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## DANUBE, LIMES AND LOGISTICS SOME THOUGHTS ON ROMAN ARMY SUPPLY IN MOESIA INFERIOR

*Totius enim legionis ratio ... cotidie adscribitur actis  
maiore prope diligentia quam res annonaria vel civilis  
polyptichis adnotatur.*  
Vegetius 2.19

**Abstract:** Understanding army logistics is important for understanding the Roman army and the Roman limes as such, especially the fundamental and dual role of the Danube. Camps and smaller garrisons were located with strategic factors in mind, considering geographical conditions and their influence on logistics, with the Danube being both a border and a transport route. The stepwise annexation of the areas that would become Moesia Inferior is testimony of planning always preceded by terrain reconnaissance. This included a thorough analysis of what was and was not available in the province and whether stable coordination of army supplies by trained personnel was possible. Logistics could have had something of an improvised character, especially in the first century, and they required a specific skillset to be carried out, but overall they were manifest of good organization and planning. A sophisticated and well devised system was in operation.

**Key words:** Roman army, logistics, supply lines, *frumentarii*, Danube limes, Moesia, Moesia Inferior

### Introduction

The wayfaring archaeologist in the Balkans, navigating the scenic but narrow roads of Serbia, Romania or Bulgaria to reach one of the *limes* sites on the Danube perhaps, will inevitably encounter (and get stuck behind) numerous trucks displaying company names with the word “logistics” in them. Studying every millimeter of the back of a trailer for a couple of hours lets the mind roam freely, contemplating the situation in a wider context.

The word “logistics” is derived from the Greek adjective *logistikos* meaning “skilled in calculating”.<sup>1</sup> The first instance of administrative use was a military official with the title *logista* in Roman and Byzantine times.<sup>2</sup> In other words, logistics is a specific variant of administration in its

<sup>1</sup> ROTH 1999, p. 1; on logistics in general see also JOMINI 1837, pp. 485–486 (who proposes a different etymology for the word); for an introduction to military logistics: KRESS 2002.

<sup>2</sup> Byzantine emperor Leo VI was the first to define logistics in his work commonly known as *Taktika* (about AD 900).

Leo’s discernment of λογιστική as a special skill of generals (Epilogue 57, 64) beside tactics and strategy inspired the development of the modern concept of logistics in the works of the late eighteenth- and early nineteenth-century military theorists: “This is what the logistic art is to do. It divides the army into squads ... and the other units, as

broadest sense — dividing the coordination of provisioning into basic units run by specialized personnel.

The importance of searching for remains, whether material or not, of the logistics of the Roman army has been increasingly recognized and studied over the past few years.<sup>3</sup> The present study will summarize the body of evidence for Roman army logistics in the province of Moesia Inferior, which offers, in this case as in others, a convenient training ground for archaeological theories.

### Army logistics

Modern use notwithstanding, logistics is and always has been primarily a military term. It has even been argued that “logistics is the lifeblood of any army”.<sup>4</sup> Accordingly, a whole range of military conflicts in the past and present, from the Battle of Dyrrhachium in the Great Roman Civil War (48 BC) through the Burma campaign in World War II and the battle of Pusan in 1950, famously were decided to a large extent by superior supply lines or the lack thereof.

The *NATO Allied Administrative Publication* gives the following contemporary definition of logistics: “The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, the aspects of military operations which deal with: a) design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposal of materiel; b) transport of personnel; c) acquisition or construction, maintenance, operation, and disposition of facilities; d) acquisition or furnishing of services; and e) medical and health service support”.<sup>5</sup>

Obviously, the scope of army logistics may vary between the different descriptions and definitions in place, but what they usually have in common is provisioning and transport, and the administration of the two.

### Logistics in the Roman army

The Romans were not the inventors of army logistics, but they certainly perfected this art in the ancient world. Lessons learned in the Punic wars and later military reforms under the Republic led to its rapid development,<sup>6</sup> whereas the decision to keep a permanent border<sup>7</sup> in the early principate<sup>8</sup> led to a significant remodeling in order to provision the units stationed there. Incidentally, the army was by far the biggest organization in the Empire.<sup>9</sup>

The Roman army with its wide range of tasks beyond simple border security<sup>10</sup> still had to find the time and personnel to implement a system of logistics, the success of the army being heavily dependent on a continuous provision of supplies.<sup>11</sup> Consequently, beside providing a rather broad overall training for the soldiers themselves, it fostered the development of a large number of specialized professions that at first glance have little to do with fighting battles. On top of that, these numerous specialists had to be coordinated by a strong administrative apparatus.<sup>12</sup>

well as entire battle lines. It makes a proper division of all these. Which ones and how many will guard fortified towns? Which ones and how many young or old men there are? Which ones are maimed in their limbs or incapacitated by illness? How many have a position in the civil government or one dealing with public affairs? This is what logistics are”. Translation after DENNIS 2010, pp. 635–639.

<sup>3</sup> Especially THOMAS, STALLIBRASS 2008. See also ROTH 1999; PAPI 2007; SIMON 2015; LE BOHEC 2015; POLAK, KOOISTRA 2013.

<sup>4</sup> PIGGEE 2002, p. 1.

<sup>5</sup> *NATO Glossary*, p. 2-L-5.

<sup>6</sup> ROTH 1999, pp. 161–163; ERDKAMP 2002, p. 49.

<sup>7</sup> POLAK, KOOISTRA 2013, p. 359.

<sup>8</sup> For the various purposes and necessities influencing Augustus and his successors in this regard, see EICH 2009, p. 565; cf. DOMASZEWSKI 1908, pp. 192–193; ØRSTED 1985, p. 20.

<sup>9</sup> SPEIDEL 2009, p. 283.

<sup>10</sup> SARNOWSKI 1988, p. 69; DUCH 2015.

<sup>11</sup> THOMAS, STALLIBRASS 2008, p. 1.

<sup>12</sup> SPEIDEL 2009, p. 285.

The logistical difficulties of Roman imperial expansion increased as a rule with the distance from the Mediterranean Sea,<sup>13</sup> hence the prime importance of establishing a frontier on the big rivers, the Rhine and the Danube, not only in terms of “grand strategy” but also communication. Legionary camps and forts were obviously meant to be as self-sufficient as possible, but the garrisons could not exist in a sort of splendid isolation and were heavily interconnected with one another and with other centres near and far to ensure stable supply routes. Provisioning an army locally may have always been the most economic option, but only when the prerequisites of organization, planning and technical knowledge had been fulfilled.

Supply units are depicted on Trajan’s column<sup>14</sup> and Appian noted that provisioning constitutes the hardest task in big armies,<sup>15</sup> but a scientific problem arises from the fact that even though the Roman army did document supply measures thoroughly (as shown by the famous “*Hunt papyrus*” below), these documents are quite rare,<sup>16</sup> while descriptions by contemporary authors on the topic are even less frequent and dispersed,<sup>17</sup> sometimes even contradictory.<sup>18</sup> Still, from Vegetius we learn that the *praefectus legionis* was responsible for arms, horses, clothes and food, while the duties of the *praefectus castrorum* and his staff included tents, baggage, the sick, vehicles, animals, wood, tools, beds and artillery,<sup>19</sup> and there were many more people engaged in this process.<sup>20</sup> We have the names and job descriptions of some of the specialists dealing with matters one might consider to be logistical in nature, arguably beginning with the work of intelligence units such as the *exploratores* and *speculatores* of a legion as the first step towards a reliable supply system, involving choice of an appropriate spot for the camp, fort or other structure, and going as far as the province administration.<sup>21</sup>

A complex army, garrisoned to protect the border and secure the development and Romanization of the region, could not simply forage.<sup>22</sup> It has been argued that one of the reasons for dividing the legions into *vexillationes* and spreading them over a larger territory was to avoid overloading the supply system in one spot.<sup>23</sup> For this to work, the conditions for the civil population, that is, the autochthonous population and the Roman settlers and veterans, had to be convenient as well. Production had to be stimulated,<sup>24</sup> so that preferably a large part of the food and other supplies,

<sup>13</sup> HANSON 2002, p. 27.

<sup>14</sup> DAVIES 1920, p. 21; POGORZELSKI 2012, pp. 78–79.

<sup>15</sup> App. *BC* 4.100.

<sup>16</sup> At least compared to the millions of documents that surely existed. Cf. SPEIDEL 2009, p. 283.

<sup>17</sup> SINNIGEN 1962, p. 216: “The routine supply organization was rarely a matter to arrest the attention of observers interested in the more striking aspects of military life”; cf. also GOLDSWORTHY 1998, p. 287; ROTH 1999, pp. 3–5; WHITTAKER 2004, p. 88; JOHNSTONE 2008, pp. 128–129: “Sources of both art and literature in the Roman period were biased towards topics considered suitable for expression and mundane events and situations were seldom represented, described or discussed”; SPEIDEL 2009, p. 286: “Es ergibt sich aber dadurch auch ein Bild vom römischen Heer, das nicht allein durch militärische Übung, Kampfbereitschaft und strenge Disziplin geprägt war, wie es die antiken Autoren so gerne und oft betonten, sondern auch von einem Heer, das eine Verwaltung mit einem umfassenden Anspruch unterhielt”.

<sup>18</sup> See the discussion of terms like *lixae* or *frumentarii*.

<sup>19</sup> Vegetius 2.9, 2.10.

<sup>20</sup> SIMON 2015, p. 246: “Almost any military officer engaged in financial affairs, or anyone from the office of the

*procurator Augusti* or the provincial governor can be associated with the organization of the supply, therefore it is still not possible to determine the exact stages and persons of the army supply”.

<sup>21</sup> SPEIDEL 2009, p. 284: “Die Vermutung einer vielfältigen, detaillierten, intensiven und auch allenorts nach einheitlichen Richtlinien geführten Truppenverwaltung, die sich daraus ergibt, wird zudem durch die reichsweit einheitliche Struktur und Organisation des Heeres gestärkt, in der gerade auch die in der Verwaltung beschäftigten Soldaten überall gleichlautende Grade und Funktionstitel trugen (*librarius, actarius, beneficiarius, commentariensis, cornicularius, exactus, optio, tesserarius, usw.*)”.

<sup>22</sup> BISHOP 1999, p. 111; cf. HERZ 2002, pp. 19–20.

<sup>23</sup> BISHOP 1999, p. 112; HERZ 2002, p. 26.

<sup>24</sup> WHITTAKER 2004, p. 102; ØRSTED 1985, p. 20; THOMAS, STALLIBRASS 2008, pp. 9–10.

especially when perishable, was directly available near the *limes* sites.<sup>25</sup> At the same time, the development of towns guaranteed the availability of specialized goods, like quality tableware, wine and weapons. Enhancement of a road network and ports facilitated transport and hence also supply lines.

