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(KAAM)
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KILIKIA ARKEOLOJİSİNİ ARAŞTIRMA MERKEZİ
BİLİMSEL SÜRELİ YAYINI 'OLBA'

Kapsam

Olba süreli yayını Mayıs ayında olmak üzere yılda bir kez basılır. Yayınlanması istenilen makalelerin en geç her yıl Kasım ayında gönderilmiş olması gerekmektedir.

1998 yılından bu yana basılan Olba; Küçükasya, Akdeniz bölgesi ve Ortadoğu'ya ilişkin orijinal sonuçlar içeren Antropoloji, Prehistorya, Protohistorya, Klasik Arkeoloji, Klasik Filoloji (ve Eskiçağ Dilleri ve Kültürleri), Eskiçağ Tarihi, Nümizmatik ve Erken Hıristiyanlık Arkeolojisi alanlarında yazılmış makaleleri kapsamaktadır.

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2. Noktalama (tireler) işaretlerinde dikkat edilecek hususlar:
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   c. Metin içinde yer alan "fig." ibareleri, küçük harf ile ve parantez içinde verilmeli; fig. ibaresinin noktasından sonra bir tab boşluk bırakılmalı (fig. 3); ikiden fazla ardışık figür belirtiliyorsa iki rakam arasına boşluksuz kısa tire konulmalı (fig. 2-4). Ardışık değilse, sayılar arasına nokta ve bir tab boşluk bırakılmalıdır (fig. 2. 5).
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Dipnot (kitaplar için)

Richter 1977, 162, res. 217.

Dipnot (Makaleler için)

Oppenheim 1973, 9, lev.1.

Diğer Kısaltmalar

age.	adı geçen eser
ay.	aynı yazar
vd.	ve devamı
yak.	yaklaşık
v.d.	ve diğerleri
y.dn.	yukarı dipnot
dn.	dipnot
a.dn.	aşağı dipnot
bk.	Bakınız

4. Tüm resim, çizim ve haritalar için sadece "fig." kısaltması kullanılmalı ve figürlerin numaralandırılmasında süreklilik olmalıdır. (Levha, Resim, Çizim, Şekil, Harita ya da bir başka ifade veya kısaltma kesinlikle kullanılmamalıdır).

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gerekmektedir. Adobe illustrator programında çalışılmış çizimler Adobe illustrator formatında da gönderilebilir. Farklı vektörel programlarda çalışılan çizimler photoshop formatına çevrilemiyorsa pdf olarak gönderilebilir. Bu formatların dışındaki formatlarda gönderilmiş figürler kabul edilmeyecektir.

6. Figürler CD'ye yüklenmelidir ve ayrıca figür düzenlemesi örneği (layout) PDF olarak yapılarak burada yer almalıdır.

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JOURNAL 'OLBA'

Scope

Olba is printed once a year in May. Deadline for sending papers is November of each year.

The Journal 'Olba', being published since 1998 by the 'Research Center of Cilician Archeology' of the Mersin University (Turkey), includes original studies done on antropology, prehistory, protohistory, classical archaeology, classical philology (and ancient languages and cultures), ancient history, numismatics and early christian archeology of Asia Minor, the Mediterranean region and the Near East.

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   b. The text should be written in 10 puntos; the abstract, footnotes, catalogue and bibliography in 9 puntos 'Times New Roman' (for PC and for Macintosh).
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   d. Titles within the article should be written in small letters and be marked as bold. Other choises (big letters, underline or italic) should not be used.
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   c. The indication fig.:

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      * If many figures in sequence are to be indicated, a short hyphen without space between the beginning and last numbers should be placed (fig. 2-4); if these are not in sequence, a dot and space should be given between the numbers (fig. 2. 5).

d) In the bibliography and abbreviations, if the author has two family names, a short hyphen without leaving space should be used (Dentzer-Feydy); if the article is written by two or more authors, after each author a space, a long hyphen and again a space should be left before the family name of the next author (Hagel – Tomaschitz).

3. The 'Bibliography' and 'Abbreviations' should take part at the end of the article. The 'Abbrevations' used in the footnotes should be explained in the 'Bibliography' part. The bibliography used in the footnotes should take place as abbreviations and the following order within the abbreviations should be kept: Name of writer, year of publishment, page (and if used, number of the illustration). This rule should be applied even if a publishment is used only once.

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Bibliography (for articles):

Corsten 1995 Corsten, Th., "Inschriften aus dem Museum von Denizli", Ege Üniversitesi Arkeoloji Dergisi III, 215-224, pl. LIV-LVII.

Footnotes (for books):

Richter 1977, 162, fig. 217.

Footnotes (for articles):

Oppenheim 1973, 9, pl.1.

Miscellaneous Abbreviations:

op. cit.	in the work already cited
idem	an auther that has just been mentioned
ff	following pages
et al.	and others
n.	footnote
see	see
infra	see below
supra	see above

4. For all photographies, drawings and maps only the abbreviation 'fig.' should be used in continous numbering (remarks such as Plate, Picture, Drawing, Map or any other word or abbreviaton should not be used).

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OLBA XXI, 2013

AGRICULTURAL STRATEGIES AND THE ROMAN MILITARY IN CENTRAL ANATOLIA DURING THE EARLY IMPERIAL PERIOD

Julian BENNETT*

ABSTRACT

A recent review of the palaeoenvironmental and related evidence for the multi-period site of Gordion has identified a pattern of intensive and ultimately unsustainable land use for the region during the Roman period, a pattern interpreted as resulting from the need for over-production by estate-owners to comply with the "often onerous taxes" levied by the provincial authorities. The nature of these "onerous taxes" is not made clear in that review, but it can be argued that the Roman period intensification of land use at Gordion initially came about from the need to supply food for the legionary and auxiliary troops stationed in Galatia and Cappadocia from the Neronian-Flavian period onwards. This explanation is suggested by the evidence that Gordion served as a Roman military base between the mid-1st and the early 2nd centuries. As the use of the location in this way began almost a full century after Galatia was provincialised, a military presence there at that time is unlikely to have been required for security reasons. In which case there is a strong probability that this activity was somehow linked with the increased military activity in Central and Eastern Anatolia that began in the Neronian-Flavian period.

