

The Roman Army and the Economy

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THE ROMAN MILITARY SUPPLY DURING THE PRINCIPATE TRANSPORTATION AND STAPLES

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During the last few years, there has been a new interest in the role played by the Roman army in the long distance exchange between different territories and provinces. The Roman legions became one of the main stimuli for long-distance transactions between distant lands, since they fostered commercial transactions from far-away centres was not a spontaneous activity, but a well-organised network that involved either military or civil staff. The army always required a constant supply of staples for its survival. As Vegetius (*Epit.* 3.3) said: 'For armies are more often destroyed by starvation than battle, and hunger is more savage than the sword. Secondly, other misfortunes can be alleviated in time: fodder and grain-supply have no remedy in crisis except storage in advance.'¹

The network, it is commonly believed, was created during the Principate because of problems that the armies in the field had to face in Republican times. Despite Cato's phrase 'war feeds itself' (Livy 34.9.12), the Republican generals used to be very careful in supplying their soldiers on campaign and in times of peace. Of course, Roman troops requisitioned supplies from their enemies or allies in time of war as many sources record.² However, they could never solely rely on those potential resources.³

Livy (23.49.2) mentions that *societas publicanorum* obtained the contracts for the military supply in Republican times, and, besides, that they were exempted from military service and liability in case of piracy or shipwreck. For instance, in 52 BC Caesar (Caesar, *Bell. Gall.* 7.3.1) entrusted the supply of all the Roman legions in Gallia to the negotiator Gaius Fulvius Cito. Nevertheless, the army supply was always a problem in Republican times, since there was neither an institution nor a post responsible for it. For instance, Caesar's victory was at stake twice during the civil war due to lack of corn and supplies amongst his soldiers. Such was for instance the case during the manoeuvring around Ilerda (BC 52) during the

campaign against Afranius and in Northern Africa (*Bell. Afr.* 19.47) against king Juba.

The Republican experience provided the basis for the development of a complex structure of military supply that would characterise the Principate and the Late Empire. Unfortunately, there are no direct written sources that explain how this structure worked and evolved over time. Hence, scholars have had to build up explanatory models based on a few indirect documents and a huge volume of archaeological data.

The structure of Roman military supply: an explanatory model

The Roman army, whether legions or auxiliaries, constituted an essential instrument for the survival of the Empire as well as its distinctive way of life. Maintenance of this powerful war machine required a series of basic supplies for its subsistence, which were normally obtained from the territory where the troops were stationed.⁴ Vegetius (*Epit.* 3.3) describes what the army's main objectives were in the late fourth century AD concerning supply: '...there should be careful consideration given to supplies and their issue in order that fodder, grain and other army provisions customarily requisitioned from provincials may be exacted in good time, and quantities always more than sufficient be assembled at points well-placed for waging war and very well fortified.' This situation, common to all the armies in history, was probably particularly complex in the Roman world, where legions were stationed far away from the capital of the Empire,⁵ which posed great difficulties to transport and the flow of information.⁶

Interestingly, the Romans maintained a common diet for all the soldiers in the Roman army. A few possible explanations may be given. Firstly, it was less risky at the physical level to maintain the same diet when the army was, for a short time, away from their own territory. Besides, at the psychological level, this local diet preserved the soldiers' emotional links with their homeland (smells, tastes) and their rejection of foreign foods (neofobia). Moreover, at the sociocultural level, a common diet for all the soldiers fighting in

¹ L. Wierschowski, *Heer und Wirtschaft. Das römische Heer der Prinzipatszeit als Wirtschaftsfaktor* (Bonn 1984); J. Remesal Rodríguez, *La armoria militaris y la exportación de aceite bélico a Germania* (Madrid 1986).

² D. van Berchem, 'L'armée militaire est-elle un mythe?', in: *Armée et fascisme dans le monde antique* (Paris 1977) 331-339; Remesal (n. 4); C. R. Whitaker, *Les frontières de l'Empire romaine* (Besançon 1989).

³ R. Duncan-Jones, *Structure and scale in the Roman economy* (Cambridge 1990) 5-76; C. Carreras, *Una reconstrucción del comercio en cerámicas: la red de transporte en Britania* (Barcelona 1994).

¹ Similar thoughts are expressed by Caesar, *Bell. Civ.* 1.72.1, Frontinus, *Strat.* 4.7.1 and Ammianus 25.7.4.

² Caesar, *Bell. Gall.* 4.32; 5.17, Josephus, *Bell. Jud.* 2.528.

³ Sun-Tsu in his *Art of War* (IV BC) reproduces the same idea "a good general manages to feed his troops from the enemy" (II.15 n).

distant lands was a way to maintain a collective mind as well as preserve the same identity of the people they defended.⁷

To guarantee the regular supply of the troops, Rome organised an extremely complex administrative system that provided what any unit required, making these goods available to the final destination. The army could obtain these supplies from:

- a) the local territory
- b) their own province
- c) the other provinces of the Empire

Supply from the local territory

Generally, military units obtained their supplies (i.e. food, cloth, skins, and metals) directly from the surrounding environment. Therefore, they could sustain themselves due to their own sources (i.e. *prata*, *figlinae*, *fabrīcae*),⁸ or from local civilians through taxes, requisition or trade. If the army wished to maintain peaceful relationships with their neighbours, requisitioning or special taxes to attain local supplies should never have occurred. Most native revolts were brought about by soldiers' abuse in confiscating goods or collecting taxes.⁹

The basic Roman military diet in peacetime consisted of corn (wheat or barley), sour wine (*castrum*), salt, cheese, bacon-fat (*lardum*) and olive-oil.¹⁰ Depending on the size of the units as well as the production capacity of the neighbourhood, the army requirements may often have been fulfilled by the local resources. Nevertheless, this was not always the case.