A further precautionary measure to ensure a stable flow of basic supplies was building *horrea* (warehouses, mostly used as granaries), where food could be stored for an extended period of time.<sup>26</sup> Polybius notes that when building a camp ample space was allotted for the *horrea* close to the *praetorium* (*Hist.* 6.27.3–5) and from Tacitus we learn that the camps in Britain had enough food stored for one year (*Agricola* 22.2). The *horrea* also allowed camps to function as tactical bases for military excursions,<sup>27</sup> beyond the Danube for instance in the case of Moesia. The *horrea* were extremely important and guarded by the army when located outside camps.<sup>28</sup>

Accordingly, one may argue that unlike the preferably isolated marching camps of the Republican troops, the Imperial army's permanent garrison sites sought the proximity of existing settlements for reasons both logistic and strategic. First, a settlement indicated the presence of potable water and no threat of flooding, by the Danube for instance in the case of Moesia. The availability of building resources was another important issue.<sup>29</sup> Additionally, local inhabitants could be taxed to supply the garrison with food.<sup>30</sup> In a strategic context, this sought proximity reflected the position of these existing settlements on important communication routes and convenient crossing places on the Danube, which had to be controlled and secured.

Theoretically, the more a given population was advanced in terms of “civilization”, i.e. possessing some sort of administration and urban centres, the easier it could be assimilated into the Empire — although advanced peoples also tended to have advanced armies of their own. In Moesia and later Lower Moesia, the local population was easy to control and apparently not prone to revolt, at least after the somewhat enigmatic “Thracian surge”.<sup>31</sup> On the other hand, it was much harder to assimilate primitive peoples into an orderly Roman province, which would generate “income” for the Empire.<sup>32</sup> In Germania, Rome had experienced painfully how hard it was to build a province without appropriate urban structures, whose value is not reduced to mere economics, but manifests itself also as a motor for Romanization and convenient soldier recruitment.<sup>33</sup>

## Specialists and civilians

Individuals responsible for provisioning a legion tended to be designated as *frumentarii*. As the name suggests, *frumentarii* were initially supposed to collect *frumentum* (grain), and administer the *annona militaris*.<sup>34</sup> In the first and second centuries, they were recruited from among the legionaries.<sup>35</sup> As their tasks diversified, there was a considerable shift in their job description. Their main task was supplying the army with food, but in the historical sources they are mostly known for being messengers and army intelligence specialists, a secondary aspect of their work, but sug-

<sup>25</sup> To make the province as self-sufficient as possible. The *Expositio totius mundi et gentium* from the fourth century AD labels the Late Roman provinces Moesia Prima and Dacia Ripensis, the successors of Moesia Inferior, as *sibi sufficientes*, which should be interpreted as an assertion of their agricultural potential. Cf. MITTAG 2006, pp. 338–351; GROENMAN-VAN WAATERINGE 1997, p. 263; WHITTAKER 2004, p. 98; DAVIES 1997, p. 267; THOMAS 2008, p. 31.

<sup>26</sup> ROTH 1999, p. 185.

<sup>27</sup> ROTH 1999, p. 182.

<sup>28</sup> BISHOP 1999, p. 117; FINK 1971, pp. 115–119.

<sup>29</sup> TOMAS 2016, p. 34.

<sup>30</sup> ROTH 1999, pp. 141–155.

<sup>31</sup> KOLENDO 1998.

<sup>32</sup> EICH 2009, p. 568: “Die Motivation für die sorgfältige militärische Durchdringung der attackierten Gebiete war primär fiskalischer Natur, das heißt ihr Sinn war die Gewährleistung der ungestörten, stetigen Abschöpfung von staatlich beanspruchten Ressourcen”.

<sup>33</sup> On the case of Germania, cf. SCHNURBEIN 2003, pp. 93–108.

<sup>34</sup> SINNIGEN 1962, pp. 211 and 213–224.

<sup>35</sup> RANKOV 1990, p. 178.

gestive enough to eclipse the information on their original duties.<sup>36</sup> It has been suggested recently that their alternative tasks included delivering correspondence between the provinces and the emperor rather than espionage.<sup>37</sup> Just like the *exploratores*, recruited often from the local population, specialists in food supply would have had a talent for clandestine operations carried out under the cover-up of their initial duties.<sup>38</sup> At the same time, information from intelligence units could arguably be useful for logistic purposes also.

Nomenclature notwithstanding, the complex food logistics required experts for coordinating operations on a mass scale.<sup>39</sup> Commanders of the army units and their deputies (i.e., *primipilarii*, *centuriones frumentarii*<sup>40</sup> and *beneficarii*<sup>41</sup>) participated in the process, but all sorts of specialists were needed due to the sheer volume of the different requirements reflecting the size of the army in the province and the demand for quality supplies. Their job was to coordinate movements on the army supply routes and supervise local supply, but the known kinds of supply-related job descriptions in the army should not be treated as carved in stone. Especially in the early Principate it has been noted that campaigns were all exceptional and measures such as task division were calculated *ad hoc*.<sup>42</sup>

At this point, the *lixae* are an interesting subtopic. Apparently, they played some role in supplying the legions, but the exact nature of their work is unclear.<sup>43</sup> A vast baggage train followed each legion, consisting mostly of civilians, both slaves (private or state) and freemen. The latter included the servants of the soldiers as well as the *lixae*.<sup>44</sup> The servants of the legion were responsible for supplying and cooking the food and carrying the equipment.<sup>45</sup> The term *lixae* may have been used for the baggage train employees, but they could have also been craftsmen, engineers and even geodesists or medics according to some theories.<sup>46</sup> They could have also been merchants selling to the army goods of a rather extravagant, luxurious kind, such as spices.<sup>47</sup> They were not, however, either *mercatores* or *negotiators*.<sup>48</sup> They accompanied the army, living apparently outside the camp in the *canabae*.<sup>49</sup> Interestingly, *lixae* are mentioned by Tacitus in a clearly pejorative context, where they are described as unpatriotic capitalists.<sup>50</sup> Some scholars have argued whether *lixae* were freemen or slaves.<sup>51</sup>

More importantly, the example of the *lixae* demonstrates the astonishing extent of civilian participation in army logistics. Auctions were held during the early Principate to allow merchants to purchase the right to transport grain from the provinces to Rome or to the other provinces.<sup>52</sup> Some *negotiatores* were specialized in the grain trade<sup>53</sup> and basic products were available on the local markets.<sup>54</sup> Thus private merchants could count on the army for protection not only because of their

<sup>36</sup> KOLB 2000, pp. 290–294; MANN 1988, p. 149; AUSTIN, RANKOV 1995, pp. 136–137.

<sup>37</sup> RANKOV 1990, p. 180.

<sup>38</sup> CUPCEA, MARCU 2006, p. 186.

<sup>39</sup> ROTH 1999, p. 274.

<sup>40</sup> HERZ 2002, pp. 43–44; SIMON 2015, p. 246.

<sup>41</sup> ROTH 1999, p. 274; *beneficarii* probably acted as intermediaries between the financial administration and the officers of a given unit, cf. MONFORT 2002, pp. 76–79.

<sup>42</sup> EGRI 2008, p. 49.

<sup>43</sup> CONRAD 2004, p. 107.

<sup>44</sup> FEIG VISHNIA 2002, p. 265.

<sup>45</sup> ROTH 1999, p. 111.

<sup>46</sup> CUPCEA, MARCU 2006, p. 182.

<sup>47</sup> ROTH 1999, pp. 93–95.

<sup>48</sup> FEIG VISHNIA 2002, p. 266.

<sup>49</sup> IVANOV 1990, p. 133; WIELOWIEJSKI 1970, p. 191.

<sup>50</sup> Tac. *Ann.* 2.62: *veteres illic Sueborum praedae et nostris e provinciis lixae ac negotiatores reperti quos ius*

*commercii, dein cupido augendi pecuniam, postremo oblivio patriae suis quemque ab sedibus hostilem in agrum transtulerat.*

<sup>51</sup> Slaves naturally played a part in army logistics, cf. ROTH 1999, p. 101. Feig Vishnia has suggested that the *lixae* coordinated slaves in their duties (FEIG VISHNIA 2002, p. 272), but this view is somewhat isolated as their mercantile nature is rather beyond doubt. Cf. BOUNEGRU 2006, pp. 71–72: “Les Lixae étaient en fait des accompagnateurs commerciaux (ambulants) des militaires ...”. According to WIELOWIEJSKI 1970, p. 191, they were merchants, small scale traders and peddlers accompanying the bigger army units.

<sup>52</sup> RICKMAN 1980, p. 126.

<sup>53</sup> ERDKAMP 2002, pp. 66–67.

<sup>54</sup> ŻMUDZIŃSKI 2004, p. 120.

part in its supply chain, but also because the main trade routes also happened to be the (potential) main invasion routes for the enemy, which the army was guarding.<sup>55</sup> In his work the Byzantine Emperor Leo VI also pointed out the importance of taking care of civilian traders.<sup>56</sup> The frontier population of the Danube provinces would ideally come to market in the Roman settlements where appropriate trade *fora* could be found.<sup>57</sup> The local indigenous elites, as well as Italic families coming in the wake of the army took part in the exploitation of the province: through agriculture, mining and trade, and also through administrative measures.<sup>58</sup> Over time civilian contractors also played some role in sea transport<sup>59</sup> and the associated long range army supply routes (see *pastus militum*, below).

### Moesia Inferior

After a somewhat slow start during the reign of Augustus, when Rome's strategic interests in Europe were focused on Germania and Illyricum, Moesia became strategically more important in the second half of the first century.<sup>60</sup> It has been suggested that the organizational activity under Trajan after the Dacian Wars should be seen as the beginning of the army supply system, based predominantly on the own resources of Moesia Inferior and partly also Thrace,<sup>61</sup> while others acknowledge Domitian for skillfully combining the supply system with the communication network and the protection forces to provision his campaigns,<sup>62</sup> which is somewhat ironic given his logistically (and militarily) disastrous Dacian campaign.<sup>63</sup> He also divided the province of Moesia into two parts, Superior and Inferior, in the year 86. The separate command and supply structure was meant to facilitate defending the area<sup>64</sup> (as was the enlarged manpower). It was certainly true that the war campaigns of both emperors were a special challenge for logistics, the army was on the move and considerably larger than the *limes* garrisons. During his second war in particular Trajan had to cope with a classic military problem: how to protect and not overextend his army's supply lines. He did so by dividing his armies into marching columns,<sup>65</sup> among other things to avoid Dacian guerilla tactics. The emperor had learnt his lesson from the first Dacian campaign when the route eastward was left open for the Dacians to flee and in the second war he had his forces carry out a supplementary attack in a wide arc from the bend of the Danube to cut off this escape possibility. Hence a series of smaller forts were built in the Dobrudja and Wallachia.<sup>66</sup> In the field of military logistics, the extension and over-extension of supply lines is a separate and ever fresh topic.<sup>67</sup> Eventually three legions were stationed in Moesia Inferior during the Principate: the *V Macedonica* at Oescus and later Troesmis, the *I Italica* at Novae and the *XI Claudia* at

<sup>55</sup> ØRSTED 1985, p. 174.

<sup>56</sup> DENNIS 2010, p. 163: "On the march with your troops in your own country, consider the markets and trade centers on land routes and perhaps also along the coast, so that the <merchants> may be present there without danger and may transport their cargoes for your provisioning without hesitation and without fear".