Keywords: Galatia-Cappadocia, Gordion, Legionary Ware, Pontic-Cappadocian frontier, Roman army, Roman military diet, Vindia.

ÖZET

Erken İmparatorluk Dönemi'nde Orta Anadolu'da Tarımsal Stratejiler ve Roma Ordusu

Roma Dönemi'nde, çok dönemli Gordion bölgesi etrafında, palaeo-çevresel ve bağlantılı unsurların güncel analizi, yoğun ve son derece sürdürebilirlikten uzak toprak kullanımı dokusu olduğunu ortaya koymuştur; bunun olası nedeni, toprak sahiplerinin, eyalet otoriteleri tarafından kesilen ve 'sık olan ağır vergi' talebini karşılama ihtiyaçlarını, üretim fazlası ile tatmin etmek olabilir.

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Bu 'ağır' vergilerin yapısı çok bilinmemekle beraber, Roma Dönemi'nde yoğunlaşan Gordion'daki toprak kullanımının nedeninin, Galatia-Cappadocia birleşik eyaletinin Nero-Flavius döneminden itibaren alayların ve süvari birliklerinin yemek ve yem ihtiyacını karşılamak üzere hizmet vermesiyle açıklanabilir. Bu iddianın kaynağında, Gordion'un İ.S 1. yüzyılın ortalarından, erken 2. yüzyıla kadar askeri üs olarak kullanılması yatmaktadır.

Bu coğrafyanın, bu şekilde kullanımı hemen hemen Galatia'nın eyaletleşmesinden bir tam yüzyıl sonra başladığı için, bir askeri varlığın, güvenlik nedeni ile talep edilmiş olması çok mümkün görünmemektedir. Bu durumda böyle bir etkinliğin bir şekilde, Nero-Flavius Dönemi'nde, Orta ve Doğu Anadolu'da artan askeri etkinlikle bağlantılı olarak çıktığı yönünde güçlü bir iddia oluşmaktadır.

Anahtar Kelimeler: Galatia-Cappadocia, Gordion, Lejyon Malzemesi, Pontus-Cappadocia cephesi, Roma ordusu, Roma askerinin beslenmesi, Vindia.

A range of archaeobotanical and palaeoenvironmental evidence recovered from Gordion's Citadel Mound and its vicinity during excavation and field survey has provided firm evidence for the changing patterns of land use there between the Phrygian and Medieval-modern periods[1]. In particular, the evidence suggests the area was subjected to a phase of intensive and ultimately unsustainable land use during the Roman period, at which time crop production was focussed on the large-scale production of (bread)wheat (*Triticum aestivum*) at the expense of the mixed barley-wheat regime that generally prevailed in earlier times[2]. It is thought that this change in the agricultural strategy came about because of the need by local estate-owners to satisfy the "onerous" tax-demands of the local provincial authorities[3].

At first sight this explanation seems quite plausible, given the persuasive evidence indicating how taxes on the land – the *tributum soli* – are believed to have provided the main source of tax income for the Roman State[4]. The truth is, though, that direct evidence regarding the methods of provincial taxation in the Roman Empire is sparse. Even so, the cumulative evidence is that many provinces - especially those with a primarily agrarian based economy, and which were usually less-monetised outside of their

1 Marston 2012.

2 Op. cit., 388 with 391

3 Op. cit., 395.

4 Cf. Bagnall 1985, 289: "agriculture was the main part of the ancient economy, farmers living on the land were the vast majority of the ancient population, and taxes on the land the bulk of government revenues".

urban centres - paid taxes in kind[5]. Such is indeed clearly indicated in the writings of the 2nd century land-surveyor Hyginus Gromaticus, our only contemporary report explaining the *tributum soli* system in the Roman Empire[6]. What this meant in practice was that such taxes in kind were paid with a wide variety of produce depending on what a specific region was best known for in terms of its agricultural products - some areas even paying in honey and leather hides - but it is generally assumed that most taxes in kind were delivered in the form of wheat, the principal staple of the ancient diet in the Mediterranean World[7]. That being so, then apart from what was required to supply the citizens of Rome with their regular food dole, which during the Imperial period was supplied principally from Egypt, Sicily, and North Africa, the largest customer for wheat initially received in kind was the Roman army[8]. Hence the eventual creation (probably under Severus) of the *annona militaris*, a levy in foodstuffs specifically for the benefit of the Roman Army that replaced the earlier practice by which a soldier paid for his food through deductions from his salary[9]. Hence also the comment allegedly made by the 3rd century emperor Probus, that in a dream world there would be no soldiers and therefore no need for taxes of any kind[10].

It follows from this that in many of Rome's provinces, agricultural strategies were, to some extent at least, focused on the need to supply food for Roman army, and specifically to satisfy the needs of the provincial garrison. As such, then from the time that Galatia was provincialised, the presence of initially at least one legion, until *c*. AD 14, and five or so auxiliary units[11], must have had a major effect on the established agricultural

5 Duncan-Jones 1990, 187-198.

6 Hyginus Gromaticus, De Limit. 205L.

7 Cf. Duncan-Jones 1990, 188.

8 Note, for example, the tax-grain sent from Baetica to feed the army in Mauretania in the Claudian period: Dio 60.24.5; also the wheat sent from Pamphylia Side to Syria in connection with the campaigns of Severus Alexander and Gordian: AE 1972.626-628.

9 Develin 1971, provides a detailed and conveniently accessible discussion of the annona militaris. For deductions from individual soldiers to pay for their rations, cf. Fink, nos. 68 and 69: the elimination of this deduction had the corollary of raising the real level of a soldier's salary.

