna accepted Nicomedia as *adelphos* since both cities claimed Athenian origin.¹²⁵⁹ Moreover, a ship-owner and a trader from Nicomedia are attested in Smyrna.¹²⁶⁰ According to Bosch, the economic reasons for *homonioia* between Smyrna and Nicomedia were decisive, as both cities were ports and connected with each other via a shipping route.¹²⁶¹

Secondly, the agreement was made between the city and Laodicea in Phrygia under Commodus. There are two reverse types issued in the name of Commodus and Bruttia Crispina. Laodicea, an inland city, was a centre of textile industry¹²⁶², and seemingly had close ties with major trading centres such as Nicomedia. In fact, the epitaph of a wool merchant (Markos eriopoles Sostrate) is attested in Nicomedia which may have been linked to larger scale textiles trade connected to Phrygia in particular.¹²⁶³ Sale of the goods was interprovincial in scale and it required good connections with important markets. Thus, *homonioia* coins were issued by Laodicea not only with Nicomedia, but also with other cities. Laodicea also constituted alliances with Ephesus, Smyrna, Hierapolis, Tripoli, Heracleia Salbake, and Antioch on the Meander, Philadelphia, and Pergamon.¹²⁶⁴

¹²⁵⁴ Bosch 1935, 235-238.

¹²⁵⁵ Franke-Nollé 1997, 1941-1944.

¹²⁵⁶ *BMC Ionia* 491-493. Franke-Nollé 1997, 1963-1993.

¹²⁵⁷ Franke-Nollé 1997, 2040-2046.

¹²⁵⁸ Fernoux 2004, 291.

¹²⁵⁹ *SEG* LIII-2 2262. Poleis Adelphai. Smyrna announces Nicomedia as its *adelphos* since both of them claimed Athenian origin. It was due to *syngeneia*, which was common practice between cities. Eudoxia 2003, 35-45.

¹²⁶⁰ Robert 1980, 42. Robert adds that the origin of the epitaph cannot be known precisely. *CIG* II 3265.

¹²⁶¹ Bosch 1935, 235-236. It is not known where *homonioia* coins were struck in general. However, Bosch claimed that *homonioia* between Smyrna and Nicomedia was issued in Smyrna.

¹²⁶² Strabo XII 8, 16.

¹²⁶³ *TAM* IV 174; Fernoux 2004, 262.

¹²⁶⁴ Bosch 1935, 237-238.

Thirdly, agreement occurred between Perinthus and Nicomedia under Gordian III. In the scene, Demeter of Nicomedia is on the left and Tyche of Perinthus on the right.¹²⁶⁵ Perinthus was the junction in the road system leading from Byzantium to Philippopolis and hosted a squadron of the Roman fleet.¹²⁶⁶ Thus the city had an important role between the Danube-Euphrates on the European side, in the same position as Nicomedia on the Asian side. On the Propontis, there were two bridgeheads: Byzantium with Chalcedon, and Perinthus with Nicomedia. Although there is no evidence, this *homonioia* could indicate an agreement on transferring the troops as Roman fleet was apparently stationed both in Perinthus and Nicomedia.¹²⁶⁷ It is very likely that due to the important location of these two cities *homonioia* was made in order to serve their mutual military or economic benefit. As wheat was an export item of Perinthus, *homonioia* might have been related to grain supply to Nicomedia.¹²⁶⁸

Fourthly, *homonioia* appears between Nicomedia and Pergamon under Gordian III. There are three reverse types.¹²⁶⁹ In one of reverse types, Asclepius of Pergamon and Demeter of Nicomedia shaking hands were depicted in a galley.¹²⁷⁰ In another type Demeter of Nicomedia with a prow at her feet and Asclepius of Pergamon are seen.¹²⁷¹ In those types, intentionally or unintentionally maritime features of the cities are highlighted. An alliance with Pergamon must have served especially their mutual interest in maritime trade. Two cities were connected to the sea, (Pergamon had a path to the sea by the Kaikos). Thus this *homonioia* was likely to serve common economic interests, e.g. liberation from the port and other customs, further developments of certain specialties, sales of consumer goods in the hinterland, market law etc.¹²⁷² It can therefore be suggested that *homonioia* coins between the cities and Nicomedia have been issued mostly for economic purposes. It should be noted that *homonioia* were made between partner-cities for special religious festival and sacrifices. As far as known, Nicomedia and Pergamon were both *metropolis* and *neokoros* cities. Smyrna, Perinthus, and Laodicea were also *neokoroi*.¹²⁷³ Inscription on a lead weight found in Adapazari, belonging to Nicomedia reveals the office of *homonyarkhes* (special *theoroi* to the

¹²⁶⁵ Franke-Nollé 1997, 1722-1723.

¹²⁶⁶ Bosch 1935, 240 and fn. 130.

¹²⁶⁷ Bosch 1935, 240 and fn. 130.

¹²⁶⁸ Bosch 1935, 236-237.

¹²⁶⁹ Franke-Nollé 1997, 1623.

¹²⁷⁰ Franke-Nollé 1997, 1624-1632.

¹²⁷¹ Franke-Nollé 1997, 1633-1638.

¹²⁷² Bosch 1935, 237.

¹²⁷³ Bosch 1035, 222; Klose 2007, 127.

festival), which must have been linked to the above-mentioned special festivals.¹²⁷⁴ These festivals created a market for the traders, and thus the *homonoia* must have functioned facilitating trading activities between the cities. Therefore, *homonoia* coins issued for religious festivals indirectly indicate economic purposes.

Koinon coins of Bithynia were possibly minted in Nicomedia under the Roman Empire.¹²⁷⁵ The emperor Augustus gave permission to Pergamon and Nicomedia to build a temple in the name of Rome and himself in 29 BC.¹²⁷⁶ Therefore, the city took the title of *neokoros* (=νεωκόρος) and became a centre for the imperial cult within the province.¹²⁷⁷ During the reign of Commodus, the title of *neokoros* was given to the city for a second time. On a coin minted during the reign of Caracalla, the title of *dis neokoron* (=δῖς νεωκόρον) can be read and the goddess Demeter is depicted holding in her hands, the temples of the emperor, each with eight columns.¹²⁷⁸ The third time the city was granted the title of *neokoros* was during the reign of Severus Alexander.¹²⁷⁹ On a reverse type under Severus Alexander, a galley was depicted at the bottom and three temples on the top. The title read on the coins is *tris neokoron* (=τρίς νεωκόρος).¹²⁸⁰ There were two *neokoroi* cities in Bithynia, Nicaea and Nicomedia, which could organize *koinon* festivals at four years intervals.¹²⁸¹ *Koinon* festivals were an opportunity to indicate the loyalty of the cities to the emperor. Obtaining the title of *neokoros* was highly appreciated by the cities in Asia Minor in general since such titles bought fame and dignity and demonstrated good relations with the emperor. Besides their religious character, these festivals were also important for the provincial economy since they created a market for participants, especially merchants from different cities in Bithynia and outside the province.¹²⁸² A recent study done by Doukellis show that Hadrian's *Panhellenion* was an imperial network of Greek cities within broader context as far as eastern empire is concerned.¹²⁸³ Thus provincial leagues such as *koina* are also suitable to examine for the network theory as an institution creating a multidimensional web of communications.

¹²⁷⁴ *SEG* LV 1386.

¹²⁷⁵ Burnett-Amandry-Carradice 1999, 96.

¹²⁷⁶ Cassius Dio LI 20, 6-9.

¹²⁷⁷ Burrell 2004, 147-166; Harris 1980, 875-876.

¹²⁷⁸ *RG* 544; 218, 219.

¹²⁷⁹ Arslan 1996, 107.

¹²⁸⁰ *SNGCop.* 582.

¹²⁸¹ Şahin 1987, 66.

¹²⁸² For the economic aspects of religious festivals (*panegyreis*), see Van Nijf 2007, 139-146; Ligt 1993, 225-234. An inscription found in Cyzicus dated to the first century AD, shows an association of foreign traders who had visited the city for a *panegyris*.

¹²⁸³ Doukellis 2009, 285-297.

In fact, being a centre of the imperial cult was of great economic importance to the cities and it can be observed that this regularly triggered the minting of large emissions in the central cities, which became hubs of considerable trade and traffic.¹²⁸⁴ *Koinon* coins were issued between Claudius and Hadrian in bronze, while increasing their copper ratio. They were large and heavy coins, each equivalent to three denarii.¹²⁸⁵ *Koinon* coins might have provided recognition for Bithynian merchants in their activity in inter-regional long distance trade. Furthermore, using *koinon* coins in transactions may have facilitated the small expenses of travellers and merchants in comparison to civic issues since their value was higher than that of civic issues. Thus there may well have been practical advantages in possessing *koinon* coins rather than *denarii*. According to Katsari, these coins did not make a substantial impact on the local economies as their numbers were limited and the coinage started to disappear by the second century AD.¹²⁸⁶ She adds that due to the lack of numismatic evidence it is not possible to argue that *koinon* coins circulated more broadly than civic coins. They were used within the province but did not form broader circulation pools.¹²⁸⁷ However, the *koinon* coins of Bithynia issued under Hadrian tell a different story.

As seen in the table 4 (see, appendix-2), *koinon* coins issued under Hadrian (and Sabina) are attested in Ankara, Bursa, Bolu, Sakarya, İzmit, Amasra and Çorum Museums. These large bronze coins have also been found in Seleucia on the Tigris, Athens¹²⁸⁸, and in the excavations at Palmyra.¹²⁸⁹ Seleucia was economically and politically an important city. Palmyra was a prominent inland city, which mostly profited from trading activities¹²⁹⁰, and Athens was another important trade centre in antiquity. Moreover, Ankara was other important stop on the eastern roads¹²⁹¹; Amasra (Amastris) was an outlet for the Paphlagonian plain¹²⁹², and İzmit (Nicaea) and Prusa were inland Bithynian cities, which were rich in resources and active in trade. Thus, the *koinon* coins of Bithynia refer to wider economic implications and purpose, since the circulation of those coins are vast in space.

The third group includes Roman Imperial issues starting under Diocletian and ending with the reform of Heraclius (AD 630). In AD 284, Diocletian made Nicomedia

¹²⁸⁴ Bosch 1935, 223-224.

¹²⁸⁵ Arslan 1996, 102; Burrell 2004, 147-162.

¹²⁸⁶ Katsari 2011, 212.

¹²⁸⁷ Katsari 2011, 226.

¹²⁸⁸ Jones 1963, 317.

¹²⁸⁹ Michailowski 1964, 140-141, Nr. 118.

¹²⁹⁰ Stoneman 1995, 51-81; Sartre 2005, 240-274.

¹²⁹¹ Katsari 2011, 229, 232.

¹²⁹² Nesbitt-McGeer-Oikonomides 2001, 40.

his capital and established a mint here.¹²⁹³ Coinage in Nicomedia begins once again with this mint in 294, which had high capacity in order to meet the demand for coins in the diocese of Pontus and continued to produce coins for more than three hundred years. The mint of Nicomedia produced gold, silver, and bronze coins during the reign of Valens and minted only bronze until 619. There were high minting volumes from the reform of Anastasius in 498 until the reform of Heraclius. Between AD 619 and 626, no coins were minted, probably the result of internal unrest. During the reign of Heraclius, the empire became stronger thanks to successful campaigns, and went through a period of reconstruction. Because of Heraclius' reforms, the treasury was centralised and provincial treasuries were closed. Therefore, the mint's activity ended in about 630.¹²⁹⁴

II. The Survival of the Civic Coins

As mentioned earlier, civic coins were used for local trade and Roman silver coins were preferred for long distance trade. Transactions of silver currency included exchange of commodities, tax payment, banking, and investment in business, the payment of magistrates and army officials, public works, and even labourers' wages, e.g. employees of merchants, shopkeepers, and artisans.¹²⁹⁵ However, there was no competition between Roman silver coins and civic bronze issues. The distinction between these two spheres of movement does not mean that there was an impassable border between the two convertible currencies. Two currencies co-existed in the empire.¹²⁹⁶

Owing to the rise of the Roman state during the Republican period, the level of monetisation changed at least in some provinces. It is evident that bronze coins were predominantly used both in urban and rural zones.¹²⁹⁷ A. Burnett suggests that smaller denominations were widespread in Roman cities after 200 BC, although in the countryside there is less evidence because smaller villages and towns did not possess the markets as urban centres had. In such areas, coins are occasionally present in excavations.¹²⁹⁸ Numismatic catalogues of imperial and provincial bronze coins in the

¹²⁹³ Foss 2002, 2-3. For the Diocletian period and the subject of tetrarchy see Williams 1985, Kolb 1987, Mattingly 1971, Ensslin 1971 and Rand 1971. Lactantius, *De Mortibus Persecutorum* 7-8, 10. In this period, Nicomedia took its place among the four most important cities of the world beside Rome, Antiocheia (Antakya) and Alexandria (İskenderiye). See, Libanius, *Orationes* LXI 7-10 and Ammianus Marcellinus XXII 9, 3.

¹²⁹⁴ Foss 2002, 3-4.

¹²⁹⁵ Katsari 2011, 167, 177; Fernoux 2004, 276.

¹²⁹⁶ Fernoux 2004, 275-277.

¹²⁹⁷ Hollander 2007, 87-88; Katsari 2011, 222.

¹²⁹⁸ Burnett 1987, 95.

eastern provinces show that the output of small change increased considerably not only in Rome but also in civic mints from the beginning of the Principate. Literary evidence and inscriptions prove the monetisation of these regions increased during the Principate.¹²⁹⁹ Dio Chrysostom, in the first century AD, speaks of poor inhabitants who had to pay rents for their houses, and their needs: clothes, furniture, food, wood for the fire. With exaggeration, the only thing they did not pay for was water.¹³⁰⁰ In the time of Dio, Bithynia paid tax in kind. Thus, peasants did not have to earn money to pay tax, but needed money to buy daily essential items, e.g. pottery, glass.¹³⁰¹ They used small bronze coins in their transactions not *denarii* or *aureii*. As a result of this, transactions in small change would have taken place more frequently and regularly than higher value deals.¹³⁰²

Funerary inscriptions which mostly date to the 2nd and the 3rd centuries AD show that inhabitants of certain villages, such as Desa, Prepane, Kassa, Sarakelane, Soka and Arbeilanon in the territory of Nicomedia had to pay certain quantities of *denarii* to the village authority in order to re-use sarcophagi or in the case of violation.¹³⁰³ This supports that money was in use throughout the territory. However, it would be difficult to observe highly monetized rural economy since exchange in products and labour instead of cash was in practice in rural communities. A decree passed against moneylenders in Nicomedia to regulate transactions since their actions of moneylenders caused a riot also shows monetized economy in the city.¹³⁰⁴

Moreover, nineteen lead weights attributed to Nicomedia, as they were found in its territory and one of the *agoranomos* Statius Aelius Nicomedianus, indicates the importance of well-functioning market economy in the city. The weights date to the period beginning with AD 113/114 to 259/260. The lead weights are more sophisticated than western Asia Minor, Thracian, or Moesian weights. They carry the year, reign of the emperor, *logistes*¹³⁰⁵, and *agoranomos*. The majority of these *agoranomoi* obtained Roman citizenship. It seems that several *agoranomoi* held the office simultaneously for the whole year or in succession in Nicomedia. *Litra-agoraia*, market-litra, (c. 500 gr.) was used in the weights and units vary from *hemilitron* to *dilitron*. Most of the weights

¹²⁹⁹ Katsari 2011, 222-223.