<sup>57</sup> WIELOWIEJSKI 1970, p. 271.

<sup>58</sup> EGRI 2007, pp. 109–110; ERDKAMP 2002, p. 61.

<sup>59</sup> ROTH 1999, p. 270.

<sup>60</sup> LEMKE 2015a, p. 850; LEMKE 2011; SARNOWSKI 1988.

<sup>61</sup> SARNOWSKI 1988, pp. 66–67.

<sup>62</sup> SINNIGEN 1962, p. 223, regarding the *frumentarii*: "Domitian was apparently the first emperor to organize a 'G-4 Section' for the army" (G-4 being an army slang term for logistics officers).

<sup>63</sup> STROBEL 1989, p. 56; FILOW 1906, p. 38.

<sup>64</sup> DVORSKI, ZAHARIADE 1997, p. 61.

<sup>65</sup> Columns make the supply of marching soldiers easier and less prone to guerilla warfare (which preferably targets supply units). Hence Moltke's famous motto: "Getrennt marschieren, vereint schlagen". Trajan was aware of the Roman army's specific vulnerability to guerilla attacks (LUTTWAK 1976, p. 41) not only from the "Varian disaster", but also from the failed campaign of Domitian in AD 86.

<sup>66</sup> SARNOWSKI 1988, pp. 53–59; BENEŠ 1978, p. 67.

<sup>67</sup> Cf. studies on recent events, such as: PELTZ *et alii* 2005, esp. chapter 4.

Durostorum.<sup>68</sup> In their wake, a whole array of smaller units came to garrison on the *limes* as well.<sup>69</sup> All in all, the Lower Moesian army had an estimated strength of 16,400–18,500 soldiers, who needed to be fed.<sup>70</sup>

The supply system had already evolved, becoming considerably reliable in the times of Vespasian when this stretch of the frontier was significantly strengthened as part of the reorganization of the Empire defences.<sup>71</sup> However, the eventual annexation of Scythia (a separate province in late antiquity, modern day Dobrudja) made the dislocation of another legion into the region necessary, including additional *auxilia*, which was difficult considering obligations in other parts of the Empire.<sup>72</sup> Moreover, the unfavourable geographic conditions especially in the southern part of Dobrudja, as well as in the adjacent region of Ludogorie, made provisioning by agriculture particularly difficult.<sup>73</sup> This dilemma was exacerbated by the fact that the territory of Moesia (Inferior) was never densely populated except for the Greek cities on the Black Sea.<sup>74</sup> In a thinly populated area it is harder to feed an army, moreover “the roads and means of water-carriage are much better in rich countries and afford a greater choice, being more numerous, the means of transport are more abundant, the commercial relations easier and more certain”.<sup>75</sup> The impact that the *limes* had on the development of the settlements described above was a major economic factor<sup>76</sup> and the small scale urbanization around army camps was also important for the security of the provisioning.<sup>77</sup> The fords on the Danube and the proximity of the army had a positive influence on the exchange of goods with the Barbaricum. Due to their symbiotic nature, the development of such settlements can be perceived as a natural process.<sup>78</sup> Still, given the particularly small population of the Dobrudja, the Roman administration was forced to implement a “settlement programme” to ensure provisioning of the soldiers, hence the regular distribution of the settlements and their Latin names. As a result, the existence of a rather large number of recorded rural communities in the Dobrudja contrasted with the lack thereof in the remaining parts of Lower Moesia.<sup>79</sup>

Just like in the other provinces, the food supply was generally meant to be based on local resources [Fig. 1], using production centres within the province, and only supplementary exterior supply lines.<sup>80</sup> However, even a central system was always elastic enough for local peculiarities.<sup>81</sup> The unusually large number of cavalry units in the province,<sup>82</sup> for instance, additionally raised the requirements for food and fodder. Thus, when the decision was made to create the province, its development was accelerated with drastic measures: in the early first century 50,000 Dacians (Getae) were moved by order of Aelius Catus to the southern Danube shore.<sup>83</sup> This operation was meant to depopulate the border zone on the northern shore<sup>84</sup> and to increase the population density in the new province. This maneuver was repeated on an even larger scale during Nero’s reign,

<sup>68</sup> MATEI-POPESCU 2010; SARNOWSKI 1988.

<sup>69</sup> MATEI-POPESCU 2013, pp. 207–230; BENEŠ 1978.

<sup>70</sup> DUCH 2015, p. 236.

<sup>71</sup> SCHÖNBERGER 1969, p. 155; GABLER 1999, p. 75; LUTWAK 1976, p. 57; BENEŠ 1978, p. 65.

<sup>72</sup> POULTER 1986, p. 521.

<sup>73</sup> LEMKE 2015b; POULTER 1980.

<sup>74</sup> MROZEWICZ 1982, p. 6; ZAWADZKI 2009, pp. 55–56.

<sup>75</sup> CLAUSEWITZ 1832, Book 5, Chapter 14-4.

<sup>76</sup> CONRAD, STANČEV 2002, p. 677; THEODOSSIEV 2000, p. 91.

<sup>77</sup> On the local production, see THOMAS, STALLIBRASS 2008, p. 9; KOLENDO 1976, pp. 45–67.

<sup>78</sup> For the immigrated population settled for reasons of security and economy close to the camps along the Danube, cf. MROZEWICZ 1984a, p. 116.

<sup>79</sup> POULTER 1980, pp. 734–737. See also MATTHEWS 2015.

<sup>80</sup> SULTOV 1983. Cf. WHITTAKER 2004, p. 98; MONFORT 2002, p. 72.

<sup>81</sup> SPEIDEL 2009, p. 286: “Aus solchen Gründen wurde deshalb der Schluss gezogen, dass die Truppenverwaltungen sehr viel weniger von zentralen Vorgaben und weit mehr von lokaler Initiative bestimmt waren, als dies durch Finks Kategorien nahegelegt wird”; cf. SIMON 2015, p. 242.

<sup>82</sup> BENEŠ 1978, pp. 64–66.

<sup>83</sup> DUCH 2015, p. 238; PREMERSTEIN 1898, p. 158.

<sup>84</sup> ALFÖLDI 1939, p. 30; PREMERSTEIN 1898, p. 158: “Eine wüste Verteidigungszone”.

when Titus Silvanus Elianus, governor of Moesia, ordered 100,000<sup>85</sup> families of *transdanuviani* to be moved to the southern shore, so they would pay tribute in grain and populate the province.<sup>86</sup> At the same time, further depopulation of the left bank was intended, maybe as a countermeasure to the Sarmatian intrusions of the period,<sup>87</sup> even though *annona* (grain) was collected in Wallachia as well, as we know from Hunt's *pridianum* (see below).

Looking at the *limes* sites in Moesia Inferior, one can see that the Danube was their biggest shared attribute. The decision to make the river a frontier line of the Empire included a number of considerations, tactical and logistical ones.<sup>88</sup> More often than not fortresses were built on elevated ground, but never so high as to make the transport of heavier goods from the river level troublesome. Logistic convenience was also the reason for the location of fortress sites right on the Danube, where transport ships arrived. Wherever major tributaries were lacking, the Roman army sought places close to the mouths of smaller streams emptying into the Danube. Springs of fresh water were common in the upper run of these rivers and constructing an aqueduct along a river valley was easier for the engineers. In the case of the large legionary fortresses in the province, the ground selected for their construction had to be sufficiently wide to accommodate the *canabae* and *vici* that invariably emerged. These aspects had preference over the potential defensive characteristics of the terrain.<sup>89</sup>

### *Canabae and vici*

The *canabae* of the various army camps in Moesia Inferior contributed to the process of supplying the army. Here lived soldier families, veterans, who had a considerable influence on the development of these towns, and people working for the army as well as slaves.<sup>90</sup> By settling near their former garrison<sup>91</sup> they contributed to increased control, consolidation and supply chains for the army, before quicker economic growth and Romanization occurred under Trajan.<sup>92</sup> Most of all, veterans were helpful in the early phases of urban life around the camps as far as organization, economy and security were concerned.<sup>93</sup> From the second century onwards veterans would also settle in the northern Dobrudja,<sup>94</sup> diminishing the considerable infrastructural problems there.

The first *canabae* in the yet undivided province developed in Oescus.<sup>95</sup> Since the area within one *leuga* (2.2 km) was under the direct authority of the army, the inhabitants of the *canabae* despite their status as *veterani et cives Romani consistentes* had no right of ownership there;<sup>96</sup> consequently, they often settled a little farther off. At Durostorum, the *canabae* lay several hundred metres from the camp. They developed when the *XI Claudia* legion arrived and received the honorary title *Aeliae*.<sup>97</sup> In the rural territories south of Novae, Conrad noticed signs of regular land partitioning along the valleys, just like in the other provinces. Veterans lived here probably after completing the *honesta missio*. The *canabae* of Novae stretched approximately 1.5 km towards

<sup>85</sup> Zawadzki's comment should be kept in mind with regard to these numbers (ZAWADZKI 2009, p. 67): "this number rather comes from doubling the 50,000 Getae transferred under Augustus onto the right shore by Aelius Catus. ... The author of the *elogium* likely intended to stress that the feat performed by Plautius Elianus was twice as important. ... Still the number of relocated Danubian settlers must have been substantial, since these people had a positive impact on the grain production".

<sup>86</sup> MROZEWICZ 1987, pp. 107–128; MILLAR 1982, p. 8.

<sup>87</sup> ZAWADZKI 2009, p. 55.

<sup>88</sup> RANKOV 2005; LEMKE 2015a.

<sup>89</sup> LEMKE 2015a.

<sup>90</sup> EGRI 2007, p. 104; ARICESCU 1980, pp. 115–116; MROZEWICZ 1984a, p. 115. MANN 1974, p. 516, labelled the civilians in the wake of a legion an "instant village". At Vindonissa about 2000 slaves belonged to the camp; cf. WHITTAKER 2004, p. 91.

<sup>91</sup> MANN 1983; MANN 1974, p. 515.

<sup>92</sup> SARNOWSKI 1988, p. 51.

<sup>93</sup> TAČEVA 2004, p. 10.

<sup>94</sup> DORUȚIU-BOILĂ 1977, p. 90.

<sup>95</sup> MROZEWICZ 1982, p. 14. On Oescus in general, see BOYANOV 2008; KABAKČIEVA 2000.

<sup>96</sup> CONRAD 2006, p. 322.

<sup>97</sup> GEROV 1977, p. 301.