10 HA Probus 22.4-23.3. Cf. also Dig. 50.16.27 (Ulpia), on how tributum resulted from the need to have an army.

11 Mitchell 1993, 74, for these figures, although the garrison might have been larger, with two legions and twice the number of auxiliary units. Cf. also Strobel 2002, 52-53, for the departure of the legionary garrison of Galatia in about AD 14. The exact number of auxiliary units that

strategies in the region, the existing number of local producers now having to cater for the needs of these 7,500+ non-producers stationed in their midst. But the impact of the demands of the Roman military on the food resources of Galatia must have been even greater between the reigns of the emperors Nero and Trajan. Not only did this period witness the passage through the region of several army units to and from campaigns in Armenia, but much more significantly, under Vespasian, Galatia was absorbed into the larger militarised double province of Galatia-Cappadocia. Until dissolved by Hadrian, this administrative entity was provided with a large permanent garrison of two legions and some 18 auxiliary units – some 20,000 men in all - "because of the constant raids of the barbarians" [12]. Moreover, the evidence indicates that even after Galatia and Cappadocia regained their status as independent provinces, the total number of military units in these two areas remained more or less the same as before until well into the later 2nd century[13].

As stated, the impact of such a number of non-producing consumers on the prevailing local agricultural strategies must have been considerable. Yet this facet of the region's history has generally been overlooked in previous studies of Roman Anatolia[14], even though it must have necessitated and also facilitated substantial economic developments throughout the region during the Imperial period, and especially so with regard to the need to feed these non-producers. However, quantifying what that impact might have been on the existing local agricultural regimes in any province of the Roman Empire is not an easy task, in the absence of any conclusive data on this matter. But as will be shown, it is possible to come to some conclusions about this subject that do not involve a total suspension of belief. This is because the literary and other sources of the period allow us to establish at least an order of magnitude for the food and fodder requirements of individual Roman army units, both in terms of consumable quantities required and the amount of land necessary to produce these. In isolation, such figures would add little to our knowledge of Roman Anatolia, even though as informed estimates they would at least allow us to quantify to

remained in the province after then and until the early Neronian periods is uncertain, although analysis suggests no more than three or four.

12 Suet. VIPs. 8.4. See below for the number of legions and auxiliary units stationed in the joint province.

13 Cf. Bennett 2002, 307-308.

14 A notable exception that proves the rule is Mitchell 1993, 250-253.

some extent the impact of the Roman army on the region. On the other hand, as will be shown, where they might make a positive contribution is towards a better understanding of the proven occupation by the Roman military of the Gordion Citadel Mound during the late Neronian/Flavian-Trajanic period[15], and the evidence for the intensification of wheat production there at about the same time.

The Roman Military Diet

As is well known, "an army marches on its stomach". Although Napoleon I generally receives the credit for coining that maxim, he was certainly not the first *vir militaris* to have given voice to it. Since time immemorial, efficient generals have ensured that their armies were provided with sufficient food resources both before and during a campaign. So for the Roman period we have Caesar, who, when campaigning in Gaul between 58-50 BC, made certain that his army was provided with sufficient supplies through requisition and foraging, while the soldiers of the expeditionary force despatched by Nero to Judaea in AD 66 in response to the outbreak of the First Jewish Rebellion carried with them sickles to reap standing crops to supplement their normal three-days rations[16]. Indeed, even before setting out on campaign an emperor and his officials might send out advance orders to local communities to supply food for the soldiers on the march. For example, the city of Rhodiapolis was ordered to help provision Trajan's army for his Parthian campaign, and various cities in the western and eastern Empire faced similar demands from Severus Alexander in connection with his Persian and German Wars[17]. Some emperors even appointed specialist logistic officers for specific campaigns, as with Domitian, who made Plotius Grypus his *praefectus vehiculorum* responsible for supplying the troops engaged in his trans-Danubian campaign of AD 92[18]. Likewise, Trajan, who appointed C.Caelius Martialis of Corinth as his logistics

15 Cf. Bennett - Goldman 2007 and 2009. As it is, during the 3rd century Gordion was also home to some members of the cohors I Augusta Cryonic equitata, presumably a limited number posted there as stationary, in other words, rural policemen: cf. Bennett 2009, 116.

16 Caesar BG. 4.32 and 5.17; Josephus BJ. 2.528. The issue of rations on a three day cycle, as referred to by Josephus, seems to have been standard practice throughout the Imperial period, whether on campaign or in garrison: cf. Cod. Theo. 7.4.6 (of AD 360); also Tomlin 1998, 45, with n. 49.

17 Rhodiapolis: IGR 3.739, col. IVA; HA Sev. Alex. 45.1-2.

18 Erdkamp 2002, 52, with Statius Silv. 4.9.16-19.

officer for his Second Dacian War, and gave Lucius Abournius of Carian Alabanda a similar assignment during his Parthian War[19].

It should come as no surprise, then, to learn that the late 4th century writer Vegetius devoted a whole section of his military treatise to the topic of army supply, beginning "Armies are more often destroyed by starvation than battle, and hunger is more savage than the sword. Time and chance may help an army to recover from other misfortunes, but where food and fodder have not been carefully supplied, the evil is without remedy" [20]. But what is true of the need to provide reliable and adequate food for the soldiers and the fodder for the horses and other animals in a campaign army is even more so for a garrison army. An army on the march could and did acquire much of the food and fodder it needed through both advance and on-the-spot requisition and foraging[21]: but a garrison army requires the creation of a well-organised and permanent method to ensure the regular supply of the necessary consumables to the bases of the individual army units, both in the form of food for the men, and fodder for the horses of those units that had them.

Self-evidently this was not an inconsiderable problem, and whatever the size of such a garrison army, it must have made some impact on local agricultural strategies. However, calculating what this impact must have been is not as straightforward a matter as might seem at first sight. Quite simply, although the literary evidence is that barley was the standard element in the fodder supplied to Roman military horses, we have no single source that states emphatically what the "standard rations" of the Roman soldier were during the Imperial period. However, several literary and sub-literary sources do indicate what was usually provided for the soldier on a regular basis[22]. From these we can conclude that a soldier's usual diet while in camp or on campaign consisted of a ration of wheat[23], generally for making

19 Martialis: AE 1934. 2; Abournius: ILS 9471.

20 Vegetius De Rei Milit. 3.3.

21 Cf. Goldsworthy 1996, 290-293; also Roth 1999, passim.

22 Davies 1971, 124-125; also Fink 1971, 310-331.

23 While not always specifically named as such in most Greek and Latin sources, wheat clearly comprised the cereal element in a Roman soldier's diet, just as it did for citizens at Rome, and even slaves in Italy as a whole: cf. Davies, op cit., 124; Rickman 1980, 5-7; and Cato De Agric. 56-58. Archaeobotanical evidence from Roman army sites in Britain indicates that the wheat component at these consisted of spelt, the best for bread-flour: cf. Helbaek 1964; Kenward - Williams 1979, 57-60; and van der Veen 1988.