¹³⁰⁰ Dio Chrysostom, *Orationes* VII 103-7.

¹³⁰¹ Katsari 2011, 223.

¹³⁰² Katsari 2011, 224-225.

¹³⁰³ *TAM* IV p. 102, Indices.

¹³⁰⁴ *TAM* IV 3.

¹³⁰⁵ *Logistes* (the equivalent of Latin *curator rei publicae*) was official of the central government in the provincial city. They were selected from equestrian order and usually held a reasonable personal fortune. Bekker-Nielsen 2008, 105.

carry a control stamp of the *agoranomos*. An overview on the lead weights shows the weight range of *litra* between 461-506 gr.¹³⁰⁶ The civic authority was in charge of the standards of weights and measures to conduct a fair market economy. It was especially important as the officials collected the one-fiftieth sale tax or custom dues in accordance with the price of the goods sold.¹³⁰⁷ Therefore, it seems that Nicomedian officials paid great attention to the standardisation of the weights in the market.

The specific reasons for minting bronze imperial and civic coins are still a matter for debate. According to Ziegler, the reason for minting bronze civic coins was occasional need for higher local mint output corresponding to irregular movements of the army, the visits of the emperors in the east, and local festivals.¹³⁰⁸ He links some local issues from Cilicia and northern Asia Minor with Roman campaigns and tension between Roman and the Persian Empire or along Danube.¹³⁰⁹ According to his argument, bronze coins were minted intermittently in order to facilitate retail transactions between soldiers, the emperor's entourage, travelling traders, and the local inhabitants. Any sudden increase of the local population would have triggered an additional demand for more small change in the local markets. Troop movements were one of them. When the authorities realized the possibility of a deficit in small change, as soldiers wished to exchange their salaries for convertible coins, one of the measures taken was to issue new bronze coins.¹³¹⁰ A study done by Elton, however, shows that the production of civic bronze coins and military movements in Cilician cities on the military road during the third century AD were not correlated. He suggests that the *annona militaris* covered most of the needs (food, accommodation, and animals) of the soldiers, who were on their way to the frontiers or elsewhere. Thus, according to Elton, the impact of their supplementary demands for food, drink, and entertainment appearing on the bronze mint output was limited.¹³¹¹ Nevertheless, as Nicomedia was on the road between the eastern and northern frontiers and apparently hosted a Roman fleet minting activity must have been affected by the armies' need for small change. Therefore, Nicomedia could reflect a different fact than Cilician cities, as it will be examined below.

¹³⁰⁶ SEG LV 1335, 1369-1388. Nr. 1389 refers to two inscribed moulds for weights found in Nicomedia.

¹³⁰⁷ Morley 2007a, 60-61.

¹³⁰⁸ Ziegler 1996, 119-227.

¹³⁰⁹ Ziegler 1993, 142-144.

¹³¹⁰ Ziegler 1993, 142-144.

¹³¹¹ Elton 2005, 289-304. Alston also rejects that the Roman army made a great impact on the growth in local economies as a stimulus. Alston 1995, 112-115.

Table 1-4 (see, Appendix-2) shows civic coins in the different collections in Turkey and Europe.¹³¹² The table helps to examine two aspects of coinage. One of them is to allow a calculation of the survival of issues in the different reigns. The second is to show the circulation of coins in Turkey.

The figures in the table represent the survival of civic coins of Nicomedia. There are 69 coins of Papius Carbo, 69 coins of Antoninus Pius, 43 coins of Marcus Aurelius, 78 coins of Commodus, 44 coins of Septimius Severus, 65 coins of Caracalla, 48 coins of Maximinus Thrax, 64 coins of Severus Alexander, 59 coins of Gordian III, and 22 coins of Trajan Decius.¹³¹³

The quantity and diffusion of emissions issued under C. Papius Carbo (61-58/7 BC) are striking as they are widely attested in different museums in Turkey and Europe. These emissions illustrate the new relationship between municipal authorities and a Roman representative at local level. For the first time, a governor of Bithynia, Carbo, issued Bithynian civic coins carrying his name on the reverse, and other magistrates followed him. On the obverse, the head of Rome or the head of Zeus were depicted and the legends of the Nicomedian issues can be read as NIKOMHΔEΩN. Under the supervision of magistrates, each city expressed its own cultural identity.¹³¹⁴ Correspondingly, Greek deities were widespread. The cult of Hermes, promoted by Bithynian kings, survived only on certain emissions of Nicaea. All cities used Dionysus, except Nicomedia, which emitted an original type, that of Zeus, probably a reminiscence of Zeus Stratios used during the monarchy. It seems that the royal spirit was still alive in Nicomedia. Carbo ordered the issue of the type of Rome with a helmet here and elsewhere, a reminder of the supreme authority. Coins of Carbo's successors survived in smaller quantity. The reason may be that a large number of coins of Papius Carbo were already in circulation and there was no need for subsequent issues.¹³¹⁵

¹³¹² The present author examined coins collections in Bursa, Bolu, İzmit, Sakarya, İstanbul, Ankara, İzmir, Tekirdağ Museums in Turkey; and the Fitzwilliam, the Ashmolean, the British Museum in the UK, the French National Library in Paris and in Naples Archaeological Museum in Europe, and finally American Numismatic Society in the USA. She has taken account of published collections of Florence (Williams 2009), Cologne (Corsten 1996), Copenhagen (SNGCop. 1944), Amasya (Ireland 2000), Amasra (Ireland-Ateşoğulları 1996), Çorum (Çizmeli 2008, 352) and Çanakkale (*SNG Turkey* 3). It is declared that there is no civic coin of Nicomedia in the Edirne collection.

¹³¹³ A table compiled by Bosch provides similar picture Bosch 1935, 92. The figures are Republican (111), Augustus (6), Tiberius (6), Claudius (22), Nero (2), Vespasian (5), Domitian (20), Trajan (7), Hadrian (17), Antoninus Pius (99), Marcus Aurelius (139), Commodus (65), Septimius Severus (95), Caracalla (78), Macrinus (14), Elagabal (17), Severus Alexander (104), Maximinus Thrax (42), Pupienus-Balbinus (5), Gordian III (29), Philip (22), Decius (16), Trebonianus Gallus (11), Valerianus (41), and Gallienus (23).

¹³¹⁴ Fernoux 2004, 162-163.

¹³¹⁵ Fernoux 2004, 164-167 and 276.

Emissions of Nicomedia were irregular between the reigns of Tiberius and Hadrian. However, this did not necessarily mean a serious lack of liquidity at the local level, because it ignores the actual volume of coins issued previously and introduced into circulation. Dabrowa interprets the development of monetary phenomenon because of military activity in the East and a generator of economic activity for the whole Bithynia.¹³¹⁶ Leschhorn emphasises that civic mints continued in the third century more than in most other regions as can be seen in the climax of coinage under Septimius Severus, Caracalla, Severus Alexander, Gordian III, and Valerianus-Gallienus during which reigns important eastern campaigns took place.¹³¹⁷ Hoards found at Nicomedia as well as Teium, Samos and Perge (?) from the third century also indicate the increased circulation of civic coins in this era.¹³¹⁸ It should be noted that there is a survival of significant number of coins from the reign of Antoninus Pius and there was no significant military campaign under his reign (see table 1 in appendix 2). This can be a reflection of general economic growth in the Roman economy. As mentioned in the fourth chapter, typology of civic coins, especially under Antoninus Pius and Commodus, reflects vibrant economic life in the city (p. 172, 179-183). Another reason for mint output must have met the demand during local festivals. As is known, Demetria was a special festival celebrated in Nicomedia.¹³¹⁹ Moreover, Severia by commencing the reign of Septimius Severus and koinon festivals were celebrated in Nicomedia along with Nicaea.¹³²⁰

The circulation of countermarked coins is another indicator reflecting the army's movement and local economies. Howgego analyses countermarked coins and concludes that they mostly served three different functions. They are authorization of validity of a coin, changing value of a coin and changing the authority from which the coins were issued.¹³²¹ Countermarks struck in Nicomedia seemingly start under Nero. From the time of Severus Alexander onwards, the city struck denominational countermarks. A laureate head, turned to the right, was used as a countermark on coins of Caracalla and appears on coins of Ancyra, Pessinus, and Nicomedia.¹³²² Countermarks here must have offered a privileged access to actual travels of coins from one region to the other. Thus coins of Nicomedia show troop movements along the roads from Bithynia through

¹³¹⁶ Dabrowa 1980, 80-85.

¹³¹⁷ Leschhorn 1985, 200-216; Debord 1998, 163-164 fn. 241.

¹³¹⁸ Howgego 1985, 66.

¹³¹⁹ *RG* 553-281-283.

¹³²⁰ *RG* 540, 190, Severia Megala on the reverse; for koinon festivals, see Cassius Dio LI 20, 6-9.

¹³²¹ Howgego 1985, 8-10

¹³²² Howgego 1985, 126; Cat No. 110.

Galatia and to the eastern frontier. Nike on the reverse was used on the coins of Nicaea, Caesareia-Germanica, Nicomedia, and Hadriani (Mysia). This countermark was struck on coins of Maximinus in Nicomedia.¹³²³ A circular punch is another countermark attested in the third century. The use of denominational countermarks from the third century onward shows a debasement in the weight of bronze coins in accordance with the decline of the silver currency. Countermark Δ is shared with Byzantium, Perinthus, Amastris, Bithynium, Cius, Heracleia, Nicaea, Nicomedia, and Magnesia in Ionia.¹³²⁴ Countermark H was applied on the coins of Byzantium, Perinthus, Cius, Juliopolis, Nicaea, Nicomedia, Prusa ad Olympum, Philadelphia (Arabia) and all applied after AD 253.¹³²⁵ Nicaea and Nicomedia strike under Gordian III, Pupienus, Valerian, and Gallienus.¹³²⁶ The declining weight standard was caused by the crisis after AD 253, and denominational countermarks increased the face value of coins. Ten *assaria*, as well as four and eight *assaria* countermarked issues were struck under Gordian III and Valerian-Gallienus.¹³²⁷

Coin finds from the eastern *limes* have been interpreted to indicate that the region from the Euxine to Dura Europus, and the hinterland of Pontus, Cappadocia, and Commagene created a 'monetarily homogeneous zone'.¹³²⁸ This zone was dominated by silver and bronze coinage minted locally but under central control in order to meet the needs of the army. Countermarks show the circulation of civic coins of Nicomedia corresponding with troop movements as coins were found along the *limes* in the Balkans and the eastern frontier. The army presence, however, brings out coinage, but does not provide evidence that civic coinage was used for paying the army. A huge logistic infrastructure was required to generate supplies through the area.¹³²⁹ As the passage of the army would have increased temporary demand for products (not necessarily food supply but other needs and extra expenditure of the soldiers)¹³³⁰, trade was also temporarily stimulated. Consequently, coinage was produced to meet this need. Thus it rather indicates economic effect of the army on the cities, which were on its route.¹³³¹

¹³²³ Howgego 1985, 152; Cat. No. 255.

¹³²⁴ Howgego 1985, 274, Cat No. 788.

¹³²⁵ Howgego 1985, 287, Cat No. 821.

¹³²⁶ Howgego 1985, 291-292; Cat No. 833-834.

¹³²⁷ Howgego 1985, 65, 78.

¹³²⁸ Katsari 2011, 199.

¹³²⁹ Mitchell 1993, 250-255.

¹³³⁰ It should be noted that the cities possessed wide variety of all sort of products than the forts. See Karagiorgou 2001, 153.

¹³³¹ Howgego 1985, 30-31.

The typology of the coins reflected increased military activities. The importance of the army itself is evident from the representation of an eagle between two/three field symbols (legionary standards) on coins of Geta, Caracalla and Severus Alexander.¹³³² This type seems to have only issued under aforementioned reigns. In addition to this, three military standards alone are depicted on coins of Julia Mamaea.¹³³³ On coins of Severus Alexander, the emperor on the reverse is depicted with armour¹³³⁴, Caracalla with legionary standards¹³³⁵, with armour holding a spear and with sword crowned by Serapis.¹³³⁶ More examples can easily be seen especially in the reigns which military campaigns were taken place such as Marcus Aurelius-Lucius Verus, Gordian III, Trajan Decius (kneeling enemy in front of him), Valerian (lancing the enemy), Gallienus and Trebonianus Gallus.¹³³⁷ In these coins, emperors are seen galloping and holding a spear in general. An increase in typology related to military activities on civic coins in general draws attention to the military campaigns of the Roman emperors. This indicates that Eastern campaigns played an important role in economic and political life in the city. In the current state of numismatic evidence, it can be said that all these types were particularly used in aforementioned reigns. Typology of the coins also indicates the military unrest or the struggle for the throne in the certain regins e.g. Balbinus and Pupienus.¹³³⁸ A reverse type shows the struggle between Septimius Severus and Pescennius Niger for the throne. In this civil war, Nicomedia supported Septimius Severus (AD 193-211) and guaranteed to supply his army's need, whilst Nicaea supported Pescennius Niger (AD 193-194).¹³³⁹ When Septimius Severus won, he punished the cities which did not support him.¹³⁴⁰ On coins of Nicomedia during the reign of Septimius Severus, the victorious emperor is shown holding a spear in his right hand, trashing his enemies, and rearing up on his horse.¹³⁴¹ There are around a hundred

¹³³² Geta: Eagle between two standards, *RG* 549, 261; Caracalla: Eagle on the altar and between two standards, *RG* 542, 202; *BMC* 188, 53; and eagle between two standards *RG* 548, 249; also Plautilla: Eagle on the altar and between two standards *SNGCop.* 572; Severus Alexander: Eagle between two standards *RG* 558, 327, eagle between three standards *RG* 558, 329-330.

¹³³³ *SNGAul.* 787.

¹³³⁴ *RG* 557, 312.

¹³³⁵ *RG* 547, 240.

¹³³⁶ *RG* 546, 236.

¹³³⁷ Marcus Aurelius-Lucius Verus: *RG* 531, 114; Gordian III: *RG* 564, 368; *BMC* 190, 63; Trajan Decius: *SNGAulN* 7130; Valerianus *RG* 570, 404; Gallienus *SNGAulN* 7143; Trebonianus Gallus *RG* 569, 402.

¹³³⁸ Balbinus: *SNGAulN* 7117; Pupienus: *SNGAul.* 806. In these coins, emperor is seen galloping and holding a spear on the reverse.

¹³³⁹ Texier 1997, 103-4.

¹³⁴⁰ Ruge 1936, 474.