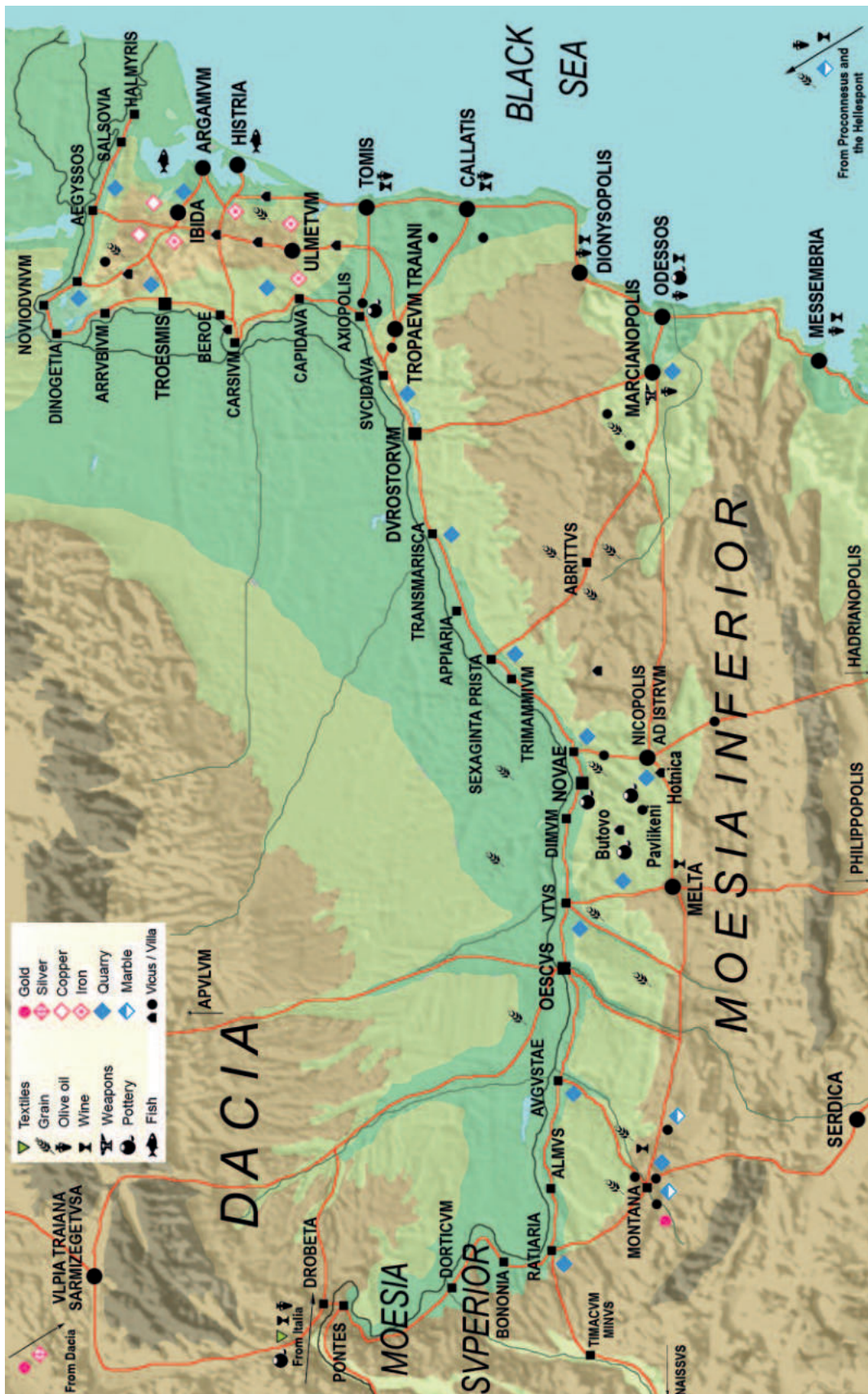


Fig. 1. Natural resources and provincial production centres in Moesia inferior (M. Lemke). The data used the sources stated in the text, as well as A. Tomas, *Archaeologia Bulgarica* 15/2 (2011), Fig. 1

Svištov, but also south and east from the camp.<sup>98</sup> On top of that, 32 sites were detected south and southeast of Novae at intervals of about 300–500 m. These farms had a surface of 5 to 50 ha, pointing to small-scale agriculture and the existence of several specialist workshops.<sup>99</sup>

Civil villages, *vici*,<sup>100</sup> were located in a distance of about 1.5–2.5 km from the camps, but they also could be completely independent from the *limes* in the province. They were administered by the inhabitants themselves and not unlike Roman towns,<sup>101</sup> even though they mostly kept their pre-Roman name. As a rule, they were not a continuation of larger pre-Roman settlements under new Imperial rule. *Vici* were likely supported by the given camp commanders, as they facilitated local provisioning and limited the growth of the *canabae*, which could be a hindrance during an attack. On the other hand, it is mostly unknown whether the provincial legates supported the development of these *vici*<sup>102</sup> with the prominent exception of Dobrudja.

The development of the province was accompanied by an expanding road network built by the army, which played a fundamental role in extending and maintaining supply lines.<sup>103</sup> The state of research on these roads is varied. The overall layout of the road network is known from *itineraria*, milestones and other epigraphic evidence, which also provide data on the location of the various towns and settlements. Thus we have the *limes* road along the Danube with roads branching off at right angles and leading into the interior of the province. In modern Bulgaria, these roads ran parallel to the bigger Danube tributaries and towards the mountain passes of the *Haemus mons*, and were connected with a route parallel to the Danube road running through Montana and Nicopolis ad Istrum.

The inhabitants of Roman *vici* were obliged to repair roads, even during the eventful third century.<sup>104</sup> A fragmentary inscription from Ulmetum<sup>105</sup> mentions the duties of maintaining the *via publica* on specified stretches of the road. The responsibility of rural communities for ensuring transport on the *cursus publicus* and technical maintenance is well known in the Imperial administration. There is proof of civilians not being happy with these numerous tasks, such as a “petition” to reduce the labor.<sup>106</sup> The epitaph of a *praefectus vehiculorum* is known from modern Comakovci near Montana; he supervised the *cursus publicus* in the second half of the second century.<sup>107</sup> His duties would have included ensuring road maintenance<sup>108</sup> and transport of supplies for the army.<sup>109</sup> The swift development of *vici* in Dobrudja was determined by the army’s reliance on civilians to maintain the road network connecting the *limes* sites with the Pontic towns (Argamum, Histria, the capital Tomis, Callatis, Dionysopolis, Odessos) and to guarantee the supply lines for the garrisons. Creating mixed settlements of veterans and *peregrini* played a major role in *limes* logistics.<sup>110</sup> The *vici* first appeared under Hadrian and were connected with the road network; they certainly did not exist before the consolidation of the Scythian *limes* under Trajan.<sup>111</sup> In late antiquity, after major migrations in the region, these artificial Roman place names disappeared quickly, especially in Dobrudja.<sup>112</sup> The phenomenon is proof of deep changes in the region. Regarding the *vici* belonging to army camps, one should also consider the numerous *villae* loosely concentrated in the vicinity. These also played their part in local production (especially farming) and Romanization,<sup>113</sup> thus enhancing the supply potential. Clusters of villages and *villae* can be seen near

<sup>98</sup> *Canabae* Novae and the question regarding the *municipium* Novae are under investigation: TOMAS 2007, pp. 42–44; TOMAS 2016.

<sup>99</sup> CONRAD 2006, p. 321; TOMAS 2007; TOMAS 2016; ČISTAKOVA 2013.

<sup>100</sup> The overview of the *vici* in Moesia Inferior is still limited. The *vici* in Britannia and Germania have been studied in detail, cf. SOMMER 2006, pp. 95–145; SOMMER 2004, pp. 312–321.

<sup>101</sup> MROZEWICZ 1982, p. 63.

<sup>102</sup> VITTINGHOFF 1968, p. 135.

<sup>103</sup> SIMON 2015, p. 244. For Moesia, see PANAIT 2015.

<sup>104</sup> PETCULESCU 2006, p. 39; POULTER 1980, pp. 734–735.

<sup>105</sup> *CIL* III 12488.

<sup>106</sup> POULTER 1980, p. 737.

<sup>107</sup> CONRAD 2004, p. 262 (no. 512).

<sup>108</sup> ECK 1979, p. 89.

<sup>109</sup> ERDKAMP 2002, p. 52.

<sup>110</sup> POULTER 1983, p. 86.

<sup>111</sup> POULTER 1980, p. 734.

<sup>112</sup> ZAHARIADE 2006, p. 6.

<sup>113</sup> BÜLOW 1992, pp. 207–211; POULTER 2007, p. 367; MROZEWICZ 1984a, p. 120; ČISTAKOVA 2013.

limes army camps, but also around the towns in the interior: Montana, Nicopolis, Abrittus, Marcianopolis, Tropaeum Traiani, Ulmetum. The amount of discovered farming tools also hints at the intensity of agriculture in these areas.<sup>114</sup>

### *Municipium and colonia*

Municipal status is a formal acknowledgement of urbanization processes taking place at the site.<sup>115</sup> Social differences due to legal status and affiliation (citizenship) were equalized, regardless of whether a given person was a Roman citizen or a *peregrinus*. Inhabitants were equal within the *municipium* and allowed to marry according to Roman law; citizens also could and had to ensure a juridical and religious order within municipal law.<sup>116</sup> It has been suggested that *municipia* developed for reasons of security at a certain distance from army camps;<sup>117</sup> therefore, it was more often the *vicus* than the *canabae* that gained municipal status,<sup>118</sup> but reverse examples are also known, notably at Novae.<sup>119</sup> Municipalization is a characteristic feature of the southern stretch of the European *limes*, including Moesia Inferior, since this type of city was closely connected with the legionary fortresses and constituted a further attempt at anchoring the Roman urban lifestyle on the Danube and beyond, in Dacia. Almost all the towns that were to become a *municipium* or *colonia* on the right bank of the Danube, developed close to army camps.<sup>120</sup> In Moesia Inferior, the army camps Novae, Durostorum and Troesmis received municipal status,<sup>121</sup> as did Tropaeum Traiani,<sup>122</sup> while Noviodunum,<sup>123</sup> Montana and the old Greek trading outpost Axiopolis were possibly also promoted in this fashion.<sup>124</sup> Oescus was the sole *colonia* on the Danube in Moesia Inferior.

### Trade and resources

Many imports from Italy and the western provinces have been observed in the first century material from Moesia,<sup>125</sup> illustrating the working of the initial long distance supply lines. The Greek-Thracian market in northeastern Thrace, existing from Republican times,<sup>126</sup> probably could not satisfy yet the new legionary consumers,<sup>127</sup> even though the annexed Pontic cities certainly constituted an economic anchor in the barren region. These cities had become autonomous colonies, *civitates foederatae*, towards the end of Augustus' reign,<sup>128</sup> a fact that was apparently welcomed by both

<sup>114</sup> CHOLAKOV 2012.

<sup>115</sup> ABBOTT, JOHNSON 1968, pp. 3–10; MROZEWICZ 1982, p. 76; ØRSTED 1985, pp. 36–37. Municipalization in Moesia Inferior has been investigated fairly thoroughly: MROZEWICZ 1995, pp. 83–89; MROZEWICZ 2008, pp. 679–686. Cf. also TACHEVA 2005.

<sup>116</sup> VITTINGHOFF 1968, p. 142.

<sup>117</sup> POULTER 1983, p. 81.