Alternatively, the military units could first of all obtain their required foodstuffs from their own lands (*prata*), where they may have cultivated cereals, raised domestic animals (cattle, horses, sheep, pigs) or obtain wood. The soldiers themselves may have

⁷ C. Carreras, *La economía de la Britannia romana. La importación de alimentos* (Barcelona 2000) 176.

⁸ A. Mócsy, 'Das Lustrum Primipili und die Annona Militaris', *Germania* 44 (1966) 312-326; H. von Petrikovits, 'Militärische Fabricae der Römer', In: *Actes du IX Congrès International d'Etudes sur les frontières romaines* (Marmara, 1972) (Bucarest 1974) 399-407; idem, 'Römische Militärhandwerk', in: *Beiträge zur römischen Geschichte und Archäologie von 1931-1970* (Bonn 1976) 598-611; Remesal (n. 4).

⁹ Rebellions of Thracians in AD 26, Frisians in 28 AD, Iceni in 61 AD and Batavi in AD 69 are to be blamed on the excessive demands that the army made upon the local tribes as well as the abuse of officers and soldiers.

¹⁰ Apollin, *Berica* 54 says: '...they had no [vintage] wine, salt, sour wine or oil, but fed on wheat and barley, and large quantities of meat and hare boiled without salt, which upset their digestion.'

cultivated these lands or leased them to neighbouring civilians.¹¹ However, the frontier regions were not specially suited to provide all the ingredients for their basic diet, and not even in the required quantities. For instance, the limes of Britain or Germany could not supply enough corn for the army stationed there, let alone liquids such as sour wine or olive oil, which were produced in more southern latitudes.

A second alternative for local military supply was billeting, which means that local civilians provided accommodation and food for soldiers following the practice known as *hospitium*. This was a common practice in the Eastern Roman Empire¹² in provinces such as Syria or Palestine,¹³ where local people had to lodge soldiers as well as provide food and clothing. Only soldiers, veterans, teachers, doctors, orators and philosophers were exempted from compulsory billeting.¹⁴ Talmudic sources illustrate the fear of civilian Jews facing the *hospitium* burden because of the soldiers' behaviour in their homes.¹⁵ For instance, Shimeon Hatemani in the second century AD (os. Betzoh 2.6) explains: 'A patrol of gentiles came into town and they [the townspeople] were afraid that they [the soldiers] might harm them and therefore we prepared them a calf and we fed them and gave them to drink and rubbed them with oil so that they would not harm the townspeople.'

Both systems allowed the military units to obtain the necessary foodstuffs without investing much in either transportation or infrastructure. Ideally, most resources should have been provided from the local land and population, whereas a minimum may have been purchased from local private traders in the local markets, as the Vindolanda tablets seem to document.¹⁶ Every unit had its own finance administrator; sometimes this function was undertaken by a *tabularius* or a *signifer* (Vegetius 2,20; PSI 1603), who on his officer's orders took note of all transactions made by the unit. Normally, the responsibility for supplies was under the control of an *evocatus* and

¹¹ A. Mócsy, 'Zu den Prata Legionis', in: H. Schönberger (ed.), *Studien zur den Militärgrenzen Roms* (1967) 211-214.

¹² The legions in the Eastern were often settled in cities such as Antioch as occupation army, so they did not have much problems in supply, but they lacked discipline and hardly could endure the hard conditions of Parthian and Persian campaigns, such as Corbulo's legionaries (Festus, *Anr.* 13.35).

¹³ Z. Safrai, *The economy of the Roman Palestine* (London 1994).

¹⁴ Dig. 50.4.18.29-30.

¹⁵ B. Isaac, *The Limits of Empire. The Roman Army in the East* (Oxford 1990) 298.

¹⁶ A. K. Bowman and J. D. Thomas, *Vindolanda. The Latin writing-tablets* (London 1983).

signifer (CIL VIII.18224), assisted by a *quaestor* who made payments and an *actarius* who registered transactions in books.¹⁷ At Vindolanda, the *optioes* were in charge of these books (Tab. Vindol. II, 127), as they show purchases carried out locally.¹⁸ Provincial procurators provided the units' cash for the soldiers' payments as well as other expenditures in the camp. Then the accounts were sent back to the procurator.

Ideally, the local units should have kept within their forts or nearby *horrea* sufficient supplies to last for at least one year. Tacitus (*Agricola* 22.2-3) records that his father-in-law, Agricola, ordered that each unit should have a year's supply of grain when he was governor in Britain (AD 78-84). Calculations on the granary sizes in the British limes showed that they could store enough corn for one year.¹⁹

Normally, the border regions of the Empire (*Limes Africanus*, *Germanicus* or *Britannicus*) were not suitable for many crops and also recorded low densities of population, so they did not have enough resources to feed a numerous unproductive group such as the army. Therefore, the units had recourse to supply to the regions away from the limes in the same province, as it seems to be the case in Britannia or Germania Inferior.²⁰

Supply from their own province

The situation became more complex when supplies came from distant places in the province and diverse administrative levels, therefore, had to intervene. Since the Augustan period, as Strabo recalls, the highest financial authority within each province was the *procurator augusti* (Strabo 3.4.20).²¹ He was responsible for military

supply,²² as well as other duties such as farming direct and indirect taxes in the province (*XX hereditarium*, *XX libertatis*, *portoria*), which constituted part of the imperial *Fiscus*.²³

According to the number of soldiers, the procurator assigned a proportional amount of money for each unit's commanding officer in order to obtain supplies from the local market. However, as said before, depending on what they could get from their own local sources, each unit may have made different purchases. Sometimes, supplies could easily be obtained from the network of local private traders, who carried the army requirements from distant areas in the province, as for example a wagon full of hides coming from Catterick to Vindolanda.²⁴

Apart from Strabo's passage, the relationship between procurators and military detachments regarding supplies becomes evident from an inscription from a *tabularius* of *legio III Augusta*, dedicated to the procurator *III publicorum Africæ*, T. Cl. *Proculus Cornelianus* (AE, 1956, 123). Beside this, there is a letter by Pliny the Younger (*Epist.* 27) acting as a governor of Bithynia, in which he mentions that the procurator Maximus required the service of soldiers assigned to him. Maximus needed those soldiers in order to collect grain in Paphlagonia, probably destined to supply the Roman army during the Parthian campaign.