¹³⁴¹ *RG* 541, 198. For the type of the emperor with armour holding a spear and a patera: *RG* 539, 175.

coins from Septimius Severus and this is quite large amount in comparison to other reigns. The struggle must have triggered the issuing of new coins.¹³⁴²

Another reverse type depicted on coins of Antoninus Pius and Gordian III is the image of a bearded artisan, Hephaestus sitting on a stool away to the right and with hammer and tongs (?) and working a helmet lying on a short column in front of him.¹³⁴³ According to Bosch, this must be related to the defence industry in Nicomedia, as Antoninus Pius needed all sorts of military supplies and armour made in the eastern provinces.¹³⁴⁴ Thus, Hephaestus type is less related to the worship of the God, but rather refers to a symbolic representation of defence industry in Nicomedia.¹³⁴⁵ Diocletian also gave orders for building a weapons workshop in the late third century. There was a supply of artisans and sources for such workshops in the city.¹³⁴⁶

As a result, there is a correlation between increased eastern campaigns and minting activity in Nicomedia. There is an increase in the survival of coins from Nicomedia; countermarks and the typology of coins which coincides with the eastern campaigns. Due to debasement in silver coinage, denominational countermarks were applied in the third century and bronze coinage increased to meet the demand for small change by soldiers and traders in consequence of increased trading activities. However, one should approach to the survival of coins with caution, as even some of coins corresponded to the time of military campaigns and emperors' stay, these can also be linked to local festivals or the general economic growth in the Roman economy during the Principate. Thus, there is a delicate line to be certain evaluating the survival of the coins with respect to the reason for coinage.

Emission quantities were also affected by earthquakes and building programmes. The city has been exposed to many large-scale destructive earthquakes from ancient times to the present. One of these occurred in AD 120¹³⁴⁷ during the reign of emperor Hadrian (AD 117-138).¹³⁴⁸ Following this, the emperor contributed greatly to the reconstruction of the city.¹³⁴⁹ This incident was depicted on city coins with the

¹³⁴² Gren notes that there was an increase in commerce and coinage under Septimius Severus, Gren 1941, 137.

¹³⁴³ Antoninus Pius: *RG* 523, 57; *BMC* 181, 14; Gordian III: *SNGAul.* 822.

¹³⁴⁴ *IGR* III, 6.

¹³⁴⁵ Bosch 1935, 280-281.

¹³⁴⁶ Lactantius, *De Mortibus Persecutorum* 7-8, 10.

¹³⁴⁷ Guidoboni 1989, 720-724. In 29 BC, at Nicaea, Nicomedia, Pontus; in AD 69 at Nicomedia; in AD 120-128 Cyzicus, Nicaea and Nicomedia, c. 2nd century, in the reign of Antoninus Pius, in Ephesus, Cyzicus, Nicomedia Bithynia-Hellespont Phrygia in general; in c. 178 Poimananon, Smyrna, Chios, Samos; in AD 180-192 Muduopolis, Nicomedia; in c. AD 269 Nicomedia.

¹³⁴⁸ *TAM* IV 2= *Eustathius ad Hieron* 198 9.

¹³⁴⁹ Harris 1980, 895; Mitchell 1987, 351.

image of the goddess of the city kneeling down before the emperor, and he was honoured as *Restitutor Nicomediae* (re-constructer/builder/restorer of the city).¹³⁵⁰ Coins of Hadrian did not survive in large quantity in Nicomedia. The reason may be a loss of liquidity caused by the earthquake.¹³⁵¹ The earthquakes, however, which occurred under Antoninus Pius and Commodus, can be correlated with the quantity of emissions. As a result, earthquakes and building programmes must have been one of reasons for civic minting.

III. The Circulation of the Civic Coins

Coin circulation alone is not a reflection of trade links, but it reveals a lot about economic activities connected to the trade. Given trading links and traders of Nicomedia examined in the fourth chapter, here the circulation of coins potentially could confirm trading links of the city. It is taken for granted that civic coins were minted to meet the need for low-value transactions between neighbouring cities, and they circulated locally.¹³⁵² According to Howgego, long distance inter-regional circulation of small change was exceptional. Such circulation must have been tied to activities of traders, and the movement of people.¹³⁵³ The army was highly mobilized body of population within the empire. Therefore, the circulation of coins outside a natural geographical area of circulation may have been also related to a specific military action.¹³⁵⁴

According to T. Jones, civic coins generally circulated within a radius of 50 miles (80 km) around the city of origin. Jones called this a *rule of locality*.¹³⁵⁵ For that reason, it is difficult to make economic considerations about inter-regional trade in the Mediterranean based on circulation of those coins.¹³⁵⁶ Museum's collections in Turkey, which provide evidence for local circulation, hoards, excavation finds, and chance finds help to define the distribution of the coins of Nicomedia.

There are different categories to evaluate distribution of the coins within trade and connectivity. According to Hopkins' tax and trade model, there are three categories of trading activities (a) long-distance or inter-regional trade, (b) medium-range or intra-regional and (c) local trade between the countryside and a nearby market town.¹³⁵⁷ L. de

¹³⁵⁰ Ruge 1936, 474; Vollkommer 1992, 905-6.

¹³⁵¹ Bosch 1935, 200.

¹³⁵² Howgego 1994, 7-8, 21; Heuchert 2005, 31-32.

¹³⁵³ Howgego 1995, 101-102.

¹³⁵⁴ Howgego 1985, 20-30.

¹³⁵⁵ Jones 1963, 313-324.

¹³⁵⁶ Heuchert 2005, 31; Mitchell 1993, 242.

¹³⁵⁷ Hopkins 1983b, 84-109.

Ligt suggests a model in the case of Roman fairs and markets of Asia Minor. De Ligt's suggestion for the fairs reflects inter-regional fairs (six or eight weeks), attracted merchants from remote areas (500-1,000 km). The bronze coins found in these cities probably belonged to people who were present in such fairs. Athens and Corinth were large ports attracting numbers of merchants from distant areas. If the coins are found in areas over 500 km from the city that minted them, their origins signify long-distance travels, although number of those coins is low.¹³⁵⁸ Regional fairs were a magnet for people from regions as much as 300 km away. These fairs were held in the countryside, inland cities, or in maritime cities. Merchants and producers used bronze, silver, and gold currencies as a means of exchange. Therefore, as merchants came from different regions, they carried with them small change which belonged to different circulation pools. Established markets in cities located on trading routes also attracted considerable regional trade. Coins minted in neighbouring provinces were found in such markets.¹³⁵⁹ Local fairs were comparatively small-scale commercial meetings for the needs of the population in a restricted geographical area. They would take place either in cities or in the countryside. Local fairs attracted local producers and buyers who were involved in buying and selling rural commodities or urban manufacture. The principal currency in both fairs and regional permanent markets, e.g. Epirus, Macedonia, and Cilicia, was civic coins. The survival of civic coins in any place is an indication of moderately self-sufficient or geographically isolated areas.¹³⁶⁰ As seen, trading activities affected the distribution of small change in the eastern provinces. The scale however, diverges among regions according to the size of the local economy and the requirements of the population. According to Katsari, divisions of inter-regional, regional, and local trade seems to overlap with the three groups of numismatic circulation pools.¹³⁶¹ Katsari divides in to three categories in accordance with the distance the coins covered.¹³⁶² She examines different places which were part of a network that was involved in inter-regional trade in the eastern Mediterranean via the sea routes of the southern Aegean Sea.¹³⁶³ While mentioning the hoards Katsari points out that if coins minted in distant

¹³⁵⁸ Ligt 1993, 88-91. Katsari 2011, 232.

¹³⁵⁹ Ligt 1993, 82-88. Katsari 2011, 232.

¹³⁶⁰ Ligt 1993, 78-82. Katsari 2011, 232-233.

¹³⁶¹ Katsari 2011, 233.

¹³⁶² Katsari 2011, 227. "(a) bronze coins issued in distant provinces, (b) bronze coins issued in neighbouring provinces and (c) bronze coins issued in the same province or city".

¹³⁶³ Katsari 2011, 229.

regions such as Syria and Greece are found in Asia Minor (or vice versa), this may suggest the existence of long-distance trade.¹³⁶⁴

i. Hoards (Figure 49-Appendix 2/Table 5)

Coins of Nicomedia are attested in hoards in six different places in the Balkans. One of them dated to AD 250, found in Elisenia (Eliseyna in Mezdra, close to the legionary base at Novae) in Bulgaria, contains 116 bronze coins from different cities.¹³⁶⁵ There is only one coin of Nicomedia in this hoard. The second hoard dated to Philip or later was found in Tatarevo (south of Philipopolis-Plovdiv) in Bulgaria.¹³⁶⁶ The hoard consists of 36 silver Roman Imperial coins from Domitian to Gordian III, and 75 bronze coins.¹³⁶⁷ There is only one coin of Nicomedia. The third hoard found in Albania (No. 27) consists only of bronze civic coins from Dacia, Moesia, Thrace, and Asia Minor.¹³⁶⁸

The fourth hoard found at Archar¹³⁶⁹ (Colonia Ratiaria, today Bidincko/Vidin, north-west of Bulgaria, close to legionary base at Viminacium) consists of bronze and silver coins including five coins of Nicomedia which were issued under Commodus (1), Septimius Severus (2) (with countermark of bust of Elagabalus), Severus Alexander (1) and Caracalla (1).¹³⁷⁰ According to Gerasimov, the hoard might have belonged to a soldier from Nikaia in Asia Minor who passed Trajanopolis, Stobi, Pautalia, and settled in the town of Ritzaria (now Archar). It is also possible that a merchant from Asia Minor buried the hoard since merchants from Egypt and the East visited the towns in the Lower Danube and Thrace. The burial date seems to be during the time of Severus Alexander. The fifth hoard found at Todoricane, around Pleven (72 km to Pleven, in northern Bulgaria in Moesia, close to the legionary base at Novae) contains two

¹³⁶⁴ Katsari 2011, 19.

¹³⁶⁵ Noe 1937, 109-110, hoard no. 386. Nicomedia (1), Anchialus (7), Callatis (1), Hadrianopolis (10), Odessus (1), Serdica (1), Tomi (1), Augusta Traiana (1), Marcianopolis (40), Nicopolis ad Istrum (41), Viminacium (1).

¹³⁶⁶ Noe 1937, 279-280, hoard no. 1066. It was recorded, as Tartarevo in the Noe's catalogue, however, there is no place called Tartarevo in Bulgaria. This may well be Tatarevo which is located in the south of Plovdiv (Philipopolis) since disposition of the hoard is specified in Philipopolis Museum.

¹³⁶⁷ Nicomedia (1), Nicaea (2), Serdica (16), Deultum (36), Bizya (1), Pautalia (9), Hadrianopolis (1), Augusta Traiana (2), Anchilau (1).

¹³⁶⁸ Noe 1937, 19-20, hoard no. 27. Jones 1963, 314, Table 2. Marcianopolis, Nicopolis ad Istrum, Viminacium, Odessus, Tomi, Hadrianopolis, Pautalia, Philippopolis, Serdica, Augusta Traiana, Trajanopolis, Sebastopolis, Heracleia, Nicomedia, Nicaea and Juliopolis. Number of coins was not listed in Noe's catalogue.

¹³⁶⁹ Gerasimov 1955, 605-606. A farmer found a pot containing silver and bronze coins while ploughing his field and sold to Museum of Vidin. It contains 382 coins.

¹³⁷⁰ Gerasimov 1955, 605-606. Civic Coins: Nicaea (29), Mylasa (1), Flaviopolis (1), Nicomedia (5), Juliopolis (1), Alabanda (1), Corinth (1), Stobi (29), Pautalia (7), Philippopolis (2), Marcianopolis (4) and Trajanopolis (3).

Nicomedian coins found in a pot.¹³⁷¹ The hoard consists of only bronze coins.¹³⁷² The last hoard attested at Edinakovci, around Kolarovgrad (113 km to Kolarovgrad, west of Varna, Shumen/Northern Bulgaria, close to the legionary base at Durostorum) consists of 476 bronze civic coins.¹³⁷³ The hoard contains three coins of Nicomedia, which were issued under Severus Alexander (1), and Julia Domna (2).¹³⁷⁴ In addition to the hoards, Howgego's work on circulation of countermarked coins shows the connectivity and mobility of the Nicomedians. In the Western Euxine countermark 626 applied after AD 222-225, including coins of Nicomedia is attested at Odessa.¹³⁷⁵

Coins were hoarded for economic and religious/ritual reasons in antiquity. The hoards listed above seem to not to conform to religious reason. Hoards occur as accidental losses, emergency hoards, saving hoards and abandoned hoards.¹³⁷⁶ Although their actual context is obscure, the hoards listed belonged to soldiers, travellers, or merchants. A hoard containing higher value denominations shows the economic and social status of the owner. Bronze coins were hoarded more commonly than silver and gold, and people from lower social strata usually used bronze coins. Hoards also illuminate the exchange system and monetary economy. Existence of gold, copper, and silver coins in the same hoard was an indicator of highly monetized economy.¹³⁷⁷ With this respect, Tartarevo and Archar hoards are distinctive in terms of the level of monetary economy as they contained both bronze and silver issues. However, the majority of hoards mentioned largely consist of bronze coins, and this suggests the usage of low-value transactions and possession of lower strata. Edinakovci (382) and Archar (476) hoards contain a considerable number of coins.

Hoards can be examined within three periods, which are the Antonine (Trajan-Commodus), the Severan (Septimius Severus - Maximinus Thrax), and the Military Anarchy (Gordian III - Gallienus). Within those periods, regions can be divided into two categories which are militarised (a number of troops stationed) and less militarised

¹³⁷¹ In the village near Todorikane, a farmer found a pot of bronze coins while ploughing. The rest of the hoard is not available and dates of coins were not specified in the catalogue. Coins are from Pautalia (35), Serdica (90), Augusta Trajana (25), Philippopolis (11), Nikopolis ad Nestum (3), Perinthus (4), Trajanopolis (3), Mesembria (1), Nicomedia (2) and Nicaea (1).

¹³⁷² Gerasimov 1959, 363.

¹³⁷³ The hoard was found by chance in the village; in the same area ceramic fragments are attested, and it is believed that an ancient settlement existed there. Callatis (1), Marcianopolis (192), Nicopolis ad Rositsa/Istrum (?) (222), Odessos (3), Tomi (7), Augusta Traiana (1), Hadrianopolis (16), Anchilaus (8), Byzantium (3), Serdica (1), Philippopolis (5), Nicomedia (2).

¹³⁷⁴ Gerasimov 1962, 236.

¹³⁷⁵ Howgego 1985, 39.

¹³⁷⁶ Katsari 2011, 15.

¹³⁷⁷ Katsari 2011, 11.

or peaceful regions (few soldiers pass through or stationed permanently).¹³⁷⁸ Elisenia and Tartarevo hoards belong to the time of Military Anarchy. Edinakovci (close to legionary base at Durostorum) and Archar (colonia after Trajan) are from the Severan period. The majority of coins are from ancient cities in the Balkans and the number of coins of Nicomedia in the hoards was limited (from 1 to 5). The locations of these hoards seem to have been town centres around the legionary bases. Forts were usually located in the middle of Roman countryside and fairs took place in nearby villages. In the provinces of Dacia, Pannonia, Moesia, and western Syria there were more excavation coins attested in the urban centres and fortress cities than in forts. Therefore, soldiers took part in the exchange of commodities not only for different kinds of food products but for also some other needs.¹³⁷⁹ It is worth examining whether the coin circulation of Nicomedia was triggered by these trading activities of merchants from Nicomedia. To do so, the circulation pattern of the coins needs to be examined.

There were two major routes starting from the colony of Emona. Although it is longer than the other route, Poetovio line was highly preferable. The hoards follows the northern major route passing from Poetovio (Ptuj) and reaching Singidunum, Viminacium where eastern part of the northern frontier starts and followed the colonies at Ratiaria (Archar), Oescus and legionary bases at Novae and Durostorum (Silistra). The route follows the Black Sea coast, Deultum (near Burgas), then turned to inland access and joins Hadrianopolis, Byzantium and ends at Nicomedia.¹³⁸⁰ Thus, besides the Albanian hoard (on the Via Egnatia) circulation of hoard coins the line along with the Danube (Volga), the northern frontier and major route between Poetovio-Nicomedia.