<sup>118</sup> MROZEWICZ 1984b, p. 286. Building cities in the *territorium legionis* was likely also avoided to keep jurisdiction and administration simpler (*ibidem*, pp. 288–290), even though places in the direct vicinity of army camps became popular during the crisis of the third century (*ibidem*, pp. 292–293).

<sup>119</sup> Although it should be noted that the *municipium* at Novae is merely attested through a single inscription where the abbreviation MN has been extended to read *municipium Novensium*; cf. GEROV 1989, no. 300.

<sup>120</sup> VITTINGHOFF 1968, p. 132.

<sup>121</sup> PETCULESCU 2006, p. 35.

<sup>122</sup> ARICESCU 1980, p. 47.

<sup>123</sup> MATEI-POPESCU 2016.

<sup>124</sup> BOUNEGRU 2006, p. 30.

<sup>125</sup> PARASCHIV 2002–2003, pp. 177–207; ŻMUDZIŃSKI 1998, p. 47.

<sup>126</sup> BOŽKOVA 2007, p. 91.

<sup>127</sup> On surplus production, see THOMAS, STALLIBRASS 2008, p. 5.

<sup>128</sup> BOUNEGRU 2009c, p. 32.

sides as Rome guaranteed safety and stable development of the entire region.<sup>129</sup> The missing local infrastructure combined with the army's demand resulted in a booming trade in the provinces in the years to come, which in turn accelerated urban development.<sup>130</sup> The products and natural resources discovered at the various *limes* sites hint at the possible supply lines. Since a legionary camp constituted a considerable market,<sup>131</sup> local production could not satisfy all the needs. Soldier's pay was the fiscal basis for the operation with transactions somewhat blurring the division into the army and civilians.<sup>132</sup>

In Moesia Inferior, olive oil and wine were the basic imported products (originating from the Eastern Mediterranean, especially Asia Minor). The prime evidence for this are the relevant amphorae, on one hand mirroring the extent of military control in a given frontier zone<sup>133</sup> and on the other reflecting the long distance nature of these imports.<sup>134</sup> In the first century, the region was supplied with oil from Histria, transported in Dressel 6 amphorae. The Greek Pontic cities were also among the customers, playing their part in turn in supplying the army.<sup>135</sup> The import was supplemented with Spanish olive oil in Dressel 20 amphorae. Zeest 90 amphorae with olive oil from Ionia appeared toward the late second century.<sup>136</sup> Further imports for the camp at Novae included pottery, especially the prized *terra sigillata*,<sup>137</sup> lamps, wine, glass, worked stone (including marble from Proconnesos<sup>138</sup>), lead and jewelry. The lamps came from Italy, the *unguentaria* from Dalmatia and Italy, the wine and olive oil from Italy and Istria, as well as the Pontic cities.<sup>139</sup> In Callatis, both wine and the required amphorae were produced in large quantities,<sup>140</sup> while Histria became a local centre of fishing.<sup>141</sup> In Marcianopolis, a weapons factory was set up in the fourth century.<sup>142</sup> Outside the province, Istria especially seems to have become the main source of olive oil for the entire Danube region.<sup>143</sup> Only a few first-century finds can be connected with Greece or Asia Minor.<sup>144</sup> Over the years, in the second century, the import from Italy diminished as a result of local economic acceleration.

Traded products highlight the importance of civilians in the army supply system. Moesian production centres like Hotnica, Pavlikeni and Butovo developed quickly after the Dacian wars of Trajan.<sup>145</sup> Deliveries of pottery for the army by the local communities may have also been a manoeuvre to offset the burden of a mandatory food supply<sup>146</sup> by allowing the producers to actually sell something. The said production centres developed around the newly founded city of Nicopolis and supplied the *limes* sites to the north, especially Novae. The army and the soldiers' pay was a major factor in the monetization of the province.<sup>147</sup> Limited access to central state coins, for instance during the Marcomanic wars, strengthened local minting. Towards the late second century,

<sup>129</sup> BOUNEGRU 2006, p. 23; PIPPIDI 1958, p. 244. On a lighter note: Among Ovid's many woes after being banished to Tomis was the duty to serve in the defense of the city, before Rome assumed this task; cf. *Ov. Tr.* 4.1.69, *Pont.* 1.8.7. PREMERSTEIN 1898, p. 195, commented on this Roman protection as follows: "Dass dies einigermaßen gelang, zeigt vielleicht am besten der Umstand, dass Ovid ... in dem zwischen 14 und 16 verfassten IV. Buche der *Epistulae ex ponto* von neuerlichen feindlichen Invasionen schweigt, während die Tristien und die vorhergehenden Bücher *ex Ponto* bis zur Ermüdung Klagen über diesen Gegenstand variieren".

<sup>130</sup> EGRI 2007, p. 107; ØRSTED 1985, p. 31.

<sup>131</sup> MANN 1974, p. 516.

<sup>132</sup> WHITTAKER 2004, p. 95; WIELOWIEJSKI 1970, p. 190.

<sup>133</sup> EGRI 2008, p. 51.

<sup>134</sup> EGRI 2008, p. 45; SALKIN 2007, p. 40; SIMON 2015, p. 239; diminished quantities of amphorae in frontier provinces can either result from a reduction of military

personnel or reflect a growing economic independence; cf. THOMAS, STALLIBRASS 2008, p. 8; EGRI 2008, p. 51.

<sup>135</sup> MATEI-POPESCU 2014.

<sup>136</sup> DYCZEK 2002, p. 20.

<sup>137</sup> DIMITROVA-MILČEVA 1987, pp. 108–133.

<sup>138</sup> SKOCZYLAŚ, GRAŁA 2003, p. 217.

<sup>139</sup> DUCH 2015, p. 248.

<sup>140</sup> GRAMATOPOL, BORDEA 1969, p. 145.

<sup>141</sup> BOUNEGRU 2009d.

<sup>142</sup> SARNOWSKI 1988, p. 128.

<sup>143</sup> EGRI 2008, p. 50.

<sup>144</sup> ŻMUDZIŃSKI 1998, p. 50.

<sup>145</sup> DUCH 2015, p. 250.

<sup>146</sup> GERRARD 2008, p. 122.

<sup>147</sup> DUCH 2015, pp. 241–244.

provincial minting was dominant among the coins in Moesia and Thrace. This tendency continued when in the third century imports of *terra sigillata* were consequently replaced by corresponding products made in the area of Nicopolis.<sup>148</sup> Additionally, the soldiers produced pottery, “legionary ware”, in the camps themselves.<sup>149</sup>

Short transport routes were crucial when the transported goods were heavy raw materials. Stone used at Oescus came from different quarries than at Novae, Nicopolis, Pavlikeni or Dimum, for instance;<sup>150</sup> this clearly results from efforts to keep the supply route as short as possible. Limestone was the most common rock in use. From Hotnica, which was the quarry for the central Danube plain and the *limes* sites between Dimum and Iatros, stone was transported by the rivers Rosica and Jantra to the Danube.<sup>151</sup> Other quarries from the territory of Nicopolis include Kameneč, Samovodene and Koevei.<sup>152</sup> Some quarries on the lower run of the Danube are also known, for instance near Dervent, where ships could be loaded conveniently at a port;<sup>153</sup> certainly there were many more. Sandstone quarries along the Danube have been found at Novae, Carevec and Oreš, while basalt was available in Dragomirovo, Ovča Mogila, Červena, Slomer, Vărbovka, Pavlikeni and Butovo.<sup>154</sup> The marble used at Novae for statues and architectural elements came from a more distant region (Berkovica, Vraca, Montana), but still within the province. The local acquisition of stone was no problem overall, numerous smaller quarries have also been noted at natural outcrops of limestone in the valleys of the Danube tributaries<sup>155</sup> (like the Jantra). Also in the less hospitable Dobrudja this raw material was relatively abundant.<sup>156</sup> In the Dobrudja, the Altın Tepe (Tur. “Golden Mountain”) and Casimcea mountain ranges held deposits of copper,<sup>157</sup> while traces of antique iron ore mining were discovered in various places.<sup>158</sup> Also, numerous stone quarries were located in the Dobrudja,<sup>159</sup> while the soil was rich in clay in many places, providing good raw material for pottery production.<sup>160</sup>

State<sup>161</sup> and private<sup>162</sup> brick factories were built in the province. The former could be manned by the *vexillationes* deployed for construction works or responsible for pottery production.<sup>163</sup> Clay could be found in numerous places along the Danube and the provincial hinterland, for instance in Ovča Mogila, Dičin, Radanovo and Butovo.<sup>164</sup> The huge amount of wood<sup>165</sup> and metal<sup>166</sup> that were necessary could not always be collected or extracted near the camps. The goods were preferably transported by ship, even though it was possible to move them by wagon or cart.<sup>167</sup> Timber was transported on the Danube.<sup>168</sup> Still, in spite of the currently dominating forest-steppe in the region, it appears probable that wood need not have been imported from far away, the forests in the area being sufficiently large.<sup>169</sup>

<sup>148</sup> ŽMUDZIŃSKI 1998, p. 48.

<sup>149</sup> GASSNER, JILEK 1997, pp. 301–309; DYCZEK 2009, pp. 153–171; DYCZEK 2016.

<sup>150</sup> SKOCZYLAŚ 1999, p. 129.

<sup>151</sup> SKOCZYLAŚ 1999, p. 130.

<sup>152</sup> TOMAS 2016, p. 37.

<sup>153</sup> BALTRES, AVRAM 2002–2003, p. 199.

<sup>154</sup> TOMAS 2016, pp. 38–39.

<sup>155</sup> BALTRES, AVRAM 2002–2003, p. 203.

<sup>156</sup> RADULESCU 1972, pp. 177–203.

<sup>157</sup> ZAHARIADE 2006, p. 13.

<sup>158</sup> Garvăn, Teița, Igliza, Turcoaia, Babadag, Capidava, Pantelimonu de Sus and Istria.

<sup>159</sup> Slate: Istria, Mihai Viteazu, Pantelimonu de Sus, Iacob Deal, Turcoaia; granite: Măcin, Turcoaia; dolomite: Valea Nucarilor, Mahmudia; limestone: Isaccea, Mihail Kogalniceanu, Zebil, Medgidia, Saligny, Hârșova, Mahmudia, Babadag, Capidava, Cernavodă; cf. ZAHARIADE 2006, pp. 13–14.

<sup>160</sup> Especially the Kaolin-ware typical of the Dobrudja: DYCZEK 2016, p. 243. Cf. ZAHARIADE 2006, p. 14.

<sup>161</sup> SARNOWSKI 1997, p. 498.

<sup>162</sup> EGRI 2007, p. 105; TOMAS 2016, p. 40.

<sup>163</sup> RADULESCU 1973, pp. 129–135; IVANOV 1994, pp. 7–13; DYCZEK 2009, p. 158. SARNOWSKI 1997, p. 498, suggested that the camp name Tegulicum west of Durostorum reflects the presence of such a detachment.

<sup>164</sup> TOMAS 2016, p. 39.

<sup>165</sup> HANSON 1978, pp. 293–305.