The procurator had to organise the supply of all those military detachments that could not obtain resources locally. As provincial finance administrator, he could purchase food and other supplies in bulk from provincial *mercatores* or foreign traders, in order to distribute the supplies amongst the units by using the public or private transport network. Sometimes, due to special military requirements, the army was obliged to requisition foodstuffs from the provincials with the compulsory permission or *diploma*, known as *indictiones*. There are numerous testimonies to this practice, such as

¹⁷ Y. Le Bohec, *The Imperial Roman army* (London 1994) 51. The post of *actarius* is documented from Septimius Severus onwards (Aurelius Victor, *De Caesaribus*, 33, 13).
¹⁸ Tablets 4 (Tab. Vindol. II, 190) and 5 (Tab. Vindol. II, 191) (Bowman and Thomas in: 16) 88-95) include a series of purchases carried out by a person called *Privatus*, perhaps a slave. He bought wheat, barley, wine, sour wine, *garum*, *lardum*, pig and venison.

¹⁹ R. Davies, *Service in the Roman army* (London 1989) 187, calculates that a Roman soldier consumed approximately one-third of a ton of corn annually (333 kg).

²⁰ Britannia: J. D. Anderson, *Roman military supply in North-East England*. BAR Brit. Ser. 224 (Oxford 1994); Germania: R. Brandt and J. Stollste (eds.), *Roman and native in the Low Countries. Spheres of interaction*. BAR Int. Ser. 184 (Oxford 1983); W. J. H. Williams, *Romans and barbarians. A regional study on the Dutch Eastern river area* (Amersfoort 1986).

²¹ Mócsy (n. 8).

²² The figure of procurator augusti is fully discussed in relation to military supply by Wierschowski (n. 4), J. Remesal Rodríguez, 'Die Procuratores Augusti und die Versorgung des römischen Heeres', in: H. Vettors und M. Karidri (Hrsg.), *Acten des 14. Internationalen Limeskongresses 1986 in Carnuntum* (Wien 1990) 55-65, and R. L. Disc, *Cultural change and imperial administration* (New York 1991).

²³ Some provinces probably raised fewer taxes than the cash they required to feed the army and all the administrative staff. Therefore, one may expect some kind of compensation between the provincial treasuries, either imperial *fiscus* or senatorial *aerarius* *Schnurr*. This compensation favoured a balanced economic relationship between the central and peripheral provinces.

²⁴ The tablet Vindol. II, 343 details purchase and sale of corn and hides by Octavianus. A. K. Bowman, J. D. Thomas and J. N. Adams, 'Two letters from Vindolanda', *Britannia* 21 (1990) 43.

papyrus PSI 683, in which clothing, ropes and oils were requisitioned, as well as other papyri (BGU 266; P.Gen. 35; P.Flor. 278).²⁵

When the geographical conditions required a constant collaboration of the civilians in the supply and transport of supplies, laws were issued to fix general norms. This is the case in the decree of S. Sotidius Strabo Libuiscidianus (Mitchell, 1976; AE 1976, 653), *legatus augusti* in Galatia during the reign of Tiberius, who asked for wagons and pack animals from the community of Sagalassos in order to take care of military transport over-land. The *procurator* had the right to use a large number of animals, while senators and soldiers were only permitted a more limited number. This special treatment for the *procurator* is related to his special function regarding military supply in the province.²⁶

Overland transport was a general problem in Roman military strategy.²⁷ With the only exception of Legio (Hispania), all legionary headquarters during the Principate were established in places where the geographical conditions allowed the easy and safe movement of supplies by water, which otherwise would have required cumbersome transportation over land.

When supplies had to come from a great distance, special detachments (*mittes, fumentarii*)²⁸ were sent to fetch the required supplies and protect convoys. The *rostrum* of Sept. 105 AD for the cohorts I *Hispanorum*, which was quartered in the province of Moesia inferior, sheds some light, since it documents the absence of soldiers from the camp due to several missions. For instance, some soldiers went to Gaul to collect grain and clothing, while others fetched horses on the river Erar, transported herds from Haernus, or

²⁵ There is an interesting inscription (AE 1958, 236) from Hama in Domitian's reign, in which the procurator of Syria, *Claudius Athenodorus*, is exhorted to prevent abuse in requisitioning labour, pack animals and wagons from the local civilians. R. Moutierde and C. Mondesert, 'Deux inscriptions grecques de Hama', *Syria* 34 (1957) 278.

²⁶ *Remnesal* (n. 22) 60.

²⁷ Tacitus, *Ann.* 15.8 refers to a senseless campaign by Caesarius Pactus in Cappadocia, interrupted because of lack of supplies which had to be obtained over land.