Furthermore, there are coins from sea-oriented cities in the hoards.¹³⁸¹ Although other hoards contain harbour cities' coins near militarised areas, the Archar hoard differently presents some western Anatolian cities and Corinth where there is no connection with the army or the legionary bases. The majority of coins in the Archar hoard suggest that owner was from Nicaea and it is the hoard containing the highest

¹³⁷⁸ Katsari 2011, 12.

¹³⁷⁹ Katsari 2011, 215-220. Verboven 2007, 295-313. Verboven suggests that soldiers created a business class in the northwestern provinces. In addition, Rathbone confirms soldier's involvement in trade. Rathbone 2009, 302.

¹³⁸⁰ Wilkes 2005, 237-238.

¹³⁸¹ In Elisenia hoard, there are coins of Anchilais, Callatis, Odessus, Tomi and majority of coins is from Marcianapolis; in Tartarevo hoard, Deultum, Anchilais, and most of coins is from Deultum. In Albania hoard, Odessus, Tomi, Heracleia Pontica, Trajanopolis; in Archar hoard, civic coins are from Mylasa, Alabanda, Trajanopolis, Corinth and strikingly most of coins are from Nicaea and Stobi. Todorican hoard contains coins from Perinthus, Trajanopolis, Mesembria, and majority of coins are from Serdica, Augusta Trajana and Pautalia. Finally, Edinakovci hoard contains coins of Byzantium, Anchilais, Tomi, Odessus and Callatis and majority of coins are from Nicopolis ad Rositsa and Marcianopolis.

number of Nicomedian coins (5). The hoards therefore seem to have belonged to a trader who visits periodic markets in aforementioned cities in the Balkans.

There are few coins from Nicomedia in the hoards in general and those few coins must have been for paying for lodgings, tolls, or other petty services made by merchants, soldiers, or travellers. This is consistent with general tendency as merchants carried money with them for transportation costs, small taxes (*portoria*) and their personal needs. Not only merchants but also the crewmembers of ancient ships often carried small amounts of coin in order to meet their needs. Thus, exchange has taken different forms, e.g. monetary exchange, credit, barter, and futures. As seen, there were a variety of mediums in trade and metal coinage was only one of them. Thus, the presence of coin hoards and excavation finds, which were found close to emporia, ports, or urban centres, only presents “an undefined percentage of the actual means of transaction in antiquity”.¹³⁸² Even if the hoards belonged to soldiers on the Danube frontier, they could be interpreted as indicating trading activity. A recent study done by Verboven suggests that soldiers created a business class in the north-western provinces. Thus, the presence of Nicomedian coins in the Balkans could also indicate this aforementioned ‘business class’.¹³⁸³ Furthermore, Rathbone confirms soldiers and veterans to have been one of the groups conducting trading activities in the Empire.¹³⁸⁴

As bronze coinage rarely circulated away from the mint, the distribution was mostly within a maximum radius of 100-200 kilometres. Katsari suggests that bronze coins can be found as far as thousands of kilometres away from the provenance and this indicates a long distance movement of people and goods.¹³⁸⁵ The distances are between Nicomedia and Elisenia is 750 km, between Tatarevo is 480 km. Moreover, the distances between Nicomedia and Archar is 840 km, Nicomedia-Todoricane is 660 km, Nicomedia-Edinakovci is 570 km, Nicomedia-Tirana (Albania) is 1100 km, and Nicomedia-Odesssa is 1020 km. The hoards not only refer to inter-regional circulation of civic coins of Nicomedia, but also long-distance inter-regional trade. The Albanian hoard must have been connected to shipping route between Nicomedia-Salona, and Edinakovci hoard is close to Tomi, which is commercially connected to Nicomedia by sea. Nicomedian traders, ship-owners, and marble workers are attested especially at Tomi (see Chapter IV, Marble Trade in Nicomedia). The nature of their presence reflects independent activities of entrepreneurial individuals from Nicomedia rather than

¹³⁸² Katsari 2011, 184, 186.

¹³⁸³ Verboven 2007, 295-313.

¹³⁸⁴ Rathbone 2009, 302.

¹³⁸⁵ Katsari 2011, 20, 28.

a connection with the army supply. A lead weight from Nicomedia dated to AD 235-236 (Maximinus Thrax) was found in Šapine (modern Malo Crniće, Serbia) which is northwest of legionary base at Viminacium and may indicate a probable *annona* service of Nicomedia or the trading activity of an individual from the city.¹³⁸⁶

As Jones indicated the frequency of issues not only from Nicomedia, but also from Nicaea shows the importance of those mints as well as the trade relations of their area with the Balkans.¹³⁸⁷ It is striking that coin hoards in the Balkans indicate that the circulation of coins of Nicomedia and Nicaea were similar. Both Nicomedian and Nicaean coins are attested in the hoards at Albania, Tatarevo, Archar, and Todoricanë. In fact, a large hoard found at Nicomedia mostly consists of coins of Nicomedia, Nicaea and a few coins of other cities.¹³⁸⁸ Countermarked coins (Group A-C) indicates that coins of Nicomedia widely circulated in Nicaea. Furthermore, the coin circulation area around Nicomedia and Nicaea is mostly common with the ‘operational area’ of die engravers who are supposed to be from the workshop at Nicomedia.¹³⁸⁹ Howgego explains that Nicaea needed to use the harbour at Nicomedia. Although there is no evidence for *homonoia* between Nicaea and Nicomedia, Dio Chrysostom implies harbour rights given to Nicaea.¹³⁹⁰ On the other hand, the circulation of coins did not always show trade, but the movement of people. In this case, the Nicaeans were present at Nicomedia more than the Nicomedians at Nicaea. An economic contact however is attested in Dio Chrysostom’s speech from the first century AD. Dio speaks of exchange of produce, friendship, and proxeny between two cities under the Principate.

An overview clarifies the economic relations between Nicomedia as well as other Bithynian cities and the western Black Sea region. The development of urbanisation in Thrace together with land route among Serdicca-Hadrianopolis-Perinthus and Byzantium, and the multiplication of monetary emissions indicate important economic ties between Thrace and Bithynia.¹³⁹¹ Correspondingly, E. Gren diagnosed a considerable strength of the presence Bithynian cities under the Empire in the Kingdom of Bosphorus, which was exclusive and had not been the case in earlier periods.¹³⁹² In the late first century AD, Roman power subjugated the Kingdom of Bosphorus and this provided security in the Western Black Sea and facilitated trading

¹³⁸⁶ *SEG* LV 1374. It is a litra, which weighs 494.06 gr.

¹³⁸⁷ Jones 1963, 315.

¹³⁸⁸ See Introduction of *SNG Aul.* It is reported that Aulock’s coins published there belonged to a big hoard, which was scattered by dealers. Howgego 1985 40, 66, fn. 88. Jones 1963, 336, fn. 80.

¹³⁸⁹ Howgego 1985, 41.

¹³⁹⁰ Dio Chrysostom, *Orationes* XXXVIII 22; 32; Howgego 1985, 40-41.

¹³⁹¹ Gren 1941, 25-26; Fernoux 2004, 271.

¹³⁹² Gren 1941, 89-158.

activity throughout the region.¹³⁹³ The kings of Bosphorus were paying annual tax to the Empire and the delegates from the kingdom were paying the tribute to an embassy (Nicomedia?) in the province of Bithynia-Pontus.¹³⁹⁴ A marble sarcophagus found in the western necropolis of Nicomedia belonged to *Boosporanoi* who were apparently traders.¹³⁹⁵ It is clear from the epigraphic evidence that a close relationship appears to exist, and the pacification of the Balkans region and expansion of the Roman protectorate in the Bosphorus must have been intensified trade between these regions and Bithynia.¹³⁹⁶

In addition, the needs of the army in the frontiers must have triggered inter-regional trade between Bithynia and South Russia and the Western Black Sea. Bounegru presents epigraphic evidence revealing the character of bi-univocal business relationships established by the cities in the Western Black Sea, especially Tomi, with the cities of Bithynia, which were mainly Prusias ad Hypium, Nicaea, and Nicomedia. Trade relations between the Western Black Sea cities and Bithynia are important example of the centripetal tendencies of the economy in the Black Sea.¹³⁹⁷ Bithynian cities including Nicomedia already exported their wide range of products, including timber, textiles, marble (which can be traced in Nicopolis ad Histrum, Olbia and Romanian Tirusor), and also skilled labour in the form of Nicomedian masonry and craftsmen. Prusias ad Hypium via its emporion, Dia, widely marketed its wood to the cities of northern Black Sea. Apamea, exported olive oil to its immediate neighbours and Perinthus' export item was wheat.¹³⁹⁸ Within this wide range of products, Bithynia feed the frontiers privately and Nicomedia as a provincial capital played an important role as an outlet.

Supplying the army was an extraordinary business and the state did not depend on private entrepreneurs completely.¹³⁹⁹ Indeed, the term of *parapompé* recorded in the honorary inscriptions dated to the 2nd and 3rd centuries was examined recently in the case of Bithynian cities. However, there was no mention of any payment in order to accompany the emperor or army's passage during the Parthian campaigns. These

¹³⁹³ Speidel-French 1985, 97-102. According to Speidel and French inscription found in Sinope shows that the kingdom of Bosphorus both economically and militarily belonged to Province of Bithynia, not Moesia since AD 48.

¹³⁹⁴ Lucian 57; Zosimus, *Historia Nova*, I, 31, Fernoux 2004, 256.

¹³⁹⁵ Braund 2005, 127. Aristodemos Taureos, Lykos Aristodemos and their brothers Sambionos Aristodemos and Sambionos Taureos. Marble sarcophagi found in the construction work in Yenidoğan neighbourhood. Şahin 1974, 62, Nr. 36. *TAM IV* 239.

¹³⁹⁶ Gren 1941, 89-158.

¹³⁹⁷ Bounegru 2007, 37-46.

¹³⁹⁸ Fernoux 2004, 273.

¹³⁹⁹ Mitchell 1983b, 138.

inscriptions had been interpreted as an indicator of increased military burden in the cities in the crisis of the third century. There are three inscriptions attested in Nicomedia, and it seems that *parapompé* was an honorary duty simply meaning, ‘escort’.¹⁴⁰⁰ From this point of view, the epitaph of the *annoarch* Glykon found in the territory of Nicomedia showing army supply provides exceptional evidence, even if it was not a liturgic duty within the *parapompé*.¹⁴⁰¹ On the other hand, as explained in the methodology chapter, Gren takes no notice of sea transportation which was cheaper and easier. For example, not only Nicomedia itself, Ephesus and other south-western cities in Anatolia must have exported products to the frontiers by sea.¹⁴⁰² Therefore, the Roman state must have separately organized and operated the *annona* service; and the cities on the army route, like Nicomedia, had only an auxiliary role. Nicomedian traders were free to sell and offer wide range of products in the urban markets of militarised regions, which is centre of high-level consumption.

Gren’s argument is plausible if one takes dynamic role of Nicomedian traders and ship-owners in trading and providing services for the army between frontiers. As pointed out in the fourth chapter (p. 216-217), the absence of the *Corpus Naviculariorum* in the eastern empire, indicates that the *oikoi ton naukleron* in Nicomedia, Tomi and Amatrix partly took part in the *annona* service.¹⁴⁰³ Especially the shipping route between Nicomedia and Tomi must have facilitated transportation of the *annona militaris* and its distribution from Tomi through the legions (Troesmis, Durostorum, Novae) by means of the river Danube. Nicomedia especially had advantages as the city built large cargo ships, which were suitable for the *annona* service and carrying bulky items. However, as a *corvée*, it is less likely that it was a stimulus in the economy of any city. Thus, even if the ship-owners association of Nicomedia would operate partly in the *annona* service, they must have benefited from privileges, exemptions etc.

¹⁴⁰⁰ Schwarz-Stauner 2007, 1-35.

¹⁴⁰¹ First, the epitaph dated to Parthian Campaigns of Gordian III or Severus Alexander. It has been suggested to earlier date, as there is no pseudo-praenomen by Mitchell. *SEG* XXXIII 1085 and 1558. *TAM* IV 189. Recently, K. Buraselis supports Mitchell’s argument and explains “legiones a and b” as Prima and Secunda Parthica which was established by Septimius Severus during the early Parthian expeditions. *SEG* XLV 1690.

¹⁴⁰² Karagiorgou 2001, 129-166. The article presents amphorae carrying primarily olive oil, whose cultivation is very limited in the Balkans found in North Balkans, which traded from Aegean during the Late Antiquity.

¹⁴⁰³ Bounegru 2007, 195.

ii. Excavated coins (Figure 49-Appendix 2/Table 6)

Coins issued by Papirius Carbo in Nicomedia were found in Sardis excavation and in Olympia excavation (1910-1911).¹⁴⁰⁴ Moreover, a coin of Maximinus Thrax in the Dura excavation, a coin of Macrinus in the sanctuary of Apollo Hylates at Curium (Kourion)¹⁴⁰⁵, and a coin of Septimius Severus (or one of his family members including the reign of Caracalla) and a coin of Nero at Corinthian Forum are attested.¹⁴⁰⁶ A coin of Marcus Aurelius was unearthed in the Athenian Agora.¹⁴⁰⁷ Athens, Curium, Corinth are distinctive as sea-oriented cities. Dura was in the militarised area, but also was the first stop for the caravans on the route from Mesopotamia to Syria.¹⁴⁰⁸ The periods of the finds are the Severan period and the Military Anarchy and the find spots reflect inter-regional circulation of coins and trade. Distance between Nicomedia and Athens is 1190 km, and Nicomedia and Corinth is 1260 km. Again, the distance between Nicomedia and Dura and Curium is more than 1000 km. Curium was a city in Cyprus located on the sea routes, which connect the harbours of Syria and southern Asia Minor with the harbours of Greece.¹⁴⁰⁹ If the coins are found in areas over 500 km from the city, their origins indicate long-distance travel. According to Ligt's model, Athens and Corinth were large ports attracting numbers of merchants from distant regions (500-1,000 km) with their inter-regional fairs.¹⁴¹⁰ Both hoards and excavation coins confirms as the distance is minimum 500 km and maximum over 1000 km from Nicomedia.

Although there are differences between Hellenistic times and in Roman times, the circulation of coins of the Hellenistic kingdom of Bithynia also indicate established connections in an earlier period. As explained in the second chapter the kings sought to set up political and economic relations with Greek islands, the Greek mainland, and with the Ptolemies in the east. Numismatic evidence confirms these relations.¹⁴¹¹ First coins are attested in the museum collections, of İstanbul, İzmir, Sakarya, Bursa, Bolu, İznik, Amasya, and Amasra. These museum collections do not specify the provenance of the coins, but as local inhabitants mostly sold these coins to the museums, it is generally accepted that they were found in or around the city where the museums are located (appendix 2/table 7). Secondly, Hellenistic coins were found in the excavations

¹⁴⁰⁴ Johnston et al. 1981, 27; Stumpf 1991, 63, 120q.

¹⁴⁰⁵ Cox 1959, ix.

¹⁴⁰⁶ Jones 1963, 322, Table 5; Fisher 1984, 220.