<sup>166</sup> The demand for nails is best illustrated by the cluster of some 875,000–900,000 nails found at Inchtuthill; cf. MAPELLI *et alii* 2009, pp. 51–58.

<sup>167</sup> ROTH 1999, p. 209.

<sup>168</sup> TOMAS 2016, p. 35.

<sup>169</sup> Jordanes, *Getica* 51. Jordanes describes the area around Nicopolis as woodland and pastures, unsuitable for agriculture, which at first glance seems an odd choice of place for founding a city.

A specific mining district existed around Montana, but metal ore, especially iron,<sup>170</sup> was extracted also in Dobrudja, under the command of the *procuratores metallorum*.<sup>171</sup> The people living especially around the Greek cities, in the vicinity of Dionysopolis, Marcianopolis, as well as Anchialus, Deultum and Apollonia just outside the province, provided much of the natural resources, including lime, marble, iron and copper.<sup>172</sup> The mining district around Montana was meticulously secured by military personnel. The town was the most important centre in the western part of the province in terms of mining, local economy, and religion;<sup>173</sup> unsurprisingly, it developed from an earlier Thracian settlement. Due to the strategically important gold mines, it stood out among the cities of Moesia for being a *praesidium*<sup>174</sup> with an army camp, as well as a local administration within its region.<sup>175</sup> The *cohors I Sugambrorum veterana equitata* was stationed there from the early second century, as was a *vexillatio* of the *legio XI Claudia*, which replaced the *cohors* under Hadrian. Additionally, soldiers of the *legio I Italica* may have been stationed there.<sup>176</sup> The area was somewhat special, because its purpose was not solely to provide war material for the needs of the provincial garrisons, but also to organize the “export” of the ores elsewhere.

In Moesia Inferior, warehouses have been identified on military premises and in civil contexts in various places.<sup>177</sup> Especially the huge *horrea* around the farms in the region of Montana give proof of a grain production on a large scale.<sup>178</sup> But also in the eastern part of the province, along the border with Thrace, the conditions allowed for extensive agriculture in the Kamcija and Provadijska Reka river valleys. Here, as well as in some of the few fertile stretches of land in the Dobrudja, huge farms were built.<sup>179</sup>

Two *frumentarii* were mistakenly known from inscriptions in the Montana district.<sup>180</sup> However, the *regionarii* actually mentioned in both of these inscriptions<sup>181</sup> could well have engaged in logistics as Speidel pointed out, given their rather vague job description.<sup>182</sup> A *frumentarius* from the *legio I Italica*, possibly stationed at Novae, is known<sup>183</sup> as being active outside Moesia Inferior in Delphi during Hadrian’s reign.<sup>184</sup> His deeds were far closer to logistics than espionage, as he supervised a construction, a function often fulfilled by *frumentarii*, thus pointing to logistics as their main occupation.<sup>185</sup> A *lixa* is also attested in an inscription from Oescus in Moesia Inferior, dated to the late first century; he was connected with the fifth legion.<sup>186</sup>

The *primipili* could sign food supply contracts with civilian traders,<sup>187</sup> a procedure that from the third century onwards would lead to duties of *pastus militum* and the rise of civilian *primipilarii*, which is described in detail below. The *mensores* probably allotted space for traders, such as Iulius Iero from Novae, a negotiator selling wine,<sup>188</sup> while planning the camp and its surroundings.<sup>189</sup>

<sup>170</sup> ZAH 1971, pp. 191–207.

<sup>171</sup> BAUMANN 1995, p. 439.

<sup>172</sup> PREŠLENOV 2008, p. 300.

<sup>173</sup> SARNOWSKI 1988, p. 85.

<sup>174</sup> Cf. BUCKLER, CALDER, COX 1926, p. 74, inscription no. 201: *qui a Moesiae inferioris Montanensi praesidio numerus*.

<sup>175</sup> Regarding the strategic importance, see RANKOV 1983, pp. 43–47. Cf. also AUSTIN, RANKOV 1995, p. 199.

<sup>176</sup> HIRT 2010, p. 192; RANKOV 1983.

<sup>177</sup> RIZOS 2013; SARNOWSKI 2005, pp. 149–151.

<sup>178</sup> POULTER 1983, p. 89.

<sup>179</sup> SARNOWSKI 1988, p. 66.

<sup>180</sup> *CIL* III 7420; *CIL* III 12731; cf. RANKOV 1983, pp. 40–73.

<sup>181</sup> SPEIDEL 1984, pp. 186–187.

<sup>182</sup> RANKOV 1983, pp. 55–56, notes: “Exactly what the regional duties performed by all these officers were we can

only guess ...”, and “... to perform regional administrative duties ...”.

<sup>183</sup> MITCHELL 1987, p. 339. The inscription does not state the place where this officer was stationed, only his affiliation with this legion. Probably Mitchell extrapolated the former from the location of the standing fortress of the *legio I Italica* (with an error): “Novae in Moesia Superior”. There is a camp named Novae in Upper Moesia, but the legion in question was never stationed there.

<sup>184</sup> *ILS* 9473; BOURGUET 1905, p. 43. Cf. RANKOV 1990, p. 177; SHERK 1957, p. 61.

<sup>185</sup> Cf. DOMASZEWSKI 1908, p. 109.

<sup>186</sup> IVANOV 1990.

<sup>187</sup> WHITTAKER 2004, p. 96; SIMON 2015, p. 243.

<sup>188</sup> *IGrLat. Novae* 100.

<sup>189</sup> WHITTAKER 2004, p. 96.

It has been noted that the Romans preferably transported most goods on waterways. Maybe this was dictated by the geography of the Empire, or maybe it was the other way round: the waterways dictated the limits of growth for the Empire.<sup>190</sup> In spite of a certain risk connected with water travelling, the Roman army preferred this type of transportation, as it was cheaper and quicker than overland movement and much more convenient for heavy loads.<sup>191</sup> The Romans regularly transported grain, wine, olive oil, wood and stone by ship, as well as bricks.<sup>192</sup> Most legionary camps in the Empire were located on a major river<sup>193</sup> and in Moesia Inferior most of the goods were transported on the Danube and other rivers of the Balkan.<sup>194</sup> While the fleet was supposed to patrol the *limes*<sup>195</sup> and deny enemies the possibility of crossing the river and even capture their vessels, its main task was delivering supplies to the camps.<sup>196</sup> Subunits for guarding convoys were created (for land transport also).<sup>197</sup> Transmarisca and Noviodunum are some of the bases where waterways and major overland roads crossed.<sup>198</sup> From the *pridianum cohortis I Hispanorum* discussed below, we know that some soldiers served on *naves frumentariae*.<sup>199</sup> Stamped legionary tiles, found in cities on the Black Sea, give proof of intensive shipping of building materials not only to, but also from army camps, where the bricks and tiles were produced and from where they were distributed.<sup>200</sup> The army would also send out brick-producing units when necessary.

The Danube was an ideal main route for supply ships (provided it was not frozen), connecting the big ports on the Black Sea and also the Adriatic via the Sava and Drava rivers with the limestone sites and the mouths of the tributaries, which in turn made possible deliveries into the province interior, as well as the transport of raw materials in the other direction, e.g., stone from Hotnica along the Jantra to the Danube. Looking at the miserable width and depth of the Danube tributaries nowadays one is entitled to wonder, if they were navigable at all. However, the rivers carried more water in antiquity<sup>201</sup> and the barges had a minimal draught that required very little depth, so that the main Danube tributaries of the province (Iskār, Osām, Vit and Jantra) could have served as waterways for a considerable stretch.

The Moesian fleet, operating since Claudius or Nero,<sup>202</sup> was reorganized by Vespasian after 69/70, receiving the title of *Flavia* at some point.<sup>203</sup> Its soldiers had certain privileges.<sup>204</sup> Noviodunum was the seat of the *praefectus classis*, where in the second and third centuries a *vexillatio* of the *Italica* was stationed. Even when transporting heavy goods, a quay or other masoned construction was not a precondition for unloading a ship. Small light barges were used for this purpose, connecting with a natural port on a river bank.<sup>205</sup> Still, larger harbour facilities with docks for building and repairing ships were probably located at Dimum.<sup>206</sup> The main base of the fleet was Noviodunum.<sup>207</sup> Moreover remains of solid ports were found at Novae,<sup>208</sup> Halmyris,<sup>209</sup> Capidava and Axiopolis<sup>210</sup> as well as Carsium.<sup>211</sup> At Rasova near the mouth of the river Baciului, a large

<sup>190</sup> ROTH 1999, p. 189. Cf. HERZ 2002, p. 21.

<sup>191</sup> ARICESCU 1980, p. 114; ROTH 1999, pp. 190–191; RICKMAN 1980, p. 120. Cf. Liv. 38.3.11.

<sup>192</sup> CASSON 1965, p. 31; SARNOWSKI 1997, p. 498.

<sup>193</sup> MONFORT 2002, p. 76.

<sup>194</sup> BOUNEGRU 1997, pp. 311–313; BOUNEGRU 2006, pp. 12, 101–104.

<sup>195</sup> LUTTWAK 1976, p. 78.

<sup>196</sup> ŻYROMSKI 1994, pp. 118–119; BOUNEGRU, ZAHARIADE 1996, p. 8.

<sup>197</sup> MONFORT 2002, p. 76.

<sup>198</sup> SARNOWSKI 1988, p. 129.

<sup>199</sup> British Museum Papyrus 2851, col. II, 33.

<sup>200</sup> SARNOWSKI 1988, p. 78.

<sup>201</sup> THEODOSSIEV 2000, p. 94.

<sup>202</sup> SARNOWSKI 2006, p. 89.

<sup>203</sup> It is not quite clear when this title was awarded. Cf. ŻYROMSKI 1994, p. 118; CONDURACHI 1974, p. 84; SARNOWSKI, TRYNKOWSKI 1986, p. 539; ARICESCU 1980, p. 30. The first mention is dated AD 92; cf. BÉRARD 1989, p. 133; GUDEA 2005, pp. 396–404.

<sup>204</sup> ECK, PANGERL 2006, p. 96.

<sup>205</sup> CASSON 1965, p. 32.

<sup>206</sup> SARNOWSKI, TRYNKOWSKI 1986, p. 540. However, one should treat with caution the ideas of MITOVA-DŽONOVA 1986 and 1994 regarding a sophisticated dock at Belene.

<sup>207</sup> ARICESCU 1980, p. 31; BOUNEGRU 2006, p. 109.

<sup>208</sup> SARNOWSKI 1996.

<sup>209</sup> GAJEWSKA 1974, p. 83.

<sup>210</sup> BOUNEGRU, ZAHARIADE 1996, p. 85.