bread (*panis militaris*) or pasta, or as porridge or gruel[24], together with bacon or some other meat, cheese, *acetum* ("sour wine")[25], and olive oil[26]. To this list we need merely note that although almost all the contemporary literature stresses the importance of bacon as the main meat-source in the Roman military diet, this was evidently only true for an army on campaign or on exercises[27]. Animal bone assemblages from military sites in the north-western provinces of the Roman Empire indicate quite unambiguously that cattle was the more usual meat element for a garrison army, the beef/pork ratio on military sites being around 70%/20%, with sheep/goat making up the rest[28].

We likewise lack a single source indicating what the exact amounts of these basic provisions were in the individual ration allowance, although information regarding this can also be gleaned from the surviving literary and sub-literary sources. However, while some of these sources supply quite explicit figures regarding ration quantities, the data is not that easily manageable, mainly because we have to rely on Latin and Greek sources that refer to broadly similar but in practice quite different measures of volume, and which may have rounded up or down these measures for literary or other convenience[29]. Even so, as will be shown in the next section, the evidence we have does allow us to make some conclusions on Roman ration and fodder scales, a necessary preliminary to assessing what the impact of the Roman garrison of Galatia and Cappadocia might have been on regional agricultural strategies in the early imperial period.

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24 Renfrew 1973.

25 Acetum was a lightly alcoholic vin de table as opposed to vinum, vintage wine, and was supplied not necessarily to enhance the quality of the soldier's life, but because fermented wine was a safer drink than plain water drawn from steams or wells and the like which might be polluted (indeed, for this reason acetum was supplied to slaves as part of their regular diet: Cato De Agric. 56-58). In Rome's north-western provinces, however, acetum was possibly replaced by ceruesae, or beer, at least for the auxiliary soldiers drawn from this region (cf. Tab.Vind. 182, for a ceruesar[ius], a brewer, who supplied the Batavian garrison at Vindolanda): just as with the making of wine, the brewing of beer destroys harmful bacteria in the water used in the process, making beer safer to drink than plain water.

26 But cf. Fink 1971, 317, no. 15, for an ostracon from Egypt naming lentils amongst official military rations.

27 Cf. HA Had. 10.2; HA Sev. 51.5 and 61.2; HA Avid.Cass. 5,3; and Herodian 2.11.2 and 4.12.2. Also Cod. Theod. 7.4.6 (for AD 360), specifying that over the regular three-day ration period, the soldiers in a campaigning army should receive pork on the first day and mutton the other two.

28 King 1984. Similar ratios are found in the more urbanised areas of Roman Italy: cf. MacKinnon 2004, 192-194.

29 Cf. Tomlin 1998, 48-51

The Food and Fodder Requirements of the Imperial Roman Army

The data provided by the literary and sub-literary texts relevant to the scale of the wheat ration distributed to the Roman soldier have been most thoroughly assessed by R.S.O.Tomlin[30]. From his detailed analysis he concluded that the wheat ration was between four and 4.5 *modii* per man per month, and more probably the first rather than the second amount, given that a ration is a subsistence measure that can be supplemented by other sources. As a *modius* is equivalent to around 8.62 dry litres, this indicates a wheat ration of around 34.5 dry litres per man per month, or about 27.28 kg. of 'medium-heavy' wheat[31].

Data for the quantities of the other foodstuffs distributed as standard rations to a Roman soldier in the Imperial period is almost non-existent. However, a law of AD 419 states that the *munus suarium*, or state-supplied pork meat ration at Rome, was five *librae* of meat per month: as one *libra* equals around 328.9 gr., this is about 1.65 kg., per man per month, and thus about 53 gr. per day[32]. We might reasonably assume that the weight of meat thought necessary to provide adequate nutrition to a male citizen at Rome was about the same as that required for a soldier, who was at least expected to be involved in fairly strenuous activity. This supposition finds confirmation of a kind from the study of the animal bones retrieved during several years of excavation of the auxiliary fort at Valkenburg in Holland, indicating that the soldiers stationed there received an overall average of 63 gr. of meat per man per day during the Julio-Claudian period[33]. This figure is so close to the *munus suarium* ration at Rome as to indicate that a minimum of about 50 gr. per man per day was roughly the standard meat issue for a Roman soldier - bearing in mind how on a weight for weight basis, pork has a higher calorific value than beef or mutton. Although at first sight this figure for the meat element might seem really low, when we take into

30 Tomlin 1998, 50-51.

31 Pliny NH 18.66 reports that wheat came in three forms, light, medium and heavy, and so a modius of each type varied in actual weight: a modius of light wheat was 20 librae or 6.55 kg; a modius of medium wheat was 20 5/6th librae or 6.82 kg; and a modius of heavy wheat was 21 3/4rs librae or 7.12 kg.

32 Cod. Theod. 14.4.10.3 (of AD 419).

33 Groenman-van Waateringe 1997, 264.

account what was also available on a daily basis from a soldier's wheat ration, then, depending on the type of meat and its fat content, it would provide between 3000-3500 kcal per day. As such it equals the average of 3400 kcal thought necessary by the Dutch government in the 1970's for reasonably active males aged 20-35, 1.78 m. tall, weighing some 70 kg[34]. In other words, the Theodosian Code's figure of a 1.5 kg. meat allowance per man per month seems an appropriate one on which to base any further calculations[35].

As for the quantities of the other main constituents of the military ration, we have simply no evidence at all for what the cheese ration might have been. On the other hand, a series of 6th century papyri report what an ordinary soldier then received as his wine and olive oil ration, and these figures will serve for our purposes here, that is to say, that a soldier received a daily minimum of one *sextarius* of wine and 1/10th *sextarius* of oil[36]. A *sextarius* is equal to about 545 ml., and so a soldier's monthly rations of these two substances would be approximately 16.35 litres of wine and 1.64 litres of oil.