¹⁴⁰⁷ Katsari 2011, 227, fn. 107; Kroll 1993, 858-860.

¹⁴⁰⁸ Sartre 2005, 194.

¹⁴⁰⁹ Katsari 2011, 229. Far eastern goods from China, India, Scythia, could only enter the Roman Empire by either across Northern Syria or up the Red Sea under the Principate.

¹⁴¹⁰ Ligt 1993, 88-91.

¹⁴¹¹ Fernoux 2004, 61-62, Table 1.

and hoards (appendix2/table 8, figure 50).¹⁴¹² The burial dates of these hoards are in the second and first centuries BC. Hoards buried in time of Prusias II and Nicomedes IV are in majority. Most of the coins found in the hoards belong to Prusias II. As seen, the coin circulation of Hellenistic coins broadly confirms civic circulation, and indicates links that were already established under the Kingdom of Bithynia. The circulation ranges from Italy to Azerbaijan and this includes wider circulation area than the Roman times. Thus, the circulation pattern of Hellenistic coins also indicates inter-regional, regional, and local levels of connectivity.

iii. Chance/Stray Finds (Figure 49-Appendix 2/Table 9)

As seen in the table 1-4 (see, Appendix-2, and figure 49), civic issues circulated in local level as coins are attested in İstanbul, İznik (Nicaea), Bolu (Claudiopolis), Bursa (Prusa), Sakarya and Konuralp (Prusias ad Hypium) Museums. Civic issues are rarely attested in the outside of the province such as Amasya (Amaseia), Amasra (Amastris), Izmir (Smyrna), Çorum, and Ankara (Ancyra) Museums. Museum collections show local and regional circulation of civic coins in Asia Minor.¹⁴¹³ Both collections in Europe and Turkey, provenance of coins were not specified. Especially collections in Turkey mostly contain coins, which were sold by local inhabitants.¹⁴¹⁴ In the collection of the Bibliothèque Nationale de France, provenance of a coin of Vespasian was specified from Cytonia/Chania in Crete.¹⁴¹⁵

Jones' circulation work also includes coins of Nicomedia. There are three categories specified by Jones as hoards, excavation coins and chance finds. In chance finds category coin of Julia Domna in Gaza (trading post and port city close to legionary base at Hierosolyma/Jerusalem, coin of Septimius Severus in Cerasus (Giresun-Pontus), and coin of Caracalla is attested in Sinope, Amisus, Flaviopolis and Anazarbus.¹⁴¹⁶ Coins of Caracalla may have also been related to Caracalla's campaign to the east and the emperor's stay in Nicomedia in AD 214/5.¹⁴¹⁷ In Baia near Lake Golovita, which is connected to the Black Sea in the south of Tulcea (Romania), and close to legionary

¹⁴¹² Thompson-Mørkholm-Kraay 1973, 1281-1467, see also Nr. 332, 906, 971, 973, 1537, 1539, 1562, 1772, 1745, 2056. *Coin Hoards VIII*, 1994, 51, Nr. 442; *Coin Hoards VIII*, 1994, 50, Nr. 433; *Coin Hoards II* 1976, 29, Nr. 90; *Coin Hoards VI* 1981, 15, Nr. 37.

¹⁴¹³ Majority of coins from the museum collections in Turkey are dated to the reign of Antoninus Pius, Commodus, Severus Alexander, Maximinus Thrax, Septimius Severus, Gordian III, Caracalla, Trebonianus Gallus, Gallienus and Salona.

¹⁴¹⁴ For the difficulties of using museum material, see Katsari 2011, 32.

¹⁴¹⁵ Collection of the Bibliothèque Nationale de France 1992/1168.

¹⁴¹⁶ Jones 1963, 327, Table 8. Regarding Flaviopolis and Anazarbus, it should be noted that a 40-day fair held at Aegeae in Cilicia, and this attracted merchants from the west. Light 1993, 255.

¹⁴¹⁷ Johnston 1983, 58-76.

base at Troesmis, a coin of Lucius Verus was found.¹⁴¹⁸ The location (but maybe not the exact provenance) and the date of coins attested in the Turkish Museums and Jones' list mostly indicate that the Severan and Military anarchy periods were when the emission of civic coins increased. A coin of Carbo is also known in the collection of Moravia Museum.¹⁴¹⁹ Therefore, along with the excavation coins above, stray finds from the militarised area suggest that there was a monetary exchange between the city and the eastern frontier as well as northern frontiers, which was confirmed by the hoards. In addition, it should not be ignored that coins from the reigns of Antoninus Pius and Vespasian are attested. Coins from Gaza, Baia, Crete, İstanbul, Amastris, Amaseia, and Smyrna may also have been related to trading activity, as they are sea-oriented cities. As is known, Hadrian had established an annual fair at Gaza.¹⁴²⁰ Ankara was a key point of the eastern road system, which facilitates movement of people and commodities.¹⁴²¹ Distances between Nicomedia and Baia/Tulcea is 750 km, between Cytonia/Chania (Crete) is c. 1500 km, and between Gaza is c. 1200 km. Nicomedia was 817 km away from Cerasus, from Sinope 510 km, and from Amaseia 577 km. The distance between Nicomedia and Anazarbus and Flaviopolis is c. 930 km, and between Çorum is 500 km. They reflect long distance travel and inter-regional economic activities. Nicomedia was 460 km away from Smyrna, from Ankara 340 km, and from Amasra 357 km. All of these locations indicate regional travels and trade. There coins from Konuralp (110 km), İznik (80 km), Sakarya (47 km), Bolu (162 km), Bursa (138 km) and İstanbul (110 km) and they point to local trade and travel. The number of coins of Nicomedia attested in chance finds is remarkably higher than excavation finds and hoards. The number of civic coins attested in chance finds as well as hoards and excavations normally increase by approaching to the city.

IV. Conclusion

There are three important results derived from the survival, typology, and circulation of civic coins of Nicomedia. As mentioned in the fourth chapter, Nicomedia's trade was conducted through the Black Sea, the Aegean Sea, the Eastern Mediterranean, and also the central Mediterranean.¹⁴²² First, coin finds generally

¹⁴¹⁸ Dima-Popescu 2003, 369. Nr. 15. Pl. II.

¹⁴¹⁹ Stumpf 1991, 63, 120ae.

¹⁴²⁰ Lig 1993, 256.

¹⁴²¹ Katsari 2011, 229.

¹⁴²² Bounegru 2006a, 1566.

corresponding to these directions of trade in the Mediterranean and shipping lanes.¹⁴²³ Furthermore, it is consistent with the distribution of the city's commercial exports, such as marble, and with epigraphic attestations of Nicomedian ship-owners, traders, and marble workers. The circulation of civic coins of Nicomedia therefore confirms local, regional, and inter-regional connectivity and trade. Secondly, alliance coins support the view of economic relations between Nicomedia and the cities in Thrace and Asia Minor. The circulation of *koinon* coins also reveals the role of the Bithynian assembly in trade and travel.

The third result is the coinage of the city correlates with the eastern campaigns. Special emphasis on military types and increase in issued coins related to military campaigns are seen especially in the first half of the third century when compared with other reigns. The troop movements must have triggered temporary trading activities, thus the city minted more coins to meet small change requirements for these transactions. Moreover, the circulation of civic coins of Nicomedia along the eastern and northern frontiers and a lead weight found in Moesia confirm monetary exchange between highly militarised regions and Nicomedia. Thus, as Gren suggested Nicomedia must have played an important role as a trading city in the frontiers. It seems that Nicomedia was also involved in transportation of the *annona*, but it is less likely that the city minted bronze coins to pay the army and conducted actual business of the army supply. The circulation of Hellenistic coins confirms the evidence of written sources that political and economic initiatives by Bithynian kings facilitated the development of trade in the Hellenistic period. When Roman rule started in Nicomedia and in the province, in general there were already established economic contacts between the city and the Empire. As trading activities between the Black Sea region and Nicomedia started before the Roman rule, the role of the army in the economic development of Nicomedia should not be exaggerated.¹⁴²⁴ What Roman rule brought was the *Pax Romana*. The peaceful political integration of the Mediterranean provided security for maritime trade even if it is not clear that the Roman emperors actively sought to develop trade. Therefore, it is likely that the city enjoyed good growth under the High Empire.

¹⁴²³ Giacchero 1974, 220-227 and 31-312; Mitchell 1983b, 138.

¹⁴²⁴ Fernoux 2004, 61-62, Table 1.

CHAPTER VI

Concluding Analysis

This study has investigated the resources and the economy of Roman Nicomedia focusing on its production, consumption, and distribution patterns within some important methodological considerations. It challenges the perception of the self-sufficiency and rarity of mixed economies in the case of Roman Nicomedia by using existing primary and secondary sources. Finally, it has examined the positive and negative role of the Roman army in the urban economy.

One of the most significant findings to emerge from this study is that it is likely that the city could barely have fed the total population, and consequently it was probably not entirely a self-sufficient agricultural city. It seems that Nicomedia's capacity to produce not only grain but also olive oil was insufficient to meet the needs of the estimated population. Archaeological evidence indicates olive oil imports to the city in the late antiquity. On the other hand, viticulture potentially must have met local wine consumption and even can be considered as an export item.¹⁴²⁵ The testimony of amphorae, however, shows that the city imported Aegean wine from the Hellenistic period onwards. Agriculture and viticulture together were part of the economic basis of Nicomedia, but did not cover all its needs. This challenges the prevailing view of self-sufficient agricultural cities, which reduces the role and scale of trade and trading elite in the cities.

More importantly, as far as landowners and landownership pattern are concerned, the existing evidence indicates that there was no large landownership and Imperial estates in Nicomedia. The Bithynians of Thracian origins, who were the earlier inhabitants of the city as well as the region, prevailed as distinctive landowners in the city from the pre-Hellenistic period onwards. The local pattern of landownership indicates small and middle-sized properties scattered in the territory of Nicomedia. This possibly created few opportunities for foreign penetration and investment in the city. On the other hand, the result regarding carrying capacity showed that the land possessed by the city did not allow inhabitants to make profit from agricultural products and even needed to be supplied with grain from time to time. Therefore, it was suggested that almost half of the Nicomedians (approx. up to 30-50%) had to seek other civic resources and opportunities to earn money. This shows that production and

¹⁴²⁵ Xenophon, *Anabasis* VI 4, 4-6.

consumption patterns of the city stimulated the development of non-agricultural sectors.

The second major result was that the city was a combination of a commercial, service, producer city and that of consumer city. According to the results, Nicomedia was a consumer city to a certain extent. Even though local produce was insufficient to feed its total population, it should not be ignored that the city relied on local produce to a considerable extent. An archaeological study comparing imports and local produce in the town to what was happening in the countryside would reveal a more precise picture.

Economic activity at Nicomedia suggests that the city should mostly be considered as an example of a commercial and producer city. Firstly, timber and timber products potentially were export items. Among them the construction of cargo ships, which were essential in the transportation business, seems to have generated important income. This also allowed Nicomedia to have been one of the most prominent port cities in sea transport. As mentioned, construction of these ships seems to have been limited to Nicomedia and Alexandria in the Eastern Mediterranean. The second export item, marble, was also important. The diffusion of Kutluca and Vezirhan marbles attested in Asia Minor, Italy, North Africa, Greece, and Balkans proves that marble was an export product. Associations of Nicomedian sculptors, marble workers, and architects confirm that the city provided artisans working Proconnesian marble and others. A further export item seems to have been slaves, and possibly the city was an outlet for the slave trade.¹⁴²⁶ Finally, the Nicomedians probably have exported wine and fish products (*garum* etc.), although there is no archaeological evidence for this.

The existence of Nicomedian ship-owners and captains (including the association of *naukleroï*) in the Mediterranean confirms that they made great profit from transportation services. Eventually, the distribution of ship-owners, traders, and artisans matches the diffusion of marble exports and shipping lanes from Nicomedia. The results show that trade and especially transportation played the greatest part in the economic basis of the city. Therefore, the city seems to have gained significant wealth from non-agricultural activities. Overall, the evidence indicates intensive commercial activities and a high level of connectivity in the High Empire.

Moreover, the current evidence about landowners does not indicate a wealthy and powerful urban elite in the city. Thus there were lucrative business opportunities for the entrepreneurs. In fact, the epigraphic evidence for forty ship-owners, captains,

¹⁴²⁶ Xenophon, *Hellenica* III 2, 2-3; Xenophon, *Anabasis* VI 6, 37-38; Xenophon, *Anabasis* VI 6, 1-4; Diodorus of Sicily XXXVI 3.

merchants, and marble workers, indicates that there was a significant and relatively well-off group of people belonging to the upper-middle class. They were fully involved in trade and transportation for external markets. The association of shipowners seems to have been powerful trading group in the urban economy. However, it is difficult to accept that these people alone formed a trading and manufacturing elite in the city within the producer model. When it comes to the elite's involvement in ships and trade, even if Nicomedian ship-owners were mostly independent entrepreneurs, borrowing money for their cargos was indispensable. The epigraphic evidence presents evidence for moneylenders in the city without indicating their names and status. It is very likely that they were part of the wealthy urban elite. Finally, the urban elite must have employed freedmen or slaves as agents in their trading activity. As a result, the commercial activities conducted by the urban elite remain in the shadow due to lack of direct evidence.

Another important finding was support from the numismatic evidence for Nicomedian trading activities conducted through the Black Sea, the Aegean Sea, and the Eastern Mediterranean, and the central Mediterranean in the city.¹⁴²⁷ Coin finds generally match the trade patterns and shipping lanes of Nicomedia in the Mediterranean.¹⁴²⁸ Furthermore, it is consistent with the diffusion of commercial exports, at least marble, and with the epigraphic attestations of Nicomedian ship-owners, traders, and marble workers. The circulation of civic coins of Nicomedia, and of *koinon* coins therefore confirms local, regional, and inter-regional connectivity and trade. Moreover, the circulation of Hellenistic coins and evidence from written sources also confirm the development of trade in the Hellenistic period. Before Roman rule in Nicomedia and in the province, there were already established commercial contacts. The numismatic data shows that Nicomedia was in connection with the cities not only in Asia Minor but also in Italy, Greece, North Africa, Syria, the Balkans, the Black Sea coast, and Southern Russia. A natural result of this for Nicomedia was to become the centre of all sort of goods and services.

Finally, the survival, typology, and circulation of civic coins correlate with Roman eastern campaigns especially in the first half of the third century. Army passages, emperors' stays, and the presence of the Roman fleet seem to have caused changes in the consumption patterns and affected the distribution patterns of the city's products. Troop movements led to temporary trading activities, and therefore the city

¹⁴²⁷ Bounegru 2006a, 1566.

¹⁴²⁸ Giaccherio 1974, 220-227 and 31-312. Mitchell 1983b, 138.

minted more coins to meet the need for small change in these transactions. The existence of monetary exchange attested in the frontier zones shows that Nicomedia must have played an important role in trade with the highly militarised eastern and northern provinces. Moreover, the association of *naukleroi* at Nicomedia must have been partly involved in the *annona* service. The shipping lane between Nicomedia and Tomi likely facilitated the service. The evidence from this study therefore, shows that the city conducted a mixed economy and commercial activities seemingly occupied the biggest portion in the economy. Nevertheless, although they are helpful in evaluating economy of ancient cities, one-dimensional models, e.g. consumer-producer city types over-simplify the 'real' situation, which was more complex.