²⁸ Originally, *fumentarii* were responsible for corn supply as their name suggests. However, they also acted as spies (M. Clausen, *Untersuchungen zu den principales des römischen Heeres von Augustus bis Diokletian* [Bochum 1974]; F. Paschoud, 'Fumentarii, Agentes in rebus, Megastriani, Cariosi, Veredarii: problèmes de terminologie', *Bonner Historia Augusta Colloquium* 1979/81, 215-243) or security wards as the *rostrum* of *legio III Cirenica* 1979/81, 215-243) or security wards as the *rostrum* of *legio III Cirenica* reveals (R.O. Fink, *Roman military records on papyrus* [Princeton 1971] n° 10).

protected food convoys in the province of Moesia.²⁹ The post of *fumentarii* is of great interest because their inscriptions are usually found in the capital of provinces, probably acting in the governor's *officium*, or even outside of the province, far away from their original units.

For long-distance provisioning, a suitable communications network was required, along with adequate means of transport under civilian or military control. Furthermore, an administrative control was also required in order to avoid fraud. This administrative inspection was carried out by the *beneficarii* (*consularis, procuratoris*),³⁰ amongst others, when supplies were on transit, and by the unit commander after reaching final destinations.³¹ Many of these *beneficarii* are found in the provincial governor's *officium* as assistants dealing with the daily paperwork.³² Nevertheless, they operated often in the main centres of communication, where they were assigned a wide variety of duties. We find them acting as police officers, obtaining information, and supervising traffic, markets or the collection of taxes (*portoria*).³³ This last responsibility was also shared with centurions (P.Oxy. 1185). When *beneficarii* were located in the main centres of communication, they became, together with

²⁹ Pink (n. 28) n° 63. Troop dispersion, it is said, was one of the causes of Varus' defeat in the Teutoburg forest in 9 AD. Dio 56. 19 states that Varus: '... did not keep his legions together... but distributed many of the soldiers... for the alleged purpose of guarding various points, arresting robbers or escorting provision trains'.

³⁰ The *beneficarius*' responsibilities are not clearly defined until the Flavian period, when they appeared in the main hubs of communication and in the governor's *officium*. A. von Domaszewski, 'Die Beneficiareposten und die römischen Straßennetze', *Westd. Zeitschr.* 21 (1902) 158-211; M. Popovic, 'Une station de bénéficiaires à Sirmium', *Comptes Rendus Paris* (1969) 116-122; J. Ott, 'Die Mechanismen bei der Beförderung von Beneficiaren der Stathalter', in: Y. Le Bohec (ed), *La hiérarchie (rangoordnung) de l'armée romaine sous le Haut-Empire* (Lyon 1995).

³¹ The commanding officer had to test the quality of the rations and avoid quartermasters from cheating (Digest: 49.16.12; P. Dura 61).

³² Davies (n. 19) 44.

³³ There are myriad of papyri in Egypt that record *beneficarii* acting as crime investigators in a district (SB 9657; SB 9238; SP 9203; P.Amh. 77; P.Amh. 80). However, it may also have been the responsibility of the centurions or stationarii (Davies (n. 19) 175-185). Supervising traffic, markets or the collection of taxes (*portoria*): E. Schallmayer, *Der römische Wehrbezirk von Osterburken I* Forschungen und Berichte zur vor- und frühgeschichtliche in Baden-Württemberg, Band 40 (Stuttgart 1990).

their assistants (*stratores, exceptores, vici*), key figures in the military supply, second only to the *procuratores*.³⁴

The map of the distribution of inscriptions of *beneficiarii* in the Roman Empire (figure 1),³⁵ illustrates their location on the main roads to the military district as well as in the *limites*. Provinces, whose supply was based on overland transport, such as the Danubian and German ones, seem to document a large number of *beneficiarii* because their logistics may have been more complex. In contrast, Eastern and African provinces, as well as those of Spain, appear to have obtained most of their supplies locally.³⁶

The available documentation on *beneficiarii* seems to offer a relatively complete picture. They appear for instance together with *stratores* at the main entrance to Dura Europos (AE 1931, 116-7) collecting taxes, likewise in Zarei (Numidia) (CIL VIII, 4508), Mogontiacum (CIL XII, 11816), Lambaesis³⁷ (AE 1914, 234) or Aquincum (CIL III, 10429), where they controlled the commercial traffic between the colony and the military territory. In all these inscriptions, the *beneficiarii* were liable for controlling quality, quantity and probably the price of commodities in transit, some of which were meant for military consumption. The *digestae* (39. 4. 4, 1. Paulus) include a law from the reign of Hadrian, that reproduces the norms for official transport. It says that official transportation required a document signed by the *praesides* (*libellus*) listing all the products and quantities destined to one's own consumption, to the provincial governor, *procuratores* or the army. Hence, the document had to be shown to the toll official (*publicanus*), so he could exempt the public cargo from the *portorium*, insofar as it did not surpass the quantity and variety mentioned.³⁸

The importance of the role of *beneficiarii* in the supply of the Danubian provinces has been recently emphasised by Disc, who pointed out their high concentration in key strategic sites such as Celeia (Noricum), with 23 inscriptions of *beneficiarii procuratoris*

³⁴ Actually, some *beneficiarii* were specially adscripted to *procuratores, beneficiarii procuratoris*, chiefly as foremen for the collection of *portoria*, as after Schallmayer (n. 33).

³⁵ C. Carreras, *Los beneficiarii y la red de distribución militar en Britannia e Hispania*, *Genia* 15 (1997) 151-176.

³⁶ The inscription from Lambaesis (AE 1914, 234) shows that *signiferi, beneficiarii, pecuarii* and *conductores* took part in collecting the *portorium*.