<sup>211</sup> BOUNEGRU 2006, p. 109.

structure with hydraulic mortar from the second century was found and interpreted as the port of camp Flaviana, the late antique base of *militēs nauclarii*.<sup>212</sup> It has been suggested that the port at Novae, together with the unusual location of the army hospital within the camp, was a measure for facilitating the transport of wounded soldiers from the Dacian wars of Trajan.<sup>213</sup>

The talents of the army engineers and architects are attested in the written sources. Ulpian mentions the inspection of a public building programme among the duties of the governor of the province, who would have the *ministeria militaria* at his disposal for helping with the inspection (*Dig.* 50.6.7.1). As governor of Bithynia, Pliny asked Trajan a number of times for competent architects in order to carry out expertises for public building projects in the cities.<sup>214</sup> Trajan encouraged the hesitant Pliny to take action on his own account, given the apparent triviality of the matter,<sup>215</sup> but answering a letter describing the construction of two canals connecting the lake of Nicomedia with the sea via the rivers Melas and Sangarius, the Emperor was curious enough to suggest to Pliny that the latter turn on his behalf to the governor of Moesia Inferior, Calpurnius Macer, with a request for a proper specialist, who should be a *librator* or *architectus*<sup>216</sup> for the project. Moesia Inferior was not far from Nicomedia, but neither were Thrace or Greece, from where the architects working in Rome usually came according to an earlier letter by Trajan.<sup>217</sup> Thus, Trajan's idea of borrowing a specialist from Moesia could have been rooted in the fact that a *limes* province with three legions would have a certain number of excellent architects on hand during the phase of rapid development and building activity after the Dacian wars. We have from Moesia Inferior the grave stele of a *ensor discens*, found at Trimammium<sup>218</sup> as well as an inscription set up by a *miles agrimensor* from Montana.<sup>219</sup> The former belonged to the first Italic legion, the latter to the *XI Claudia*.

## Administration

The proper administration of logistics is the key to supplying an army. Thus, the Roman army command made an effort to be as meticulous as possible in this area.<sup>220</sup> Working on the logistics of the Roman army in Moesia Inferior one has the advantage of having the British Museum Papyrus 2851, also called Hunt's *Pridianum* or somewhat imprecisely, but clearly for the interested — Hunt's papyrus, which is a veritable summary of the topic. The exact provenance of this find is not known.<sup>221</sup> The form of the document is comparable to a common *pridianum* (and it will be referred to as such here<sup>222</sup>): an annual personnel register or roster of an army unit, taking into account that in Egypt, where the document was made, two of these were written annually, as the Roman and Egyptian year did not match.<sup>223</sup> Apart from information on single soldiers and units,

<sup>212</sup> BOUNEGRU, ZAHARIADE 1996, p. 86.

<sup>213</sup> DYCZEK 2004, p. 160.

<sup>214</sup> BOUNEGRU 2009b, pp. 19–29.

<sup>215</sup> AUSTIN, RANKOV 1995, p. 124.

<sup>216</sup> MITCHELL 1987, p. 338; cf. SARNOWSKI 1988, p. 68.

<sup>217</sup> The close contacts of the region with the Pontic cities of Moesia Inferior is well known: BOUNEGRU 2009a, p. 13.

<sup>218</sup> CONRAD 2004, p. 225 (no. 368). For epigraphic sources on other *ensores* in the army, cf. SHERK 1974, pp. 546–549; *ensor discens*: DOMASZEWSKI 1908, p. 25.

<sup>219</sup> BOYANOV 2014, pp. 63–69.

<sup>220</sup> ROTH 1999, p. 244. Cf. SPEIDEL 2009, p. 285: “Denn die bei Fink gesammelten Dokumente lassen kaum einen anderen Schluss zu, als dass das römische Heer der Hohen Kaiserzeit mit seiner Verwaltung versuchte, alles und jeden

schriftlich in Listen und Verzeichnissen zu erfassen und diese nach verschiedenen Ordnungssystemen anzulegen, um damit die volle Kenntnis über den täglich wechselnden Zustand von Mannschaft und Material zu gewinnen”.

<sup>221</sup> HUNT 1925, pp. 265–272.

<sup>222</sup> FINK 1971, p. 217. Cf. SPEIDEL 2009, p. 288. Marichal has suggested that instead of being an actual *pridianum*, it stated or summarized information from the last *pridianum* (*ChLA* XI 501).

<sup>223</sup> FINK 1958, p. 111. With the deployment of the unit in the European provinces one faces the question of where its headquarters could have been. Why was Stobi in Macedonia the main location for the garrison and what was the nature of the relations of a Moesian *cohors* with Egypt?; cf. SYME 1959, p. 30.



the system of army documentation included also data on current issues like supplies of food, arms, equipment, raw material and other goods, so the commanding officers knew what they had at their disposal and thus could anticipate and properly document the necessary expenses.<sup>224</sup> The unit in question is the *cohors I Hispanorum veterana*, which belonged to the garrison of Egypt before it was moved to Moesia.<sup>225</sup> Its strength was 546 soldiers, 119 of these *equites*.<sup>226</sup> The document dates to the very beginning of the second century.<sup>227</sup> While the year is not entirely certain, there is much to argue in favour of the document being written up during the preparations for one of Trajan's campaigns against Dacia.<sup>228</sup>

The text in column I, lines 11–20, mentions preparations for a big war. A massive concentration of auxiliary forces along the Dacian frontiers took place at this time.<sup>229</sup> Discharging soldiers unable to fight and replacing them with fresh blood, as attested in the *pridianum*, was commonplace and logical,<sup>230</sup> and quite in accord with the duties of the logistics officers as defined by Emperor Leo in his treatise (cited above, n. 2). The data in the document can be divided into geopolitical, intelligence and logistical elements, which all come together in the described mission of the unit's cavalry onto the far side of the Danube. We learn from the text (col. II, 24–37) that both the Haemus mountains as well as the towns of Piroboridava in modern Moldavia and Buridava in Wallachia were *intra provinciam*. Fink deduced that the Romanization of Wallachia had progressed already by the end of the first century,<sup>231</sup> which is somewhat of an overstatement. Still, removing Decebalus from the fertile lowlands on the left bank of the Danube after setting up a Moesian control zone had its strategic significance for the region, because the local harvest would have been at the disposal of the Roman and not the Dacian army.<sup>232</sup> It can be argued based on the *pridianum* that the lands around the Olt and Seret rivers were already somehow part of the province at the time.<sup>233</sup> The stated necessity of defending the *annona*<sup>234</sup> and the manoeuvre of sending a reconnaissance unit beyond the Danube has led some researchers to suggest that Trajan's reason for engaging in Dacia may have been the intrusions of Decebalus into Wallachia towards the end of the first century.<sup>235</sup> The grain from the *annona* was very precious, especially in the winter, when movement on the Danube could have been hindered by the weather.<sup>236</sup> Thus we can observe here a diversification of the supply sources for the Moesian army. The stated expedition beyond the Danube (23 cavalry soldiers; col. II, 29–33) was intended not only as a means of protecting the harvest, but also as a reconnaissance mission. Involved was about 20% of the cohort's cavalry under the command of a *centurio*.<sup>237</sup>

Concerning logistics, the documents allows us to analyse certain aspects of the long distance supply routes. We learn (II, 18–20) that soldiers of this cohort were sent to Gallia for clothes<sup>238</sup> and grain,<sup>239</sup> and also, on horseback, “beyond the river Erar” (which has not been identified). The grain guarded by the soldiers of the cohort was transported in ships.<sup>240</sup> The text is not clear regarding whether the foodstuffs were bought or simply confiscated (foraging).<sup>241</sup> Moreover, the legionaries of the cohort supervised the work in a quarry in Egypt<sup>242</sup> and serve as police in the Dardanian

<sup>224</sup> FINK 1971, p. 241.

<sup>225</sup> FINK 1958, p. 111; CAVENAILE 1975.

<sup>226</sup> HUNT 1925, p. 268.

<sup>227</sup> Fink suggested the year AD 100 (FINK 1971, p. 221).

The date accepted nowadays is September 16, AD 105. Cf. SPEIDEL 2009, p. 299.

<sup>228</sup> FINK 1958, p. 102; the main chronological indicator is column I, line 30, with the probable name of a consul (*ibidem*, p. 105).

<sup>229</sup> SYME 1959, p. 29.

<sup>230</sup> FINK 1958, p. 111.

<sup>231</sup> FINK 1958, p. 114.

<sup>232</sup> FINK 1958, p. 115; cf. CANTACUZENE 1928, p. 85.

<sup>233</sup> FINK 1958, p. 115.

<sup>234</sup> CANTACUZENE 1928, p. 90.

<sup>235</sup> FINK 1958, p. 116; SYME 1959, p. 32.

<sup>236</sup> CANTACUZENE 1928, p. 91.

<sup>237</sup> CANTACUZENE 1928, p. 86.

<sup>238</sup> Sending soldiers from Moesia to Gallia is astounding, but not impossible; cf. FINK 1958, p. 106.

<sup>239</sup> Obtaining grain and clothes as far as Gallia seems odd, but as noted by FINK 1958, p. 113, the Rhine and Danube provided a convenient transport route.

<sup>240</sup> CANTACUZENE 1928, p. 71.

<sup>241</sup> WHITTAKER 2004, p. 104.

<sup>242</sup> CANTACUZENE 1928, p. 82.

mines.<sup>243</sup> The papyrus also mentions a soldier killed by bandits plaguing the Danubian provinces,<sup>244</sup> who were the reason why transport convoys had to be guarded by army units.<sup>245</sup> From this and other Roman army administrative documents, like the Vindolanda tablets<sup>246</sup> and further papyri from Egypt and Dura Europos, we also learn that the soldiers of a single unit could be dispersed over a large area when acquiring supplies,<sup>247</sup> so the *cohors I Hispanorum veterana* was no exception in this regard. Added to the many examples of local provisioning, this source highlights the importance of long range supply lines operated both by civilian contractors and the soldiers themselves. We can assume that the administration centered in the capital of Tomis, where many members of the army personnel were stationed at the disposal of the governor and the *beneficarii consulares* and *speculatores* had their seat,<sup>248</sup> played its part in coordinating the numerous military units within the province in this regard.

More on the logistics of Moesia can be learned from a series of epigraphic monuments found in Novae. Votive statues set up in the headquarters courtyard (*forum militare*) in the second and third centuries were dedicated by the first centurions (*primipili*) of the legion,<sup>249</sup> who among other things were responsible for provisioning logistics within the fortress. Starting around AD 300, the *primipilarii*, civil functionaries responsible for organizing supplies, resumed this tradition.<sup>250</sup> They came from the Cyclades, Hellespont and Phoenicia, at a time when the Roman army relied to a significant extent on a central provisioning system.<sup>251</sup> Nine such bases from the early fourth to the early fifth century were erected by individuals from Novae. One particular Greek inscription<sup>252</sup> records, for the first time, the name of Novae in a context where the *legio I Italica* is also mentioned. It is stated that two dignitaries from Ilion and Alexandria in the province of Hellespont founded a monument for the “glorious town of Novesians”. Similar dedications were found in the colony of Oescus, in the western part of the province.<sup>253</sup> The civil *primipilarii* apparently followed the tradition of their military namesakes, the *primipili* of the Principate, which was to erect a statue or comparable dedication in the headquarters of the legion they were working for after finishing their one-year duty, the *pastus militum*.<sup>254</sup> The context of these annual shifts for civilians is extremely important for understanding the logistics of the Roman army at that time. The *pastus militum* seems to have already existed during the Tetrarchy, although under a different name as part of a reorganization of the supply chains of the Roman army. It has been established, that the *primipilarii* were civilian officials employed by provincial governors, responsible for supplying the troops on the *limes*. As noted above, their task, called *pastus primipili* (in legal sources) or *pastus militum* (in inscriptions),<sup>255</sup> was first attested at the beginning of the third century, as a responsibility of the *primipili* of the army. However, as part of the modifications in the administration, their responsibility was transferred to the *primipilarii*. However, they did not collect the *annona*; this was the duty of the civic magistrates. The duty of the *primipilarii* was to transport supplies from the province in which they were collected (which was also their home province) to the location at which a given legion was stationed, although it is not clear yet who financed the procedure.<sup>256</sup> Supplying the legions of Lower Moesia from rather distant provinces of the Mediterranean seems to have been a consequence of the devastations the Goths brought with them and the subsequent logistic complications.<sup>257</sup> Also, relying on privateers for provisioning the army brought back into

<sup>243</sup> CANTACUZENE 1928, p. 75.