Finally, given that some of the Roman army units stationed in Galatia-Cappadocia consisted entirely of cavalry or were part-mounted, we cannot overlook the fodder requirements of the Roman military horse. As it is, this is another topic that has been exhaustively researched and documented by R.S.O.Tomlin[37]. From his review of the literary and sub-literary evidence he concluded that the standard daily ration of barley was in the order of 0.4 *modii* per horse per day, and so around 1.96 kg.[38] In monthly terms, then, a Roman military horse would be supplied with around 58.8 kg. of barley each month, although this barley amount would need to be supplemented each day by around 5 kg. of hay or its equivalent in open grazing[39].

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34 Op. cit., 263.

35 It is only right to note that 6th century papyri from Egypt report a larger meat ration at that time: cf. Jones 1964, 629, for individual meat rations of around two librae or 660 gr. per day, along with three librae or 990 gr. of bread per day, providing a daily calorific value in the region of 4000 kcal, roughly what a professional athlete needs.

36 E.g. P.Oxy. 2046.

37 Tomlin 1998, 49.

38 According to Pliny NH 18.11.62, a modius of barley weighed 15 librae.

39 Cf. Hyland 1990, 90.

Interpretation and implications

To quantify the magnitude of the food and fodder required by the garrison of Roman Galatia-Cappadocia in the late Neronian-Trajanic period we need to relate these figures to the number of soldiers (and military horses) involved. As it is, we have relatively precise figures for the numbers and types of units stationed in that province for the Trajanic period only, although the literary and epigraphic evidence is that this broadly matched in numbers and types of units that garrisoned Galatia-Cappadocia in Flavian times. There were, to begin with, two legions, the *legio XII Fulminata* at Melitene, and the *legio XVI Flavia Firma* at Satala[40]. Each legion had a nominal complement of some 4800 men, of whom 120 were mounted despatch riders and scouts, along with the legion's senior officers and their servants and staff. As for the auxiliary garrison of the joint province, an auxiliary *diploma* of AD 101 indicates that the two legions were "supported" by no less than 18 such units[41], these providing the main tactical and policing element of the Roman army. Four of these units were quingenary *alae*, that is, cavalry regiments with around 512 cavalrymen and their horses. Of the remainder three were milliary *cohortes peditatae*, each with about 800 infantrymen; five were certainly or probably quingenary *cohortes equitatae*, each with 480 infantry and 120 cavalrymen and their mounts; and six were quingenary *cohortes peditatae*, each with 480 infantry[42]. In all, then, simple calculation indicates that in round figures, the standing garrison of Galatia-Cappadocia around the year AD 100 consisted of some 10,000 legionary and 10,000 auxiliary soldiers[43], and about 3000 horses – if we make a nominal allowance for re-mounts and horses provided for legionary and auxiliary officers, and the ponies and mules required for transport and load-carrying purposes[44].

Of course it is highly unlikely that any of the units that garrisoned Galatia-Cappadocia were at their full paper strength. Even so, it is likely

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40 Bennett 2006, 89: after Trajan's Parthian War, the legio XVI Flavia Firma was replaced by the legio XV Apollinaris

41 Pferdehirt 2004, 18.

42 The official size of individual Roman auxiliary units continues to be the subject of esoteric debate, but the figures given here are those accepted by most scholars: cf. Goldsworthy 1996, 21-22.

43 This roughly equal number of legionary soldiers to auxiliary troops appears to have been standard operating procedure for the Roman army since Tiberian times: cf. Tacitus Ann. 4.5.

44 Cf. Hyland 1990, 88-9, for the possibility that a legion may have required about 1,300 equines of one sort or another.

that each and every one had a number of "extras", such as the grooms attached to the cavalrymen in the *alae* and in the part-mounted *cohortes equitatae*, and also those various other military servants attested in the literary and epigraphic sources[45]. Thus, for the sake of convenience, this round figure of some 20,000 legionary and auxiliary soldiers and about 3000 horses will suffice for our purposes. As such, then, on a monthly basis, this garrison needed something in the order of 545,600 kg. of wheat, 30,000 kg. of meat, 327,000 litres of wine and 32,700 litres of olive oil for its infantrymen and cavalrymen, and a further 176,400 kg. of barley as the basic hard fodder for the cavalry horses, an amount that needed to be supplemented by open grazing and/or hay.

It needs to be stressed that these figures are only very rough estimates. Nonetheless, they do allow us to make some fairly tentative conclusions regarding the actual impact of the Roman army on land-use in Galatia-Cappadocia. Admittedly, we are singularly ill informed about land-use in classical-period Anatolia[46], apart from which both actual land-use and productivity would naturally vary from place to place according to local climatic conditions and soil types. Even so, it is clear that at least in Republican times, Central Anatolia was satisfyingly productive in terms of cereal cultivation. For example, when Manlius Vulso needed military supplies during his Galatian campaign of 189 BC, he received 10,000 *medimni* of "grain" from Cibyra, so roughly 523,000 dry litres or about 409,200 kg., and a few days later he received 20,000 *medimni* of wheat and another 20,000 of barley from Sagalassus, that is about 818,400 and 613,800 kg. respectively[47].

Of course, the figures as given by our sources for these provisions might well have been inflated to some extent: but they do point to parts of Central Anatolia as being agriculturally-productive regions, an inference that finds support in later accounts, as with two of 4th century AD date, one

45 E.g., Josephus BJ. 3.115-116, for servants with the legion in the First Jewish Rebellion, and HA Hadr. 13.7, on the servitia castris (camp servants) supplied to Hadrian by the province of Cappadocia in AD 130. Cf. Bennett 2007a, 136-139, for further examples.