³⁷ Whitaker (n. 5) 64. A series of documents from the *nomos* Idios Logos (AD 90-160) called *apostolos* were certificates for sailors transporting official cargoes on the *procuratoris* behalf (S.E. Sidebotham, *Roman economic policy in the Erythraean Thalassa*. 30 BC - AD 217 [Leiden 1986] 79).

between the late first century AD and 170 AD.³⁹ Celeia was midway on the overland route from the Mediterranean ports to the Danubian lines. The distribution of *beneficiarii consularis* is even more suggestive for the later period (AD 161-235), because their inscriptions are well represented in most centres of communication in Pannonia superior (Siscia: 10; Savaria: 10; Poetovio: 5) and inferior (Interisca: 8; Mursa: 5).

Schallmayer's work⁴⁰ lists most inscriptions of *beneficiarii* in the Roman Empire, so it allows us to analyse their distribution in some detail (see figure 1). In some western provinces such as Belgica and Germania Inferior, concentrations are documented in the main centres along the Rhine (Köln, Bonn, Remagen, Xanten, Neuss), and two Atlantic ports (Boulogne, Zierikzee) and on the main overland routes coming from Gaul (Trier, Netersheuer, Arlon, Namur, Aachen). As can be observed, many *beneficiarii* inscriptions are located on the frontiers between provinces and places where there is a shift in the means of transport. Consequently, they may have been responsible for controlling military supplies coming from other provinces in a place where the goods changed hands and where as a consequence there was more risk of illegal practices in the handling of public cargoes.

With reference to Germania Superior and Gaul, there are examples from along the Rhone (Nîmes, Vienne, Lyon), on the Alps routes (Geneva, Vevey) and along the main overland routes between the Rhone valley and the German lines (Nierstein, Erpolzheim, Altrip, Gemersheim, Strassburg). However, the region with the highest concentration in the whole Empire was the German lines, foremost in the key strategic places such as Mogontiacum (17), Stockstadt (20), Osterburken (30), and other places no less important, such as Oberbunburg, Stuttgart, Jagsthausen, Friedberg or Grosskrotzenburg.⁴¹

All the evidence points to the same conclusion: *beneficiarii* acted as link between the financial administration of the province under the *procuratores* and the commanding officers or administrative staffs of the military units. Their role was to control a regular flow of supplies obtained in the same province outside the military territory, and also from other provinces. When supplies came from other provinces,⁴² the whole structure became even more

³⁹ Disc (n. 22) 78.

⁴⁰ (n. 33).

⁴¹ The distribution pattern of *beneficiarii* in other provinces is similar, though it varies according to the logistics and geography of each territory (Schallmayer (n. 33)).

⁴² The supply from other provinces is well documented in the *rostrum* of cohorts *XX Palmmyrenorum* from Dura Europos and cohorts *I Hispanorum* from

complex because it surpassed the *procurator's* authority and hence other posts or institutions were required to co-ordinate military demands, taxes, purchases and transportation from the producing provinces.⁴³

Supply from other provinces of the Empire

It is obvious that not all the products consumed by the army could be obtained within the province, so they should be provided regularly, at a reasonable price and in specific amounts, by other provinces. Some scholars argue that a market exchange mechanism could have perfectly fulfilled these requirements without direct state intervention,⁴⁴ or possibly with some incentives.⁴⁵ Nevertheless, inadequate transport infrastructure and communication in Roman times makes this hypothesis extremely unlikely.⁴⁶

First of all, the central authority in the province had to know the exact requirements, chiefly staples (i.e. corn, wine, olive-oil), of the units in the province as a whole. It is perfectly reasonable that the province's *procurator* could play this role as far as finances were concerned. Then, he could either contact traders or local producers to order the exact amount required at a fixed price. Since *procuratores* did not have any authority outside their province, the contact and haggling with traders and producers had to be undertaken by other institutions.

The only known existing institution that acted in this way was the *annona*, a redistributive mechanism that supplied corn and other products to the populace of Rome at a reasonable price. The Roman army may have employed a similar mechanism or even the same institution to obtain the required supply from the producing provinces. For instance, the transport of olive-oil coming from Italy (amphorae Dressel 6) or Spain (amphorae Dressel 20) may have been

Moesia Inferior. It is also evident from the presence of continental grain in Britannia (York, Caerleon), references to the export of Gaulish grain to Hispania or British corn to Germania, and even a wide variety of amphorae such as Dressel 20, Galloise 4 or Dressel 6 (Carreras [n. 7]).

⁴³ O. Schliapschuh, *Die Händler im römischen Kaiserreich in Gallien, Germanien und den Donauprovinzen, Rätien, Noricum und Pannonien* (Amsterdam 1987).

⁴⁴ K. Hopkins, 'Taxes and trade in the Roman Empire (200 BC - AD 400)', *Journal of Roman Studies* 70 (1980) 101-125; M. Fulford, 'To East and West: the Mediterranean trade of Cyrenaica and Tripolitania in Antiquity', *Libyan studies* 20 (1989) 169-192.

⁴⁵ Whitaker [n. 5].

⁴⁶ Duncan-Jones [n. 6] 7-58, shows clearly the difficulties of the communication between Rome and Alexandria where the death of the emperor could only be known a few months later in winter. With regards to transport costs and time consumption in travelling see Carreras [n. 6].

arranged beforehand as taxes in kind or at a fixed price, and then carried by local traders to the destined provinces after paying *vecturae*. The archaeological distribution of some amphorae types with extremely high densities on military sites seems to confirm the existence of this redistributive public system.⁴⁷