<sup>244</sup> CANTACUZENE 1928, pp. 63–96.

<sup>245</sup> BISHOP 1999, p. 114.

<sup>246</sup> BOWMAN 1998.

<sup>247</sup> FINK 1958, p. 106. Given the overall dynamics of the military personnel, the term *quae hibernatur* is the best indicator for the headquarters of a given unit (*ibidem*, p. 116).

<sup>248</sup> MATEI-POPESCU 2014, pp. 182–186.

<sup>249</sup> SARNOWSKI 2013, p. 138.

<sup>250</sup> SARNOWSKI 1999; SARNOWSKI 2013.

<sup>251</sup> ŁAJTAR 2013; SARNOWSKI 2013; SARNOWSKI 2005.

<sup>252</sup> ŁAJTAR 2013; LEMKE 2011, p. 199; DYCZEK 2015.

<sup>253</sup> SARNOWSKI 1999, p. 61.

<sup>254</sup> SARNOWSKI 2013.

<sup>255</sup> ŁAJTAR 2013, p. 105.

<sup>256</sup> ŁAJTAR 2013, p. 105; SARNOWSKI 2013; SARNOWSKI 2005.

<sup>257</sup> SARNOWSKI 2013, p. 144; POULTER 2007, pp. 37–38.

the fighting pool forces earlier discharged to engage in the logistic process. At a time of constantly shrinking troops, this could have been a successful measure to have more soldiers available for guarding the frontier, although the process of involving private contractors in the transportation of military supplies had intensified already in the late Republic.<sup>258</sup>

## Conclusion

Summarizing the above, it seems fair to start with the extensive role played by civilians, whether the indigenous population, the traders or the Roman colonists, in the supply system and consequently for the functioning of the army. Military and civil settlements in the frontier zones were closely related,<sup>259</sup> and the urbanization of the province seen as the development of *canabae* and *vici* was conducive to the consolidation of army logistics.

Understanding army logistics is important for understanding the *limes* as such, especially the fundamental and dual role of the Danube. Camps and smaller garrisons were located strategically, taking into account geographical conditions and their influence on logistics, the Danube being both a border and a transport route. The stepwise annexation of the areas that would become Moesia Inferior are testimony to planned actions, always preceded by a reconnaissance on the ground.<sup>260</sup> This included a thorough analysis of what the province could and could not provide as well as a stable coordination of the army supply by specialized personnel.

Indeed, at some point, at least during its zenith, the Roman army gave the impression of having unlimited personnel and resources.<sup>261</sup> The logistics, especially in the first century, showed some improvisation,<sup>262</sup> although requiring a specific set of skills to be carried out, but overall they were manifest to good organization and planning ahead. A sophisticated and well devised system was soon in place. But the sophisticated logistic needs could be cumbersome as well, as Bishop pointed out, leading *ad absurdum*: “It is as if the supply mechanism set up to maintain the standing army had in turn come to require that army to defend it”.<sup>263</sup>

The archaeological record demonstrates that food and other essential products were acquired by all available means: own production on the premises of the *prata*, taxation of the local population, transport on short supply routes within the province and long ones within the Empire as a whole. The various logistic factors, like developing infrastructure, transport and the demography of a province, were not only interconnected, but also influenced by one another on a more abstract, strategic level. Setting the imperial frontier on the Danube was in this part of Europe a well-considered move, implying an interesting symbiotic approach: The army set the stage for Romanizing the province, whereas Romanization played its part in supplying the army, all to the grandeur of Rome.

<sup>258</sup> EGRI 2008, p. 49; SIMON 2015, p. 242.

<sup>259</sup> Contrary to this Agnieszka Tomas suggests: “Military installations came into existence as a result of a public programme, while civil settlements followed them or developed for other complex reasons” (TOMAS 2007, p. 46), and: “The locations for the future military bases were chosen basing on completely different factors than for civilian settlements” (TOMAS 2016, p. 34). To my mind, the reverse is more likely: forts were built in places where civil settlements already existed. Most importantly because provisioning was assured in such places, but also because places of strategic importance in the broader sense, such as intersection of important roads or places characterized by specifically favorable economic conditions, would have naturally fostered the development of such settle-

ments in the first place, prompting the army simply to take control. Thus the same factors were at work when choosing a location. And even though the army would have eventually impacted local economic growth, it must have at first lived off the existing indigenous infrastructure.

<sup>260</sup> SHERK 1974, p. 543: “Topographical information is essential to military success, and, like any effective army, the Roman army saw to it that the various provinces under its control and the people living in or around them were investigated from a military point of view”.

<sup>261</sup> Plb. *Hist.* 3.89.8.

<sup>262</sup> ROTH 1999, p. 331.

<sup>263</sup> BISHOP 1999, p. 112.

## Abbreviations

<i>ChLA</i> XI	<i>Chartae Latinae antiquiores</i> , XI, ed. A. BRUCKNER, R. MARICHAL, Olten – Lausanne 1979.
<i>CIL</i> <i>IGrLat. Novae</i>	<i>Corpus inscriptionum Latinarum</i> . <i>Inscriptions grecques et latines de Novae (Mésie inférieure)</i> , ed. J. KOLENDO, V. BOŽILOVA (= <i>Ausonius Publications. Mémoires</i> 1), Bordeaux 1997.
<i>ILS</i> <i>NATO Glossary</i>	<i>Inscriptiones Latinae selectae</i> , ed. H. DESSAU, 2nd ed., Berlin 1954–1955. <i>NATO Glossary of Terms and Definitions</i> , AAP-06, edition 2015.

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## Streszczenie

### Dunaj, limes i logistyka.

#### Kilka refleksji na temat zaopatrzenia rzymskiej armii w Mezji Dolnej

Sercem logistyki wojskowej jest administracja w szerokim znaczeniu, czyli rozbieżność kwestii koordynowania i zaopatrzenia armii na czynniki podstawowe, i idące w ślad za tym istnienie dużej liczby wyspecjalizowanego personelu wojskowego, pełniącego rozmaite zadania związane z utrzymaniem przy życiu ogromnej maszyny armii. Omówienie przygotowania logistycznego armii rzymskiej w prowincji Mezji Dolnej wymaga osobnego studium, gdyż inaczej można byłoby odnieść wrażenie, że obozy limesowe, w pierwotnym założeniu w dużym stopniu samowystarczalne, stanowią, każdy z osobna, mikrokosmos niewymagający kontaktu z resztą świata lub będący co najwyżej w kontakcie z najbliższymi centrami wojskowymi.

Stopniowa aneksja poszczególnych partii Mezji Dolnej świadczy o planowym działaniu, które każdorazowo nastąpiło po dokładnym rozpoznaniu terenu. Można też zauważyć przemyślaną koordynację zaopatrzenia armii za pomocą odpowiedniego personelu. W kontekście zaopatrzenia dostępne źródła świadczą o tym, że armia zdobywała żywność i konieczne produkty wszystkimi możliwymi sposobami. Były nimi: własna miejscowa produkcja na obszarze *prata legionis*, podatki od lokalnej ludności, transport krótkimi liniami zaopatrzeniowymi wewnątrz prowincji oraz długimi liniami w obrębie całego cesarstwa.

Widzimy ogromne znaczenie populacji cywilnej — ludności autochtonicznej, handlarzy i kolonistów rzymskich — dla zaopatrzenia i, co za tym idzie, funkcjonowania armii. Osadnictwo cywilne i wojskowe było ściśle ze sobą powiązane, a urbanizacja prowincji, zwłaszcza w postaci rozwoju osad przyfortecznych, była zabiegiem służącym konsolidacji zaopatrzenia. Dla intensywności oddziaływań wokół Dunaju miało istotne znaczenie ukształtowanie terenu. Sąsiadujące otwarte przestrzenie nie posiadały naturalnych przeszkód, które mogłyby hamować ekspansję rzymską. Zauważyliśmy też, jak bardzo romanizacja prowincji rzutuje na możliwości zaopatrzenia armii.

W niektórych sprawach widzimy pewną ambiwalencję konieczności i przydatności: rozdrobnienie większych jednostek za sprawą *vexillationes* było konieczne, aby obniżyć punktowe obciążenie zaopatrzeniowe; jednocześnie takie odseparowanie oddziałów służyło zarówno zwiększeniu gęstości kordonu limesowego, jak i wypełnianiu zadań policyjnych wewnątrz prowincji.

Powyższy artykuł pokazuje zarówno mechanizmy szlaków zaopatrzeniowych i innych zjawisk funkcjonujących w skali całej prowincji, kilku prowincji lub nawet całego cesarstwa, jak i aspekty logistyki lokalnej. Pomimo nieraz niezadowolającej liczby źródeł, jakimi dysponujemy, przy pod-

sumowaniu powyższych faktów rysuje się dość wyraźny obraz całokształtu logistycznego armii rzymskiej w Mezji Dolnej. Logistyka mogła też zawierać — zwłaszcza w pierwszej fazie — czynności improwizowane, które i tak wymagały odpowiednich umiejętności. Wkrótce stopniowo powstał system solidnie rozplanowany.

Poszczególne czynniki logistyczne, jak tworzenie infrastruktury, transport i demografia prowincji, nie tylko były ze sobą powiązane, lecz także warunkowały się wzajemnie na szczeblu bardziej abstrakcyjnym, strategicznym. Wiele wskazuje na to, że założenie granicy cesarstwa na Dunaju było efektem przemyślanej strategii, wprowadzonej w życie za pomocą wojska. Wokół tej kwestii toczy się jednak dyskusja, ponieważ trudno jest jednoznacznie zinterpretować intencje polityczne nawet jednego cesarza, a co dopiero całego imperium na przestrzeni kilkuset lat. Z drugiej strony, przydatność procesu urbanizacyjnego wewnątrz prowincji dla zaopatrzenia garnizonów granicznych, a więc dla zabezpieczenia granicy, jest bezsporna.

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