The distribution pattern around the city was formed by the transport of local, regional, and inter-regional sources and the *annona* service. As for the question posed in the first chapter about economic behaviour and the market economy suggested by Temin, Nicomedia seemed to have been involved in redistribution-command behaviour-centric transfers by means of the *annona* service provided by the ship-owners association. Not only command behaviour, but also market exchange-centric transfers-instrumental behaviour was conducted through the distribution of local, regional, and inter-regional commercial goods. By commencing systematic excavation in the city, more archaeological finds are very likely to shed light on actual trading patterns and prove the importance of commercial commodities, which have been suggested as export and import items in this research. Returning to the question of economic growth posed in the first chapter, the results indicate that economic activities of Nicomedia were mostly weighted to the Principate. As there is no quantitative data, it is difficult to suggest a "significant economic growth" in this period. However, it can be said that the city enjoyed a good growth under the Principate probably in accordance with the growth in the Roman economy in this period. Quantitative data from systematic excavation is indispensable for further speculation about the economic growth.

The case of Nicomedia should encourage further research questioning the minimalist approach to cities, and challenge the assumption that they were self-sufficient and that their economic activities were limited to income from agricultural production. Having made calculations on any city, especially inland cities, one can make inferences about the economy of that city in the light of all ancient sources. The results could change current understanding of self-sufficient cities in antiquity pointing out their dependency on each other. This reinforces the importance of the connectivity

of cities, as location on the land and sea routes or proximity to a lake, river etc. soon start to become distinctive for urban economic activities.

Corinth, examined by Engels, was another port city and has been suggested as a service city. The city could have fed 17% of its total population, and thus had low-level self-sufficiency. As there was little profit to be made from agriculture, there was a reason to be involved in non-agricultural sectors of the economy. Engels presents the importance and the role of lamp, pottery, marble and bronze manufacture in the city and evaluates the city as a service city. His results make clear that Corinth pursued a mixed economy.¹⁴²⁹

Furthermore, the ambitions even of inland cities in trading activities are conspicuous, as is shown, for example, by the case of Prusias ad Hypium. As presented by L. Robert, the city was isolated, and protected by mountains on four sides. However, the mountains in the north-west allow connection to the sea more easily than the land routes in the northeast, east, and south. Thus the road and the river Hypius gave Prusias an outlet via the coastal port of Dia, which belonged to the city. In contrast to Bithynium-Claudiopolis (modern Bolu), which was a completely landlocked city and had no outlet for its timber products, Prusias took advantage of Dia. The city had mariners, who travelled in the Euxine and traded especially in grain with the Kingdom of Bosphorus and the Greek cities of the south Russian coast. Although its territory was rich, the city faced frequent grain shortages. However, the city did not export its fruits and agricultural products to other cities. Prusias had no olives, like the rich Aegean cities and various ports of the Propontis, which shipped olive oil to the North. Wine was for local consumption and not for export. The most appropriate export item was timber exploited from vast forests.¹⁴³⁰

Another inland city that was one of the capitals at the time of the tetrarchy was Mediolanum, examined by P. Garnsey.¹⁴³¹ The city had large rural hinterland, which principally produced wine, cereal, pork, pitch; wool was obtained from the Cisalpine hills, oil had to be imported. It was well placed for communication and trade, was in close proximity to navigable rivers. Metalworkers were at the centre of manufacture and association of *fabri* and *centonarii* were available. There was an imperial wool factory at the heart of its textile industry, and traders in textiles. Many of its citizens were honoured abroad but fewer foreigners are attested in the city. Evidence for many

¹⁴²⁹ Engels 1990, 22-42.

¹⁴³⁰ Robert 1980, 104.

¹⁴³¹ Garnsey 1976, 13-27.

landowners attested outside the city shows a commercial and service city type. The evidence and historical development of Mediolanum show that this city was not an isolated backwater, which was disconnected from external markets with limited potential for economic expansion.¹⁴³² In fact, Mediolanum already had commercial prominence even before it became capital. Thus these features were decisive in making the city a capital in the fourth century. Like Nicomedia, the cases of Prusias ad Hypium, Mediolanum, and Corinth also challenge the pattern of self-sufficiency, and show that the role of trade in the civic economy has been underrated. They present evidence for the existence of a mixed economy, which had been seen as rare or exceptional by Finley.

Having reached these conclusions about the economic dynamics of the city, it is worth making a comparison between Nicomedia and other port cities in the Propontis and Asia Minor in order to comprehend its economic life in a broader context and to observe networking among them.

One of the port cities is Cyzicus, which was smaller than Nicomedia (228 hectares), possessed 160 hectares, and had estimated urban population 24,000 inhabitants.¹⁴³³ According to Hasluck, the city produced corn, meat, and wine which were enough for local consumption while the mines and forests of Ida provided builders and shipwrights with metals and timber. As for export items, the marble of Proconnesus, wine, salt fish, and the unguents of Cyzicus provided considerable income to the city.¹⁴³⁴ This city was older than Nicomedia. Although Nicomedia was a Hellenistic foundation, the city of Cyzicus was founded in the 8th century BC by the Milesians.¹⁴³⁵ Thus the trading activities of the city started in the colonisation period. Rhodes, Cyzicus, and its rival Byzantium were commercial and naval powers of the Hellenistic period. Byzantium was the inevitable port for ships passing to and from the Black Sea. This city was already the most affluent city in the fifth century in the Hellespontine tribute area of the Athenian Empire. Byzantium's position in respect to the Bosphorus corresponds to Cyzicus' situation as regards to Hellespont. According to Strabo's first century account, Cyzicus had two closed harbours and more than 200 ships, implying a sizeable fleet.¹⁴³⁶ The testimony of inscriptions presents dedications by the fishermen's business partnership (an underwriting company) and mariners to

¹⁴³² Garnsey 1976, 13-27.

¹⁴³³ Russell 1958, 80.

¹⁴³⁴ Hasluck 1910, 263.

¹⁴³⁵ Hasluck 1910, 163-164.

¹⁴³⁶ Strabo XII 8.

Poseidon.¹⁴³⁷ A company of merchants including two directors, two financial managers, and eleven shareholders; two travellers mentioned in a stele also confirm a vivid economic life.¹⁴³⁸ The city celebrated festivals of the *Koinon Asiae* and held many other games and festivals.¹⁴³⁹ Epigraphic evidence shows that the merchants from Asia were present in a tax-free fair under Claudius.¹⁴⁴⁰ In addition, immunity from indirect tax was provided during the annual festival of Athena Polias and the Augusti.¹⁴⁴¹

Unlike Nicomedia, seemingly, there was no association of ship-owners in Cyzicus. As mentioned in the fourth chapter, the peculiarity of associations of ship-owners at Tomi, Amastris, and Nicomedia indicates a 'commercial union' between those cities in the Black Sea. It seems that in the Propontis the association of ship-owners was peculiar to Nicomedia, and the city created a network of transportation business. This must have triggered commercial agreements between Nicomedia and Byzantium, Cyzicus, Perinthus, Cius and Apamea, in transportation of commodities and people.¹⁴⁴² As noted, Nicomedians were involved in trade and transportation in Byzantium and Cyzicus, and a *homonoia* agreement is known between Perinthus and Nicomedia. Cyzicus was not only on the sea transit, but also connected to Smyrna, the southern ports and manufacturing inland towns via the Macestus valley road.¹⁴⁴³ Cyzicus was linked by *homonoia* with Ephesus (Antoninus), Smyrna (Commodus), and Nicaea (Septimius Severus).¹⁴⁴⁴ Therefore, the city was in connection with two important port cities in Asia Minor and an inland city, Nicaea, which possessed rich natural resources.

Smyrna, another port city, encompassed 600 hectares with an estimated urban population of 90.000 inhabitants.¹⁴⁴⁵ The city was nearly three times larger than Nicomedia and correspondingly more populous.¹⁴⁴⁶ The mineral products in the territory of the city were distinctive with respect to variety and value. Local marble was little used, since it was cheaper to import. The soil of Ionia, including Smyrna, was relatively fertile. There are some wooded areas in the mountain slopes, but it must have been extensively covered with forests in antiquity. The Sardian plain, and smaller plains near Smyrna were composed of fertile land, which provided grain, olives, and various

¹⁴³⁷ Mordtmann 1885, 204-207, Nr. 30; Hasluck 1910, 233-235.

¹⁴³⁸ Hasluck 1910, 258.

¹⁴³⁹ Hasluck 1910, 300-302.

¹⁴⁴⁰ *SEG* IV 707.

¹⁴⁴¹ *SEG* IV 707; Ligt 1993, 254, 256.

¹⁴⁴² Hasluck 1910, 277, 279.

¹⁴⁴³ Hasluck 1910, 170-171.

¹⁴⁴⁴ Hasluck 1910, 239

¹⁴⁴⁵ Russell 1958, 80.

¹⁴⁴⁶ Cadoux 1938, 183.

edible fruit. The Ionian region was famous for the excellence of its wine, and vine bore two crops of fruit annually. Animal husbandry and fishery were also available.¹⁴⁴⁷

Besides above-mentioned physical features, Smyrna was close to other important cities. The protected tranquillity of the Gulf mostly facilitated the long sea approach to Smyrna from the Aegean Sea. Access to the interior as well as to the coastal towns was easy by land. The small harbour was an outstanding centre for commercial life. Similarly, the merchant-ships depicted on the coins of Smyrna were reminiscent of one item in the prosperity of the city.¹⁴⁴⁸ Approaching the shore from the slope, there were gymnasia, city squares (*agorai*), theatres, walls, harbours, massive baths, several fine racecourse, numerous fountains, and sunlit streets in the city.¹⁴⁴⁹ There was a theatre near the harbour and many porticoes or roofed colonnades of Smyrna. Between the theatre and the inner harbour, there was the chief agora or city square. Thus, Smyrna seems to have also been a service city. The city imported Synnadan and Numidian marble and porphyry.¹⁴⁵⁰ Smyrna obtained *ateleia* for the sacred games, which were established by the city for the occasion of its second neocorate shortly after AD 124.¹⁴⁵¹ There was rivalry between Smyrna and Ephesus, and Nicomedia made *homonoia* with Smyrna, not with Ephesus.¹⁴⁵² Apart from the *homonoia* between the two cities, a Nicomedian ship-owner is attested in Smyrna, along with other Nicomedians.¹⁴⁵³ Although Smyrna was a port city active in the export and import of bulky goods, it seems that there was no shipbuilding manufacture in the city. For that reason, Nicomedia may have assisted Smyrna in transportation especially with its large cargo ships. As mentioned, Aegean wine and pottery was found in the Kamarina shipwreck, possibly owned by a Nicomedian ship-owner.

Ephesus was another port city, encompassing 345 hectares, and its estimated populace was between 200,000-250,000 city dwellers.¹⁴⁵⁴ The city located centrally on the west coast of Asia Minor, at the mouth of two major arteries from inside the country, the royal road of Sardis and the highway from the valley of the Meander.¹⁴⁵⁵ Ephesus possessed an extensive and rather fertile territory in the Caystros Valley. However, according to Roozenbeek, after deductions of tax, rent, and seed, up to 50-

¹⁴⁴⁷ Cadoux 1938, 18-22.

¹⁴⁴⁸ Cadoux 1938, 100-101.

¹⁴⁴⁹ Cadoux 1938, 173.

¹⁴⁵⁰ Cadoux 1938, 180-181.

¹⁴⁵¹ Ligt 1993, 257.

¹⁴⁵² Cadoux 1938, 286.

¹⁴⁵³ Robert 1980, 42.

¹⁴⁵⁴ Pleket 1994, 119; cf. Russell 1958, 80. Hanson reduces and gives the population of Ephesus as 33,600-56,000 people. Hanson 2011, 254, Table 9.1.

¹⁴⁵⁵ Halfmann 2004.

75% of the population could have been fed by local grain, which is almost the same level to the self-sufficiency of Nicomedia without deductions of tax, rent, and seed. The city was supplied by grain imports from nearby cities in the Eastern Caystros Valley and from Egypt. In addition to grain, luxury textiles, and slaves, Ephesus also imported timber and building stone.¹⁴⁵⁶

Strabo mentions that Ephesus was a prosperous city thanks to the richness of its territory in comparison to other regions. Moreover, the city was the biggest *emporion* of Western Asia Minor, with an important *entrepot*, which functioned for goods from Italy and Greece.¹⁴⁵⁷ A continuous flow of commercial goods was shipped to and through Ephesus. From there, it enabled merchants to transport goods towards the interior, by land and in part by navigable rivers. The slave trade also provided significant income. According to Pleket, the portorium-policy possibly encouraged the export of first-rate slaves. A group of Roman traders is attested in Ephesus who traded in the slave market.¹⁴⁵⁸

The city exported wine, oil, small oil lamps and, famously, miniature silver statues of Artemis Ephesia. There was a sacred guild of Ephesian silversmiths. In addition, there were physicians and ship-owners that belonged either to the city council or to a lower echelon below the council. The harbours themselves generated income in the form of tolls and services. The social position of some of the Ephesian *naukleroi* (shipowners and traders) reflects the wealth-generating potential of the profession and the importance of non-agrarian activities in the Ephesian economy. Tourism was another source of income. The Artemision and Mouseion attracted people, and students to study in the city.¹⁴⁵⁹ *Ateleia* existed during the festival of the Artemisia.¹⁴⁶⁰ As mentioned, there was a shipping lane between Nicomedia and Ephesus and the Nicomedian ship-owner attested in Ephesus confirms such commercial connection between cities.¹⁴⁶¹

As a result, this large and prosperous city was an international *entrepot* and international service city through which regular flows of goods passed relying on inter-regional trade. Ephesus was a service and commercial city and most likely a producer city, which exported high-class products to distant markets and generated substantial income. If it is compared with civic revenues and economic activities of Nicomedia

¹⁴⁵⁶ Pleket 1994, 119-120.

¹⁴⁵⁷ Strabo XII 2, 10 and 8, 15.

¹⁴⁵⁸ Pleket 1994, 119-120.

¹⁴⁵⁹ Pleket 1994, 119-120.

¹⁴⁶⁰ Ligt 1993, 257.

¹⁴⁶¹ *IK Ephesus* IV, 2255e.

similarities can be seen in Ephesus as the city was involved in non-agricultural activities.

Pergamon, located 26 km from the coast, covered 160 hectares, and its estimated population was between 180.000 and 200.000 dwellers.¹⁴⁶² The city was larger than Nicomedia in terms of population and both had been capitals of Hellenistic Kingdoms.¹⁴⁶³ The city was connected to the sea via its port at Elaea. The royal will and power of the Attalids exceptionally allowed Pergamon to build a set of monumental buildings, and the effect of this was increased by the location of the city. Inscriptions attest periodic major festivals held in that city and festival transactions yielded profits for the moneychangers of Pergamon in c. AD 130. This indicates the scale and significance of commercial activity.¹⁴⁶⁴ *Ateleia* existed during the *Romaia Sebasta* and this extended to the harbour of Elaea including all import duties for a period of 30 days.¹⁴⁶⁵ As mentioned *homonoia* was established between Nicomedia and Pergamon, both of which were also *neokoros* cities.