However, the question arises whether this redistributive public system was part of the existing *annona* or a different institution such as the late *annona militaris*.⁴⁸ It appears feasible that a post such as the *praefectus annonae* could co-ordinate the extra-provincial requirements of the *procuratores*, since he already had recourse to the infrastructure and information needed to convey the supplies to each province. Therefore, the state did not have to pay the whole *stipendium* to soldiers, since it could withdraw all the amounts due for the imported supplies (*in victum*). Perhaps this cash never even reached the unit *tabularius* or the provincial *procurator*, but remained in the *praefectura annonae*, compensating the accounts between provincial treasuries. As Remesal proposes, a central authority was needed in order to co-ordinate and maintain a system of compensations between the provincial treasuries, *fiscus* and *aerarius Saturni*. Only the *praefectura annonae* could fulfil this role.⁴⁹

Furthermore, the system may have involved the direct intervention of *frumentarii* helping in intra-provincial transport and provisioning together with the *beneficarii*, under the supervision of the *praefectus annonae* or the provincial *procuratores*. The result of this complex system in the archaeological record is the distribution of olive-oil amphorae such as Baetican Dressel 20 in high numbers

⁴⁷ Remesal [n. 22]; C. Carreras and P.P.A. Funari, *Britannia y el Mediterráneo. Estudios sobre el abastecimiento de aceite bélico y africano en Britannia* (Barcelona 1998).

⁴⁸ The creation of the *annona militaris* in Septimius Severus time was an hypothesis put forward by Van Berchem (1937), based on the inscription of M. Roscius Vitulus (AE 1911.7; 1914. 248) who held a new post of *procurator annonae*, during the campaigns against Clodius Albinus (AD 196-7). This temporary post (and others) did not continue afterwards. Therefore, it does not demonstrate the existence of either a new tax or institution. J. Guey, *Essai sur la guerre partielle de Trajan* (Bucarest 1937) suggested that the institution was created in the Trajanic period, but in fact the only occurrence dates from the time of Severus Alexander (HA, Sev. Alex. 15.5). Moreover, A. Cerati, *Caracère annonaire et assistie de l'impérator fonsier au Bas-Empire* (Paris 1975) demonstrated a long time ago that what is known as *annona militaris* from Dioctletian onwards (P. Beatty Panopl. 2.245-249), was only a part of taxes in kind destined for the army

⁴⁹ Remesal [n. 4] 104.

on military sites in Britannia, Germaniae, Raetia and Noricum and Italian Dressel 6 in high concentrations in the Danubian lines.⁵⁰

It is quite interesting that these remarkable amphorae distributions in the frontier regions seem to disappear gradually in Severan times, as if this dynasty's reforms affected not only the control of the transport of public cargoes,⁵¹ but also inter-provincial military supply, at least of olive-oil.

To sum up, the military supply network in peacetime was defined by four hierarchical levels of decision. The highest rank was probably represented by the *praefectus annonae* who co-ordinated the extra-provincial supply, whereas *procuratores* organised finances, transport and supplies within each individual province. A third level identified by *benefactarii* were in charge of controlling supplies and regular transport, while commanding officers and clerks were responsible for the local purchases. Of course, the general model for the military supply in the Principate proposed here presented slight variations in each province according to their logistic and geographical features.

However, requirements in wartime may have modified this structure, since transportation became extremely dangerous and more supplies were necessary. Vegetius (*Egit.* 3.3) pays special attention to these times of crisis:

"Therefore, before the war is commenced, there should be careful consideration given to supplies and their issue in order that fodder, grain and other army provisions (*annonariae species*) customarily requisitioned from provincials may be exacted in good time, and quantities always more than sufficient be assembled at points well-placed for waging war and very well-fortified. But if tax revenue be insufficient, everything should be compulsory purchased from prior contributions in gold."

The peacetime generic model underwent changes when the army was on campaign, since some temporary posts were created. There is a series of references to these posts such as the *praefectus*

⁵⁰ T. Bezeczky, *Roman amphorae from the Amber route in Western Pannonia*. BAR Int. Ser. 386 (Oxford 1987). Another possible public supply was the wine carried by the Gauloise 4 amphorae (Laubentheimer, 1985), which appears in great amounts in military sites in Britain and Germany. For instance, they are the majority imports together with Dressel 20 containers in the fort of Walheim until the cohort moved to other fort, as was recorded also in other British forts (Carreras and Punari [n. 47]).

⁵¹ Remesal (n. 4) 105.

*vehicularium*⁵² for the Dacian campaigns of Domitian; *curator copiarum expeditionis* in the Marcomannic campaigns of Marcus Aurelius (CIL VI, 1589) and the Dacian campaigns of Commodus (AE 1934, 2).⁵³ A visual image of all the requirements of the Roman army on campaign is provided by the representation of the Dacian wars on Trajan's column.⁵⁴

Britannia: a case-study of the explanatory model

Britannia was chosen as case-study for this particular supply model, because any model should be compared to reality to know whether it fully represents the complexities of the real world. The province of Britannia is a very suitable case-study for the analysis of military supply due to its insular condition and because of the huge bibliography on the subject.⁵⁵ Epigraphic and archaeological evidence can be used to test the model. The latter include well-published excavations of military bases, granaries and monographs on ceramic distributions, amongst which amphorae stand out.⁵⁶

Following our hierarchical model of administrative posts related to the military supply, it was relevant to analyse the distribution of the administrative staff in the province. The highest financial official in the province was the *procurator*, in our model the second level below the *praefectus annonae*. The *procuratores* headquarters were established at an early stage at Londinium, as is demonstrated by the presence of the tomb of the *procurator* C. Iulius Alpius Classicanus (CIL VII, 30), which has to be dated after AD 60/1, as well as by the find of a tablet signed *proc. brit. dederunt* (proclaimed by the *procuratores* of Britannia).⁵⁷ The early role of Londinium in the military supply seems quite remarkable. It provides the reason for the foundation of the city in the first place, and

⁵² W. Eck, 'Die Laubahn eines Ritters aus Apri in Thrakien. Ein Beitrag zum Ausbau der kaiserlichen Administration in Italien', *Chiron* 5 (1975) 365-392; F. Bérard, 'La carrière de Plotus Grypus et le ravitaillement de l'armée impériale en campagne', *Mélanges de l'École Française de Rome Antiquité* 96 (Rome 1984) 259-324.