46 Broughton 1938, 607-09, lists the classical-period references for crops and animal husbandry in the region.

47 Cibyra: Polybius 21.34 and Livy 38.14.14; Sagalassos: Polybius 21.36 and Livy 38.15.11. Cf. Duncan-Jones 1976, quoting Cicero Ver. 2.3.110, for an Attic medimnus being equivalent to six Roman modii or 52.38 dry litres.

identifying Galatia as a *provincia optima sibi sufficiens*, another speaking of how the region was "rich in grain" [48]. That said, although we will never be in a position to determine exactly how productive this landscape was in real terms, thanks to the work of P.Erdkamp, we are able to get some idea of what was possible in terms of wheat production[49]. From both the classical sources and the data available for medieval and early modern times he has shown that 50 *iugera* of land, an area equivalent to about 12.5 ha., might produce between 450 and 700 *modii* of wheat a year. However, when allowance is made for what needs to be kept back as seed corn and as food for the slave/labour force involved in its production, the actual disposable amount would average out at around 457 *modii*, and so about 3,117 kg. of Pliny's "medium-heavy" wheat, enough to supply the monthly wheat ration for some 114 soldiers. Simple calculation shows that if 12.5 ha of land was needed to provide sufficient wheat for one month about 114 soldiers, then 150 ha was needed to provide a year's worth of wheat for these men. From which we can conclude that the 20,000-man garrison of Trajanic Galatia-Cappadocia would have needed something like 26,315 ha. of land devoted to wheat cultivation to supply what they needed on a yearly basis.

Wheat, however, was just one part of the Roman soldier's rations, for as we have seen, he also received a regular allotment of meat. As noted above, the actual type of meat consumed by the Roman army in the north-western provinces was in the order of 70% cattle, 20% pig, and 10% sheep/goat, and given that the majority of Roman soldiers in the garrison of Galatia-Cappadocia were – at least in the early Imperial period – likely to have been recruited from the European provinces rather than locally, then we can assume that there were no significant culturally-imposed or influenced differences in their meat diet. That being so, a similar cattle/pig/sheep-goat ratio probably applied in this region also, which means that of the 30,000 kg. of meat needed each month to satisfy the demands of this garrison, some 21,000 kg. was beef, about 6,000 kg. was pork and 3,000 kg. was sheep/goat. These figures make little sense by themselves, but some idea of the actual numbers of cows, pigs and sheep-goat required can be established with the help of a British military handbook of the late 19th century which provides us with rule-of-thumb figures for the average

48 Exp.Tot.Mundi (G.Lambroso edition of 1903), 307; HA Tr. Tyr. 18.8.

49 Erdkamp 2005, 43-47.

weight and useable meat factor of each animal[50]. That is to say, a cow averages at 363 kg., with a useable meat factor of 50%; a pig averages at 79 kg., with a useable meat factor of 75%; and a sheep averages 32 kg., with a useable meat factor 55%. For the sake of argument we shall assume that there was no real significant difference in the weight and meat value of the animals that a 19th century soldier might find on campaign in, say, South Africa, Afghanistan, or India, and what was usual in Central and Eastern Anatolia in the Roman period. In which case, the Roman army in Galatia-Cappadocia needed something in the order of 116 cows, 100 pigs and 170 sheep per month to satisfy its meat ration requirements.

We shall leave aside here any calculations as to what was required in terms of vineyards and olive groves to provide the necessary quantities of *acetum* and olive oil for the garrison of Trajanic Galatia-Cappadocia as these items were likely to have been produced in quantity outside the core region of Central and Eastern Anatolia[51]. However, we cannot neglect making an assessment of the fodder requirements of the 3,000 or so military horses in the garrison. If we assume that the same productivity rate applied to the cultivation of barley as fodder for the cavalry horses in Trajanic Galatia-Cappadocia then we come up with a smaller but still a quite extensive area of land that must have devoted to production for military use. Bearing in mind that 457 *modii* of barley would weigh in the order of 16,634 kg., this amount, the product of 12.5 ha. of barley land, would satisfy the monthly fodder ration for about 39 horses, and so the yearly production of 150 ha. was needed just to meet their annual needs. In which case the 3000 or so horses in the garrison would have consumed the produce of something in the order of 11,538 ha. of barley-producing land.

Roman Gordion: a logistics centre for the Roman army?

All this brings us back to J.Marston's conclusion, that there was a provable pattern of intensive and ultimately unsustainable land use in the vicinity of Gordion in the Roman period that was focussed on the intensive production of bread wheat[52]. To which we might add that on the basis of

50 Wolseley 1880, 80.

51 Cf. Bennett - Claasz Coockson, 2009 for a possible military-controlled wine- or oil-producing centre just outside the area we are concerned with.

52 Marston 2012.

other evidence, S.Mitchell has persuasively argued that the Roman period was the only time in pre-modern history when surplus cereal cultivation dominated the Central Anatolian landscape[53]. As was pointed out in the introduction to this article, it seems that in the mainly agrarian provinces of the Roman Empire a significant part of what was levied in local taxation was in kind, and Marston has understandably associated this change in agricultural strategies at Gordion with the need to produce a surplus to satisfy the demands of local provincial taxation. On the other hand, we might be more specific and suggest that this proven Roman period change in the agricultural regime at Gordion, from a low risk subsistence-based strategy of mixed barley and wheat cultivation to the high-risk one emphasising surplus bread wheat, is likely to have been connected to the needs of the Roman military in the region. To begin with, there was the pressing need to supply the numbers of Roman military units that travelled through Galatia in connection with Nero's Armenian campaign, the Civil War of AD 68-69, and Trajan's Parthian War, while the creation of the joint province of Galatia-Cappadocia and the Pontic-Cappadocian frontier, and the large number of troops needed there permanently for garrison purposes, must have made substantial demands on the regional agricultural resources. Common sense tells us that this series of events would quite likely have been a contributory and perhaps even a major factor in the Roman period intensification of cereal cultivation in the Gordion area that Marston has identified from the archaeobotanical and palaeoenvironmental evidence. The fact is that until the constituent elements of this garrison established permanent bases, they were in no position to arrange a stable and consistent food supply from the immediate vicinity and so their supplies had to come from elsewhere in the region[54].

To clarify this inference we must review the evidence for the occupation of the Gordion Citadel Mound in the Roman period. Strabo's comments about the nature of the site in Augustan times are quite emphatic: it was one of a group of "villages slightly larger than the others" in the area[55]. The archaeological evidence would seem to bear this out. Although the Citadel

53 Mitchell 1993, 245 and 250.

54 Cf. Tacitus Agr. 19, on how cereal from Southern Britain was transported to North Britain to supply those units then based in what is modern Central Scotland.