Halfmann's study comparing Pergamon and Ephesus reveals how the socio-economic and political structure of these cities reflected their architectural development and brought a new dimension to their economy. According to his analysis, as Ephesus was linked to the sea by its port from the beginning, there was an effort to maintain the port and its function as a nerve centre for the city. Besides the civic agora, there was a commercial agora for merchants. This separation was not only topographic but also functional.¹⁴⁶⁶ In terms of the conspicuous construction activity, the commercial function of the agora in Ephesus was much busier than in Pergamon, and it developed until the third century. This area saw constant development and architectural renovations since it was the place of the merchant class, including many freedmen. Although the development of urban planning suddenly declined at Pergamon, Ephesus continued to see construction activity from the Antonine period until the mid-third century. One of the reasons for this was that the importance of the city and the port as a step in the transfer of troops increased because of numerous wars on the eastern border of the empire.¹⁴⁶⁷

¹⁴⁶² Mitchell 1993, 243-244; cf. Russell 1958, 80. However, Hanson reduces this figure to the range between 32,850-54,750 inhabitants. Hanson 2011, 254, Table 9.1.

¹⁴⁶³ Scheer 2009, 221.

¹⁴⁶⁴ Ligt 1993, 253.

¹⁴⁶⁵ Ligt 1993, 257.

¹⁴⁶⁶ Halfmann 2004, 20, 22.

¹⁴⁶⁷ Halfmann 2004, 116-117.

As for Pergamon, there is almost no direct imperial involvement in the field of urban construction after the time of Trajan and Hadrian. However, in that period there had been a massive construction program, which corresponded chronologically to the accession of the first Pergamenians to the top of the senatorial aristocracy. Although Ephesus enjoyed a more continuous development, it was not quite regular and took advantage of the support of different emperors.¹⁴⁶⁸ According to Halfmann, the main source of income of the local upper class at Ephesus was not primarily based on large properties but on their business resources. Landownership did not play a large role as a source of wealth. Publicans and immigrant Roman politicians made use of the benefits of the position of Ephesus under the Principate and settled constantly in the city. Long lists of donors indicate (compared to Pergamon), that ‘foreign’ investments remained a decisive factor in public life. Ephesus had a particular kind of attraction for a foreign population. It was the seat of Roman provincial administration, the port, the office of Roman magistrates, and finally the bank of Asia, which was based in the Artemision. The port of Ephesus was not only the ‘door’ of Asia Minor, but also an important step and a hub of movement for people and goods transferring between the western part of the empire, Syria and Egypt. For that reason, Ephesus was the richest city in the province of Asia.¹⁴⁶⁹ The stylistic development of architecture was open to Roman influences and progressed faster than Pergamon.¹⁴⁷⁰

In terms of social history, Pergamon is characterised differently than Ephesus. As it was the royal residence of the Attalids, Italians and the Romans from the western part of the empire did not play a decisive role in ideological and economic attitudes of the upper class. In contrast to Ephesus, Pergamon was a closed and traditional society, and more reluctant to open itself to Italian and Roman influences in all spheres of public life. This is probably because the territory of the Hellenistic city was wholly occupied, making it very difficult or almost impossible for newcomers to acquire land. In contrast to Ephesus and other cities of the empire, there was no new public space and little space for the architectural plan to develop the imperial cult and create a religious and political centre.¹⁴⁷¹ The case of Nicomedia lies between the cases of Pergamon and Ephesus. The city was a Hellenistic capital adorned with beautiful buildings, and apparently, there was no strong Roman landownership given the current state of epigraphic evidence. The testimony of inscriptions also indicates that there were few foreigners in the city in

¹⁴⁶⁸ Halfmann 2004, 126.

¹⁴⁶⁹ Dio Chrysostom, *Orationes* XXXI 54; Halfmann 2004, 128-130.

¹⁴⁷⁰ Halfmann 2004, 128-130.

¹⁴⁷¹ Halfmann 2004, 131-132.

comparison to the great number of the Nicomedians abroad. On the other hand, Nicomedia was a vigorous port city like Ephesus, and trade and transport seem to have been a more popular and profitable business than landownership. Civic construction activity was conducted under the Principate especially in the reigns of Antoninus Pius and Commodus and this exceptionally peaked in 284 in the reign of Diocletian, who made it a capital and adorned it with new buildings. As the ancient city lies under the modern city, it is impossible to examine the buildings in Nicomedia. However, it seems that emperors made a great contribution to construction activity due to strategic position of the city between the frontiers under the Principate.

To sum up, first, Nicomedia apparently was in commercial connection with Cyzicus, Smyrna, Pergamon, and Ephesus, which held regular fairs, festivals, and produced olive oil, wine as well as manufactured goods. More and direct evidence is needed to explain actual networking pattern especially between Nicomedia and the cities on the Propontis coast, such as Cyzicus, Byzantium, and Perinthus. Second, the economic life of all these important cities in Asia Minor, briefly summarised here, indicates the role and scale of trading activities to be found in them as they were in Nicomedia. Nevertheless, it is not clear whether they conducted a mixed economy or whether there was a dominance of trade and manufacture in their economy. Therefore, the results of Nicomedia encourage doing more research on such cities using a similar methodology. This could change the prevailing understanding of how self-sufficient the ancient cities of Asia Minor were. Study of these cities and of other cases such as Corinth or Leptiminus in Tunisia may reveal an increasing number of cities in the Mediterranean, which were involved in trade along with agriculture (mixed economy), or whose economy was completely dominated by commercial activities, thus illuminating the nature and the mechanism of the urban economy in antiquity. This revitalised perspective would help to develop a new model for the ancient economy.

Appendix 1: Other Nicomedians abroad

Besides the local epigraphic evidence shown earlier, many other Nicomedians are attested in the shipping lanes of the Black Sea and the Mediterranean.

A stele for Flavios Sabeinos of Nicomedia, erected by his daughter, was attested in Ancyra, which was an important centre on the land route between the west and the east.¹⁴⁷² A stele with funerary banquet, attributed to Smyrna, belongs to Alexandros, who held double citizenship, and his family.¹⁴⁷³ There were many Nicomedians at Athens. Epitaphs of men¹⁴⁷⁴ and women¹⁴⁷⁵, indicate a family from Nicomedia. Epitaphs of other Nicomedians were found in Athens.¹⁴⁷⁶ An epitaph for a woman was found in Eleusis.¹⁴⁷⁷ Another inscription found in Nicopolis ad Istrum is a funerary monument of G. Kornelios Ioustos and his family.¹⁴⁷⁸ There are many epitaphs of Nicomedians found in Rome. Funerary inscriptions of the Nicomedians found at Rome include those of the couple Klaudia Mariniane and Aurelios Proklos¹⁴⁷⁹, Markos Aurelios Proklos, aged 60¹⁴⁸⁰, and Asklepiodotos, son of Markianos, who lived 11 year 10 months and 10 days¹⁴⁸¹ are attested in Rome. Severianos Asklepiodotos is attested in Puteoli as maker of the epitaph for Aurelia Flavia Appia, born in Nicomedia, aged 15.¹⁴⁸² Two epitaphs of father and son, Onesicrates and Proklos are attested in Misenum.¹⁴⁸³ An epitaph of a couple from Nicomedia at Tauropolium in Icaria was found.¹⁴⁸⁴ The epitaph of Markos Aurelios Harpokras was found in Aquileia of Cisalpine Gaul.¹⁴⁸⁵ Senia in Dalmatia reveals the epitaph of M. Klaudios Stratoneikos,

¹⁴⁷² *IGR* III 218. There is no information about the profession of Flavios Sabeinos. It is mistakenly reported as found in Thera (Delos) *CIG* III 2474.

¹⁴⁷³ *CIG* II 3265. It is dated to the 2nd-3rd century AD. Robert 1978, 409-410. According to Robert "Beithyni" meant Bithynion-Claudioupolis (Bolu) and was the birthplace of Alexandros. He, however, obtained citizenship in Nicomedia. Robert did not make any comment on this, being more concerned about commercial interests. After examining the style of the stele, he found a typological similarity with the stele type in the eastern Propontis and the west coast of the Black Sea region. Thus, he claimed that Alexandros must have lived and died in Nicomedia.

¹⁴⁷⁴ *IG* III 2, 2842. Alexandros son of Menandros. *IG* III 2, 2844. Menandros Asklepiodoros.

¹⁴⁷⁵ *IG* III 2, 2843. Kalliope Dintos. *IG* III 2, 2845. Name is absent.

¹⁴⁷⁶ *IG* III 2, 2846. Nikomakhos Nikomakhos. The epitaph of an orator, Publius Ailius Cleistenes aged 28, is also found in Athens. *IGR* III 2, 1438.

¹⁴⁷⁷ *IG* III 2, 2841. Athenais Soterilos or Soteridou.

¹⁴⁷⁸ *IGR* I 587. Poulter 1995, 10-11, fn. 29; p. 24. The majority of people in Nicopolis were from Nicaea and Nicomedia as many Nicomedians and Nicaeans settled when Trajan founded this city. This Nicomedian family was possibly one of families settled in Nicopolis.

¹⁴⁷⁹ *IG* XIV 1771=*IGR* I 289.

¹⁴⁸⁰ *IGR* I 224.

¹⁴⁸¹ *IGR* I 204.

¹⁴⁸² *IGR* I 427=*IG* XIV 837.

¹⁴⁸³ *IG* XIV 876a-b; *IG* XIV 773. Onesicrates of Nicomedia, aged 60, by his friend Zoilos (876a), and Proklos, son of Onesicrates, aged 10 (876b).

¹⁴⁸⁴ *IGINS* VI/II 1281.

¹⁴⁸⁵ *IG* XIV 2339. M. Aurelios Sp (?) and Teimokrates made for their father.

aged 16, made by his father, M. Klaudios Markeianos from Nicomedia.¹⁴⁸⁶ The Nicomedian families attested were mostly members of the upper-middle class. Their attestations with their families indicate their long term involvements in aforementioned cities rather than temporary trading activities.

An honorary inscription carrying the name of a *decaprotos* from Nicomedia is attested in Heracleia Pontica.¹⁴⁸⁷ An epitaph of Nektarios of Nicomedia who is an Egyptian *katholikos* (fiscal procurator) was attested in Theb dated to the 3rd-4th century AD.¹⁴⁸⁸ Another Nicomedian was Asklepiodotos, a *grammatikos* at Theb.¹⁴⁸⁹ The epitaph of an *iuris studiosus* (assistant to the judices) from Nicomedia was found in Rome.¹⁴⁹⁰ An honorary inscription for the decury of Nicomedia was found in Brixia (modern Brescia).¹⁴⁹¹ The list of contributors to a public performance at Cos includes another Nicomedian, Menagoras Menaros.¹⁴⁹²

A fragmentary funerary inscription found in Neoclaudiopolis belonged to a cavalryman from Nicomedia named Ailios Tertulos.¹⁴⁹³ Another funerary inscription in Latin found in the village Encomi near Salamis bears the name of a Nicomedian soldier.¹⁴⁹⁴ A Latin inscription found in Rome is related to vows for Severus Alexander, Julia Maesa and Julia Avita Mamaea. The list includes T. Flavius Domitianus from Nicomedia.¹⁴⁹⁵ Another epitaph in Latin found in Rome belongs to a soldier from Nicomedia.¹⁴⁹⁶ List of soldiers of the Legio II Traiana, made redundant after 25 years of service in AD 194, was found in Alexandria. One of soldiers is from Nicomedia (M. F. Col. Rufus).¹⁴⁹⁷ A fragment of a list of soldiers who were awarded the *Ius Tribuimus Connubii* was found in Mantua and dated to AD 248. It seems that one of the soldiers was from Nicomedia.¹⁴⁹⁸ As is known, the *Ius Connubii* was the right of conducting a regular marriage.¹⁴⁹⁹ Epitaph of ex-protector Betranus of Nicomedia attested in the castle of Cassacco in Lignano.¹⁵⁰⁰ The furthest place on the north t is Plumtonwall in Britannia. It is a dedication to Jupiter by praefectus, T. Domitius Heron from

¹⁴⁸⁶ *IGR* I 548; *CIL* III 15094.

¹⁴⁸⁷ However the reason is not clear, because the inscription is not complete.

¹⁴⁸⁸ *IGR* I 1219; *CIG* 4807.

¹⁴⁸⁹ Ruge 1936, 485. Nr. 50.

¹⁴⁹⁰ *CIL* VI 33868.

¹⁴⁹¹ *CIL* V 4485.

¹⁴⁹² *CIG* II 3142.

¹⁴⁹³ Anderson-Cumont-Gregoire 1910, 90, Nr. 69.

¹⁴⁹⁴ Munro-Tubbs 1891, 170.

¹⁴⁹⁵ *ILS* I 484.

¹⁴⁹⁶ *CIL* VI 2780.

¹⁴⁹⁷ *CIL* III 6580.

¹⁴⁹⁸ *CIL* V 4056.

¹⁴⁹⁹ Ramsay 1894, 285.

¹⁵⁰⁰ *CIL* V 1796.

Nicomedia.¹⁵⁰¹ It has been suggested by Rathbone and Verboven that soldiers were one of the trading bodies in the empire taking advantage of working on the move.¹⁵⁰² However, there is no direct evidence for Nicomedian soldiers indicating their involvements in trading activities.

There is an honorary inscription for an athlete from Nicomedia in Perinthus.¹⁵⁰³ An epitaph of a gladiator from Nicomedia was attested at Pergamon.¹⁵⁰⁴ A victors list dated to the last Mithridatic Wars presents two *kitharistes* from Nicomedia in Amphiareion of Oropos.¹⁵⁰⁵ Another victory inscription was found at Via Appia. It seems that there were two Nicomedians who were successful in poetry (160a), and music (160g).¹⁵⁰⁶ An honorary inscription found in Naples was for the athlete, P. Ailius Antigenidas, who was both Nicomedian and Neapolitan.¹⁵⁰⁷ An epitaph of an *iatros* (doctor) could be linked to ship's staff found at Rome.¹⁵⁰⁸ A dedicatory inscription to Serapis, Isis, and Anubis by a Nicomedian is attested in Delos (167-88 BC).¹⁵⁰⁹ An honorary inscription found at Delphi for the honour of an athlete from Nicomedia with others dates to the early reign of Antonius Pius.¹⁵¹⁰ A dedication to Jupiter made by Tiberius Claudius Demetrius, from Nicomedia 2nd or 3rd century AD, found in Cemenelum (near Nice).¹⁵¹¹ In addition to a Nicomedian ship-owner settled in Cyzicus, Anniani who was daughter of a Nicomedian, and Chrestus, son of Numisius are also attested in Cyzicus.¹⁵¹²

¹⁵⁰¹ *CIL* VII 317.

¹⁵⁰² Verboven 2007, 295-313; Rathbone 2009, 299-310.

¹⁵⁰³ Sayar 1998, 214-215.

¹⁵⁰⁴ Fabricius-Schuchhardt-Fränkell 1902, 366-367, Nr. 577. It should be noted that another gladiator epitaph has been found in the western necropolis of Nicomedia belonged to a gladiator named Unio. Robert 1978, 411-412.

¹⁵⁰⁵ *IG* VII 419. Metrodoros Dionysios; *IG* VII 1776. Marcus Aurelius Alexandros. There was a sanctuary dedicated to the hero Amphiaraos in the late 5th century BC. Another victors list, dated to beginning of the third century AD, found at Helikon.

¹⁵⁰⁶ *IGR* I 160 a-g.

¹⁵⁰⁷ *IGR* I 442.