⁵³ From Nero onwards, a series of exceptional posts were created to manage the military supply in wartime. They are discussed in detail by Remesal (n. 4) 96-108, in relation to the historic moment when they appeared.

⁵⁴ See figures 2 and 3, I.A. Richmond, 'Trajan's army on Trajan's column', *Papers of the British School at Rome* 13 (1935) 1-40.

⁵⁵ P. Middleton, 'Army supply in Roman Gaul: an hypothesis for Roman Britain', in: B.C. Burnham and H.B. Johnson (eds), *Invasion and response. The case of Roman Britain*. BAR Brit. Ser. 73 (Oxford 1979) 81-97; R. Selick, *The Remesbridge formula: a dramatic new view of Roman history* (Cambridge 1983); Anderson (n. 21).

⁵⁶ Carreras and Punari (n. 47); Carreras (n. 7).

⁵⁷ S.S. Freyre, *Britannia* (London 1987) 187.

explains the high concentrations on this site of *terra sigillata gallica* (TSG) and olive-oil amphorae⁵⁵ during the first years of the conquest. Although it appears feasible that *procuratores* continued to reside in London, there are later inscriptions of these posts in centres within the military area (see figure 2 at the end of this article), sometimes dating to times of conflict. Examples can be found at Inveresk (CIL VII, 1082), Risingham (CIL VII, 1003) or Watercrook (RIB 752); or even civilian sites such as Brampton (CIL VII, 875).⁵⁶

At a lower level in the model, *beneficarii* and *stratores* intervened, of which a series of 22 and 2 inscriptions respectively are documented in Britain. As can be seen in figure 2, their location coincides with the main centres of overland communication, above all in the region close to Hadrian's wall,⁵⁷ in the routes towards the northern border - Hadrian and Antonine Wall - and to the temporary Welsh frontier. Only in the case of Housesteads (CIL VII, 645) does the inscription indicate that the *beneficarius* acted as *portorium* collector, though the location of the remainder suggests that they may have also controlled the overland traffic in military supplies.⁵⁸ In the case of Risingham (CIL VII, 996) it says that the place was the first *statio*, a point for toll collection. Two tablets also record the presence of *beneficarii* in Vindolanda. One of them mentions a loan of an amount of grain (Tab. Vindol. II, 180), while on the other a foreigner asks for his intervention in an internal affair (Tab. Vindol. II, 344).⁵⁹

⁵⁵ G. Marsh, 'London's samian supply and its relationship to the development of the Gallic samian industry', in: C. Anderson and A. Anderson (eds.), *Roman pottery's research in Britain and North-West Europe*. BAR Int. Ser. 123 (Oxford 1981).

⁵⁶ Punari and Carreras (n. 47) 28.

⁵⁷ A.R. Birley, *The Fasts of Roman Britain* (Oxford 1981) 287-299.

⁵⁸ *Beneficarii* are documented at Dorchester-on-Thames (CIL VII, 83), Winchester (CIL VII, 5), Wroxeter (RIB 293), Lancaster (CIL VII, 271-2), Carterick (CIL VII, 424), Banchester (RIB 1030; CIL VII, 424), Greta Bridge (CIL VII, 280), Housesteads (CIL VII, 411), Chesterholm (RIB 1696), London (JRS 52, 1962), Bosteads (CIL VII, 645; CIL VII, 691), Aldborough (Britannia, 1987, 373), Bindowswald (CIL VII, 824), Brough-under-Stainmore (CIL VII, p. 313), Chester (RIB 505, RIB 545, RIB 532), Pierceridge (Britannia, 1986, 438-9), York (Britannia, 1979, 307), Risingham (CIL VII, 996) and Brougham (RIB 783); whereas *stratores* are located at Irchester (RIB 233) and Dover (Britannia, 1977, 426-7).

⁵⁹ P. A. Holder, *The Roman army in Britain* (London 1982) 74.

The second text is extraordinarily interesting since a foreigner, *hominem transmarinum*, interpreted as possibly a trader, was beaten by a *centurio*. He turns for help to the commanding officer, the *praefectus*, who is ill at that moment, and next to a *beneficarius* and finally to other *centuriones*. The trader addressed the *beneficarius* as the second in line, which may suggest that he acted either as a policeman or as an official who, being the

On the frontier, the evidence shows the purchase of particular provisions in the local markets, such as the ones recorded in the Vindolanda tablets (Tab. Vindol. II, 190; II, 191; II, 192; II, 302; II, 343).⁶⁴ In one of the tablets (Tab. Vindol. II, 302), the slave of the *praefectus Verecundus* is ordered to buy food on the local market. It is said that he should buy 100 or 200 eggs if they are of quality, or 8 *sextarii* of *murra* and a *modius* of olives if the price is reasonable. Therefore, this tablet refers to a direct purchase.

With regard to the archaeological evidence, there are a wide variety of products consumed by the army coming either from the southern parts of Britannia or from other provinces.⁶⁵ In view of the low volume, these transactions were probably undertaken by individual *mercatores*, who would have brought the goods to the gates of the camp (*castrametum*).⁶⁶ However, the supply of other products, such as olive-oil, only mentioned in a small quantity in one tablet (Tab. Vindol. II, 203) and corn (York, Caerleon), which were basic staples,⁶⁷ suggests direct state intervention. The extraordinary amount necessary and the distance from Britain necessitated intervention on behalf of both the purchase in other provinces as well as their distribution through the redistributive mechanism. In the particular case of the olive-oil, the location of the Baetican Dressel 20 amphora sherds and stamps favours the study in detail of the internal supply network, since it shows a significant concentration in the military zone.⁶⁸

farmer of *portoria* or responsible for supplies, was close to the group of traders.