55 Strabo 12.5.3 (568).

Mound has produced pottery sherds and coins of Augustan-Tiberian date[56], their number is negligible when set against the greater quantity of finds of late Neronian/Flavian-Trajanic date. That period saw the wholesale re-settlement of the Citadel Mound[57], the western half being systematically levelled for building purposes[58]. To this we should add that by the Hadrianic period the place Strabo knew as Gordion had become known by another name, Vindia[59], a toponym most probably derived from the Celtic *Uindo, meaning "white" or "bright" [60]. The re-naming of the location in this way suggests the arrival there of newcomers from the predominately Celtic-speaking areas of Europe who found the place effectively deserted, and so chose to give it a name that made sense to them.[61]

When the evidence of the Roman occupation at Gordion, as retrieved from earlier excavations, was first analysed, it was forcefully argued that this mid-1st century re-occupation of the Citadel Mound represented an urban(ised) settlement that developed as a side effect of a process of provincial regeneration in Galatia that began during the Flavian period[62]. If Flavian Galatia did witness a pattern (if not necessarily an imperially inspired agenda) of provincial regeneration then this is not reflected in the epigraphic evidence from Ancyra[63]. On the other hand, the Flavian period did see an extensive programme of roadworks in Galatia and the neighbouring provinces in the years AD 80–82, with existing track ways

56 Cf. Goldman 2005, 59.

57 Op. cit., 60-61: the dating evidence is supplied in part by stratified and unstratified coins of the late Neronian - Trajanic period, these greatly exceeding those of other times (cf. Goldman 2000, 254-274), but also by a substantial quantity of glassware typical of the same period, much of this material being paralleled by forms in use at Pompeii and Herculaneum when Mount Vesuvius erupted in AD 79.

58 Goldman 2000, 383.

59 Ptolemy 5.4.5 and Ant. Itin. 201.5; cf. French 1978, 294, with Belke – Restle 1984, 171.

60 Cf. Rivet - Smith, 1979, 500, and Goldman 2000, 44-45. As Rivet - Smith note, the root survives in Old and Modern English, giving us the word "Winter", meaning "the white/bright time", referring to the snow in that season, to which we can add the modern Breton, "gwen", for "white", evidently from the same Celtic root. The new name was probably chosen with reference to the gleaming "bright" or "white" appearance of the scarp edge that constitutes the east boundary of the Gordion/Yassihöyük basin.

61 As Strabo still knew Gordion by that name in Augustan times, an origin for the name Vindia in this way makes better sense than the suggestion of Mitchell (1993, 50), that the Galatians imposed it on the place after their arrival here in the 3rd century BC.

62 Goldman 2005, 60-66.

63 Mitchell – French 2012, 9.

being transformed into a proper road network with paved routes suitable for wheeled vehicles[64]. However, the Roman road system served primarily the needs of the Roman army, to move troops and to provide secure supply routes, and so this programme should be associated with the final formalisation of the Pontic-Cappadocian frontier and the need for a first rate route linking western and eastern Anatolia. That aside, the coin evidence is that this mid-1st century re-occupation phase at Gordion's Citadel Mound effectively came to an end in the late Trajanic or early Hadrianic period, perhaps owing to damage sustained during a destructive earthquake that allegedly devastated the three main urban centres of Galatia during Trajan's reign[65]. Whether or not this earthquake was the cause for the abandonment of the Citadel Mound at this time, the place remained deserted until the later 3rd century, at which time some limited activity of an uncertain nature took place there.

Thanks to Goldman's excavations on the Citadel Mound in 2004 and 2005, this pervasive hypothesis, that Roman Gordion was some kind of planned civilian settlement, no longer holds good. Instead, the 2004-05 excavations demonstrated quite conclusively that sometime between the late Neronian/Flavian and Trajanic periods, a Roman military unit was established on at least one part of the Citadel Mound while the subsequent analysis of earlier discoveries suggested that in fact the entire mound was probably used as military base at that time[66]. The clearest evidence for this military use of the site came from the 2004-05 excavation areas Op. 54 and 55[67], which revealed a 9 m. wide north-south building of unknown length but of late Neronian/Flavian-Trajanic date. A part of this building had previously been uncovered in the adjacent 1973 WCW-16 excavation trench and the combined evidence is that it contained a minimum of three contiguous rooms, the central one at least having a lateral north-south cross-wall[68]. Both the plan and the overall dimensions of this central room conform exactly to that of a *contubernium*, the standard 10-man accommodation unit found in the barrack bocks of legionary fortresses and auxiliary

64 E.g., French, 1981, 32A; cf. Mitchell, 1993, 124-126.

65 Goldman 2005, 66; cf. Orosius Hist. 7.12.5 for the earthquake.

66 Bennett – Goldman 2007 for a brief account (on-line at http://antiquity.ac.uk/projgall/bennett315/); and Bennett – Goldman 2009 for a more substantial analysis. The change in thinking about the nature of Roman Gordion is also reflected in Goldman 2010, 142.

67 Cf. http://antiquity.ac.uk/projgall/bennett315/, Fig. 1 = Bennett – Goldman 2009,Fig. 1.

68 Cf. http://antiquity.ac.uk/projgall/bennett315/,Fig 3 = Bennett – Goldman 2009, Fig. 2.

forts of the 1st and 2nd centuries AD[69], the smaller space to the east being the *arma* or weapons and storage area in such a *contubernium* while the larger west space is the *papilio* or sleeping area. Evidently the rooms on either side of this unit represent the adjacent *contubernia* of such a barrack block, making this the first Roman military building to have been identified in Anatolia. Indeed, confirmation of its identity as a Roman barrack block was provided by the discovery in what would be the *arma* space in the room to the north of two sections of Roman iron scale armour with textile and leather backing[70], while the building as a whole and the area to its rear produced several other items of military equipment (including ring-mail and scale armour), and examples of "Legionary Ware" [71].