¹⁵⁰⁸ *IG* XIV 2019. Other doctors attested in Nicomedia, *TAM* IV 135, 220, 367.

¹⁵⁰⁹ *SIG* 1127, p. 290-291.

¹⁵¹⁰ Bourguet 1929, 1, 547. It was dedicated by P. Ailius Ailianos.

¹⁵¹¹ *CIL* V 7870.

¹⁵¹² Hasluck 1910, 277, 279.

Appendix 2: Civic Coins of Nicomedia attested in the Museum Collections, Excavations, Hoards and Stray Finds

Table 1-7

Table 1

REIGNS→ MUSEUMS ↓	PC	VP	A	GE	C	B	N	V	TI	D	T	H	AN	S	AP	MA
İSTANBUL	4		3							2					5	3
ANKARA					1					1					1	
İZMİR	1															
BOLU	1							1							1	
SAKARYA																
TEKİRDAĞ																
BURSA	8				1										3	
İZNİK	8				1		2				1				1	1
ÇORUM																
BM	13	1	1		3		1	2	1		2		2		18	11
ASHMOLEAN	3	1			3					1			1		14	3
FITZWILLIAM	2														2	
COPENHAGEN	3	1			1					1					4	2
COLOGNE	2				1		1			1						1
BNF	12	4	2	2	5	1	1	3		6	3	14	2	7	5	11
NAPLES	2		1		1						1		2		5	
FLORENCE	1				2								1		3	1
ANS	9		2						1						7	10
MORAVIA	1															
TOTAL	70	7	9	2	19	1	5	6	2	12	7	14	8	7	69	43

Table 2

REIGNS→ MUSEUMS ↓	M A- L	F	FJ	L	M A- C	CO	PN	SS	JD	CA	PL	G	M	DI	E
İSTANBUL				1		2		2		5					1
ANKARA		1				1		1							
İZMİR															
BOLU										1					
SAKARYA										1					
TEKİRDAĞ															
BURSA		1	1			4		1		1					
İZNİK						1				1					
AMASYA															
ÇORUM															
BM	3		4	1		21		8	3	12	1	5	4	1	2
ASHMOLEAN	2					2		2		4		2	1		1
FITZWILLIAM		1	1			2		1		1					
COPENHAGEN	2	1		2		3		1		2	1				
COLOGNE	2							1	1	2		1	1		
BNF	5	6		3	3	27	1	14	6	25	1	2	1		4
NAPLES		2				7		3		3				1	
FLORENCE				1		2		4		2			1		2
ANS			1	3		6		6	1	5	1	2			
TOTAL	14	12	7	11	3	78	1	44	11	65	4	12	8	2	10

Table 3

REIGNS→ MUSEUMS ↓	J P	SA	JM	MT	M.mus	BA	P	G- III	TQ	OS	P-I	P-II	TD
İSTANBUL		11		3				4			1	1	2
ANKARA			1		1			1					
İZMİR													
BOLU													
SAKARYA													
TEKİRDAĞ													
BURSA		3	1	2	1			1	1		1		5
İZNİK													
ÇORUM		1											
BM	1	12	1	10		2	3	11	1	1	3	6	4
ASHMOLEAN	1	2	1		1			4		2	1		1
FITZWILLIAM		4		2	1			3	1	1	2	1	1
COPENHAGEN		3								1			
COLOGNE		5		10	9			26	2		8		
BNF		18	1	15			2	4	3	2	1	3	6
NAPLES									1	2			
FLORENCE		3	2		2			1		1			1
ANS	1	2		6				4		1	1	7	2
TOTAL	3	64	7	48	15	2	5	59	9	11	18	18	22

Table 4

REIGNS→ MUSEUMS ↓	HO	TG	VOL	VA	VG	VGV	V- II	GL	SAL	<i>KOINON</i> Hadrian	<i>KOINON</i> Sabina
İSTANBUL		2						2	3		
ANKARA										3	
İZMİR											
BOLU										1	
SAKARYA											1
TEKİRDAĞ											
BURSA				2	1			2	1	11	1
İZNİK		1		1						3	
AMASRA										1	
ÇORUM										4	
BM	1	5	1	4		9		8	1		
ASHMOLEAN		1		2							
FITZWILLIAM	1	1		2					2		
COPENHAGEN											
COLOGNE											
BNF		3		1	1	7		4	4	1	
NAPLES								1	1		
FLORENCE			1		1	1				5	1
ANS		5		4	1	4		1	1	2	
TOTAL	2	18	2	16	4	21		18	13	31	3

Table 5

REIGNS→ HOARDS ↓	C	SS	SA	JD	CA
ELISENIA					
TATAREVO					
ARCHAR	1	2	1		1
TODORICANE					
EDINAKOVCI			1	2	
ALBANIA					

Table 6

REIGNS→ EXCAVATION ↓	PC	SS	M	MT
SARDIS	1			
DURA			1	
CURIUM				1
CORINTH		1		
ATHENS				
OLYMPIA	1			

Table 7: Chance Finds/Stray Hellenistic Coins of Bithynia in the Museums.

REIGNS→ MUSEUMS ↓	Nic. I	Ziaelas	Prusias I	Prusias II	Nic. II	Nic. III	Nic. IV	Nic III-IV
İSTANBUL			5	4	1			

İZMİR			5	6				
BOLU			2	22				
SAKARYA			1	1				
BURSA	1		35	130	2			1
İZNİK			18	57				
AMASYA				1				
AMASRA				3				
BM	3	2	3					
ASHMOLEAN			10	29				6
FITZWILLIAM			2	18	5	4		1
NAPLES				5	1			
FLORENCE				6		1	1	

Table 8: Hellenistic Coins of Bithynia in the Excavations and Hoards

REIGNS→ HOARDS- EXCAVATIONS WITH BURIAL DATES ↓	Nic. I	Ziaelas	Prusias I	Prusias II	Nic. II	Nic. III	Nic. II-III	Nic. II-IV	Nic. IV	Nic. III- IV
POGGIO PICENZE (Picenum, c. 80 BC)						1				
GREECE (c. 75- 70 BC)										4
EDİRNE (Hadrianopolis, c. 85 BC)				1				13		

PLOVDIV (Philippopolis, 150-100 BC)					1					
MARMARA (Proconnesus, 110-100 BC)							8			
CYZICUS			1							
ORDU (Cotyora, c. 150 BC)			1	20						
AMASYA (c.185-170 BC)			2-3							
GIRESUN (Cerasus, c. 80 BC)							7			
KASTAMONU (c. 85 BC)								200		
TRABZON (Trapezus, 150 BC)			1	12						
KHINISLY (Albania- Azerbaijan, 50-25 BC)					2	5				
GORDIUM (c. 205-200, c. 205)	1		2							
MEKTEPINI (Between Dorylaeum and Cotyaeum, c. 190 BC)			8							
SOUTHERN ASIA MINOR (c. 150 BC)				3						
URFA (Edessa, 185-160 BC)			9							

MA'ARET EN- NUMAN (Lebanon, c. 162 BC)				X						
TROAS (c. 220- 210 BC)			1							
DALYAN (Alexandria Troas, c. 90 BC)							30			
PERGAMON (c. 201 BC)			1							
ÇEŞME (Erythrae, c. 70- 65 BC)					1					
LIMANI (Crete, c. 90-80 BC)									2	
CILICIA (160 BC)				1						
KOSSEIR (Antioch, c. 190 BC)			1							
SYRIA (160 BC)				1						
ALEPPO (Beroea, c. 190 BC; c. 138 BC)			4+							

Table 9

REIGNS→	L	V	SS	JD	CA
STRAY FINDS ↓					
CYTONIA (CRETE)		1			
GAZA				1	

CERASUS			1		
SINOPE					1
AMISUS					1
FLAVIOPOLIS					1
ANAZARBUS					1
BAIA (ROMANIA)	1				

MUSEUMS

BM The British Museum

BNF Bibliothèque Nationale de France

ANS American Numismatic Society

REIGNS

PC Papirius Carbo

VP Vibius Pansa

A Augustus

GE Germanicus

C Claudius

B Britannicus

N Nero

V Vespasianus

TI Titus

D Domitianus

T Trajan

H Hadrian

AN Antinoos

S Sabina

AP Antoninus Pius

MA Marcus Aurelius

MA-L Marcus Aurelius-Lucius Verus

F Faustina

FJ Faustina Junior

L Lucius Verus
MA-C Marcus Aurelius-Commodus
CO Commodus
PN Pescennius Niger
SS Septimius Severus
JD Julia Domna
CA Caracalla
PL Plautilla
G Geta
M Macrinus
DI Diadumenianus
E Elagabalus
JP Julia Paula
SA Severus Alexander
JM Julia Mamaea
MT Maximinus Thrax
M.mus Maximus
BA Balbinus
P Papienus
G-III Gordianus III
TQ Tranquillina
OS Otacilia Severa
P-I Philip I
P-II Philip II
TD Trajan Decius
HO Hostilianus
TG Trebonianus Gallus
VOL Volusianus
VA Valerianus I
VG Valerianus I-Gallienus
VGv Valerianus I-Gallienus-Valerianus II
V-II Valerianus II
GL Gallienus
SAL Salonina

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FIGURES

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Figure 1: The Marmara Region and its surroundings.

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Figure 2: Inscriptions carrying Thracian names attested in the territory of Nicomedia (Corsten 2007, 124, Map: Bithynia: the heartland).

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Figure 3: Physical Map of Ancient Bithynia and surroundings (Barrington Atlas, Map 52).

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Figure 4: The province of Bithynia and the territory of Nicomedia (blue dots by the present author, map in Calder-Bean 1958).

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Figure 5: Estimated territory of Nicomedia.

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Figure 6: İzmit Mutasarrıflığı in 1890s (specified as light orange), (Cuinet 1895).

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Figure 7: Kocaeli Province.

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Figure 8: Kocaeli Province and its districts today.

In: <http://www.istanbul-rehber.com/harita/il/kocaeli-haritasi.asp>

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Figure 9: Olive/Flax/Wine presses attested in İzmit (red circles by the present author, map in *TAM IV* 1974).

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Figure 10: Wine press (?) found in Umuttepe-İzmit (Survey 2006).

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Figure 11: Wine press bed (?) found in Umuttepe-İzmit (Survey 2006).

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Figure 12: Interior city walls of Nicomedia (Şahin 1974, Karte II, p. 13).

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Figure 13: A schematic city plan drawn by the present author.

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Figure 14: Estimated urban territory.

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Figure 15: Estimated exterior walled area in Nicomedia (follow yellow line).

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Figure 18: Primary roads passing through Nicomedia and Bithynia (Winfield 1977).

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Figure 19: The secondary roads between Nicomedia and Şile and Kandıra, and the canal scheme drawn by the present author, (map in Moore 1950, fig.1).

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Figure 20: Sea Routes (Arnaud 2007)

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Figure 21: Isis Pharia on coin of Antoninus Pius, (The Ashmolean Collection, Env. No. Peus 366 15.10.2000, taken by the present author at the Ashmolean Museum).

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Figure 22: Isis Pharia on coin of Marcus Aurelius, (*RG* 517, 86, taken by the present author at the Bibliothèque Nationale de France).

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Figure 23: Isis Pharia on coin of Salonina, (*RG 572, 421*, taken by the present author at the Naples Archaeological Museum).

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Figure 24: Argo on coin of Commodus (*RG 536, 153*).

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Figure 25: Re-construction of *navis oneraria* (Göttlicher 1977, 47).

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Figure 26: Prow with serpent on coin of Domitianus, (RG 520, 33, taken by the present author at the British Museum).

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Figure 27: Nike, right, crowning, and prow on the right, (Marcus Aurelius, *RG* 528, 90, taken by the present author at the British Museum).

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Figure 28: Sailing ship (merchant ship) depicted on coin of Commodus, (*BMC* 185, 36, taken by the present author at the British Museum).

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Figure 29: Sailing oared galley (warship?) on coin of Commodus, (The Ashmolean Collection Env. No. A.H. Baldwin BMS, 11.7.1938, taken by the present author at the Ashmolean Museum).

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Figure 30: *Navis oneraria* (?) on coin of Antoninus Pius, (Collection of İstanbul Archaeological Museum, *BMC* 17; Cat. Nic. 17, taken by the present author at the İstanbul Archaeological Museum).

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Figure 31: *Navis oneraria* (?) on coin of Antoninus Pius, (*BMC* 1961.3.1.117, taken by the present author at the British Museum).

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Figure 32: *Navis oneraria* (?) on coin of Antoninus Pius, (The Fitzwilliam Collection Env. No. Mossop. Coll Glend 4/23, Pilot 365, taken by the present author at the Fitzwilliam Museum).

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Figure 33: *Navis oneraria* (?) depicted on coin of Maximinus Thrax, (RG 567, 387, taken by the present author at the British Museum).

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Figure 34: *Navis oneraria* (?) on coin of Philip II, (SNGAul. 843, taken by the present author at the British Museum).

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Figure 35: Fishing vessel (?) on coin of Maximinus Thrax, (*BMC* 189, 60, taken by the present author at the British Museum).

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Figure 36: Fishing vessel (?) on coin of Septimius Severus, (*BMC* 186, 43, taken by the present author at the British Museum).

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Figure 37: Fishing vessel (?) on coin of Antoninus Pius, (*BMC* 1921 11 Spink 20, taken by the present author at the British Museum).

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Figure 38: Galley and temples of Nicomedia depicted on coin of Commodus, (*BMC* 185, 34, taken by the present author at the British Museum).

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Figure 39: *Stolos*, on coin of Antoninus Pius, (*BMC* 181, 16, taken by the present author at the British Museum).

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Figure 40: Kutluca quarry (Survey 2008).

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Figure 41: Quarry and sarcophagus workshop at Kandıra/İzmit (Çalık-Ross 2007, 140).

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Figure 42: Nicomedian traders (green) and marble workers (orange).

Map by Ian Mladjov, in: <http://sitemaker.umich.edu/mladjov/files/romana337.jpg>

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Figure 43: Amphorae displayed in İzmit Archaeological Museum, without label, (taken by the present author).

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Figure 44: Tuna on coin of Septimius Severus, (*RG* 539, 177, taken by the present author at the Bibliothèque Nationale de France).

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Figure 45: Tuna, on coin of Lucius Verus, (*RG* 532, 119, taken by the present author at the Bibliothèque Nationale de France).

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Figure 46: Nicomedians attested in the Mediterranean.

Map by Ian Mladjov, in: <http://sitemaker.umich.edu/mladjov/files/romana337.jpg>

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Figure 47: Nicomedian captains (blue), ship-owners (red) in the Mediterranean.

Map by Ian Mladjov, in: <http://sitemaker.umich.edu/mladjov/files/romana337.jpg>

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Figure 48: *Homonoia* agreement between Smyrna-Nicomedia under Commodus, (*BMC Ionia* 491-493).

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Figure 49: Circulation of the civic coins of Nicomedia and *koinon* coins.

(Yellow: Museum collections, white: hoards, green: excavation finds, blue: stray finds, black: *koinon* in excavations).

Map by Ian Mladjov, in: <http://sitemaker.umich.edu/mladjov/files/romana117.jpg>

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Figure 50: Circulation of the coins of the Kingdom of Bithynia. (Red: Museum Collections, Blue: hoards and excavation finds).

Map by Ian Mladjov, in: <http://sitemaker.umich.edu/mladjov/files/romanabc129.jpg>