⁶⁴ Bowman and Thomas (n. 16); A. K. Bowman, *Life and letters on the Roman frontier* (London 1994).

⁶⁵ Anderson (n. 21) 42-101.

⁶⁶ Most amphora types documented in the military zone correspond to a pattern of trade of slight volume, and probably reflect private trade (wine, sour-wine, *garum*, olives) through a market exchange system (Carreras [n. 7] 117-188). Apart from the presence of a foreigner (Tab. Vindol. II, 344), two accounts of a man called *Gorzus* (Tab. Vindol. II, 192; II, 207) appear in Vindolanda. He may have been a trader supplying textiles and foodstuffs. Likewise, other people in the tablets seem to supply products in small quantities (Tab. Vindol. II, 343; II, 196).

⁶⁷ C. Dickson, 'The Roman diet in Britain and Germany', *Archaeobotanik* 133 (1989) 135-154.

⁶⁸ The Dressel 20 amphorae predominate in military sites during the Principate in Britannia, reaching percentages in weight between 60-90% of the overall assemblage (Carreras and Punari [n. 47]). The amphora densities as well as stamp distribution coincides with movement of troops in each period, and reveals a close relationship between Baetican olive-oil and the army. This relationship is not reflected in any other amphora type, with perhaps the exception of the Gauloise 4 carrying wine.

On the basis of Dressel 20 amphorae densities and stamps from different Romano-British sites, it becomes possible to reconstruct the transportation of the amphorae from the ports in southern *Britannia* to the northern frontier.⁶⁹ The Baetican amphorae arrived at the main ports such as Richborough, which was the headquarters of the *Classis Britannica*, London, Exeter or Colchester, where the highest concentrations of Baetican amphorae in the South are documented.⁷⁰ It is more than probable that these were the places where the administrative staff from the procurator's office undertook an initial control and perhaps corresponded to the *stationes* destined to collect *portoria*.⁷¹

After this initial stage, the official cargoes destined to the legions continued their journeys towards the *limes britannicus* either by land or by sea with the collaboration of the *Classis*.⁷² Land transport was undertaken by the military itself or by civilians. The *Classis Britannica* played a determinant role not only in the military supply but also in shipping metals coming from state-owned mines such as Charterhouse on Mendip, Shropshire, Halkyn Mountain, Derbyshire, Alton Moor, or Dolaucothi and the Weald. Therefore, return trips from the Northern border could be used to carry public cargoes, such as metals from Welsh or southern English mines.

From the south, the military supplies were mainly directed to four or five reception points in the north such as Carlisle, Corbridge, South Shields, York or Chester. These military ports register the highest densities of Dressel 20 amphorae in the north, since they became 'breaking points', or store and distribution centres, where we have the latest stage before goods reached each military unit. It must be borne in mind that Chester records three inscriptions of *beneficarii*, perhaps because the legionary base was close to a river port, where metals from local mines were also shipped. Therefore, *beneficarii* could supervise the arrival of military supplies as well as the export of metals. York was a similar case as a river port with a

⁶⁹ Carreras and Punari (n. 47) 21-30.

⁷⁰ Higher densities of amphorae are interpreted as indicators of change in containers. This was done to facilitate the transportation of olive-oil to the final destination. Actually, a change of means of transport does not always represent a change in container since Dressel 20 amphorae have been found on all Romano-British sites.

⁷¹ There is no documentation on the location of *stationes* in *Britannia*. However, the mentioned ports enjoyed the best possibilities. Only one port, Dover, which was the headquarter of the *Classis* from the mid second century AD onwards, records the presence of a *strator*, therefore a possible existence of a local *statio*.

⁷² H. Cleere, 'The *Classis Britannica*', in: D. E. Johnson (ed.), *The Saxon shore* (London 1977) 16-19.

legionary camp, and records the presence of at least one *beneficarius*.

The last stage of the journey from the ports to the camps was undertaken by the military administration through *beneficarii* located in the main centres of communication. The Vindolanda texts are explicit and show the continuous movement of people and merchandise from this fort to other military centres such as Carlisle, Corbridge, Ribchester, Catterick, Binchester, Aldborough or York. As a whole, the supply network in *Britannia* can be summarised by the general model that identifies the different hierarchical levels with the only exception of the topmost, the *praefectura annonae*.

However, the system seemed to have changed in the Severan period, when fewer Dressel 20 imports are recorded in Britain.⁷³ Interprovincial military provisioning was no longer a military priority. On the contrary, internal supplies for all necessities were preferred in order to reduce transport costs.⁷⁴ Some scholars argue that Septimius Severus modified the military diet and replaced the olive-oil by bacon-fat (*lardum*), which could be obtained locally in all the western frontier provinces.⁷⁵ As a result of these Severan reforms, the flow of supplies between provinces was an exception to the normal rule. Far from being surprising, the subsequent mentions of *annonae militaris* may therefore be interpreted as a reinforcement of provincial ways of supply instead of interprovincial exchanges.

⁷³ Carreras and Punari (n. 47) 63-64.

⁷⁴ The *β τιτλι* on Dressel 20 amphorae with the names of the imperial family suggest that public transportation in the Severan period was in imperial hands, so that the state saved a lot of money in *vecturae*.

⁷⁵ This is an interpretation of a passage in Herodian (3.8.5). Davies (n. 19) 188.