It can be objected that one barrack block does not make a fort. But the fact of the matter is that as already intimated, a review of the earlier excavations on other parts of the Citadel Mound has identified further examples of what are best interpreted as being the same class of structure. Two of these putative barrack blocks are in the South-west excavation zone[72], and were originally examined by R.S.Young in 1950, who ceased work there after revealing the remains of two 8 m. wide west-east buildings arranged parallel to each other, both being associated with material of an early Roman Imperial date. Some further work within one of these buildings in 1995 and 1996, under the direction of by M.Voigt (as excavation area Op. 17), revealed traces of cross-walls suggesting that the building originally contained a series of contiguous rooms on its west-east axis with internal dimensions of about 4.5 x 6.5 m. These figures are again appropriate for Roman military *contubernia*, suggesting that both buildings are also Roman military barrack blocks, an interpretation that finds support in the knowledge that this specific area has also produced examples of Roman military equipment and "Legionary Ware" [73].

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69 Cf. Davison 1989, 37-39 (legionary), and 97-102 (auxiliary).

70 Cf. http://antiquity.ac.uk/projgall/bennett315/ Fig 5, mistakenly labelled as a "harness pendant".

71 "Legionary Ware" is a generic term for a very distinctive class of pottery associated with Roman military sites in the European provinces and made by Roman military potters when suitable local pottery was unavailable. It is usually red coloured or mica-dusted, and sometimes has a rusticated decoration, being in forms that often imitate the shapes of standard red sigillata products or even metal tablewares, especially beakers and flagons. For a full discussion see Swann 2004: and for published examples at Gordion, cf. Körte – Körte 1904, 193-195 (their "Rote firnis- und Glasierte Ware"), with Abb. 190-192; and Goldman 2005, Figs 5-5 and 5-6.

72 Cf. http://antiquity.ac.uk/projgall/bennett315/ Fig 1.

73 The 2004 and 2005 excavation area Op. 53 was opened directly west of these buildings in order to learn more about their character, but work ceased before Roman-period levels were reached.

The third of these putative barrack blocks is located in the North-west excavation Zone, another area opened by Young in 1950, and where, as in the South-west Zone, he ceased work after exposing structures from the Roman Imperial period, in this case, the remains of a peristyle house and other buildings, located to the east of a north-south road. This general area was the focus of M.Voigt's excavations between 1995 and 1997[74], her work revealing that the road was probably colonnaded, and was flanked on the west side by another building of early Roman Imperial date, the partial excavation of which exposed a room with dimensions closely matching the *arma* identified in excavation areas Op. 54 and 55[75], suggesting that this might also be a barrack block. That being so it is worth noting how the "peristyle house" and its associated elements can be paralleled in Roman military contexts[76], allowing for the possibility that this might represent another military construction. Either way, this area has also produced examples of Roman military equipment and a "Hülsenscharnier" brooch[77], a type most commonly found in the military districts of Raetia and the adjacent provinces in late 1st and early 2nd century contexts[78], as well as examples of "Legionary Ware".

In other words, the cumulative evidence is that the late Neronian/ Flavian-Trajanic period of occupation at Gordion's Citadel Mound was predominately if not entirely military in nature. To which we might add the indications that at some point in its existence it was garrisoned by a Roman military unit of Central European origin. The Celtic origin of the toponym Vindia aside, the closest parallels for some of the "Legionary Ware" forms found at Gordion are at Carnuntum on the Middle Danubian frontier, these in turn matching similar (and earlier) products found in the German provinces[79]. Moreover, a Central European origin for at least a

74 Cf. http://antiquity.ac.uk/projgall/bennett315/ Fig 1, with Goldman 2005, Fig. 5-2.

75 Goldman 2005, 61, Fig. 502, "Roman Building 3".

76 Cf. Johnson 1983, Fig 104, for a very similar building in the auxiliary fort at Rottweil.

77 Voigt, et al, 1997, Fig. 32, g.

78 Cf. Riha 1979, Taf. 39.78, Type 5.12.2.

79 Gassner – Jilek 1997, their Fig 5.15, for a bull-horn lug handle directly comparable to examples found at Gordion, as, e.g., Körte and Körte 1904, Abb. 190, I. Note also that a "Legionary Ware" mortarium found in the 2004-05 excavation is almost exactly paralleled by one of Trajanic-Hadrianic date found at York in Britain (K.Hartley, pers. comm. 2007), occupied from c. AD 122 by the legio VI Victrix after a long period of service in Germania Inferior (cf. Keppie 2000, 30): as several "Legionary Ware" forms continued to be made by Roman military potters into the

part of the garrison based on the Citadel Mound is likewise suggested by some of the related metal artefacts found there. For example, in addition to the Raetian "Hülsenscharnier" brooch found in Voigt's North-west Zone excavations, a "Snake's-head foot" brooch, another type common to the province of Raetia in the late 1st and early 2nd centuries AD, has also been found at Gordion[80]. To which we might add that a military horse harness pendant found in the 2004-2005 work at Gordion is closely paralleled by examples found at Sisicia, in modern Croatia, a military base until at least the Claudian period, as well as at other sites in the Danubian frontier region[81]. It might be, of course, that some or even all of these metal artefacts were brought to Gordion in *c*. AD 114-116 by the *cohors VII Breucorum equitata*, a unit attested there at that time by epigraphic evidence, having been redeployed there from its original base in Moesia[82]. But what cannot be denied is that they strongly suggest the arrival at Gordion of a military unit that had recently been based in Central Europe, and not one of those auxiliary units already serving in Anatolia[83]. That being so then it was possibly one of those units redeployed to the east from Europe in connection with the preparations for Corbulo's first Armenian campaign[84].

Having demonstrated the overwhelmingly military nature of the Neronian/Flavian-Trajanic occupation of the Citadel Mound at Gordion we needs must explain why this came about. To begin we might note that although the Roman army regularly established garrisons in abandoned defended sites of an earlier date this procedure was usually in connection with the process of pacifying a newly annexed territory[85]. That was clearly

Antonine period (cf. Gassner – Jilek 1997), it is possible that the prototype for the Gordion and the York mortaria was developed among "Legionary Ware" potters working in Germany.

80 Muscarella 1967, 84, with http://antiquity.ac.uk/projgall/bennett315/ Fig 2; cf. Riha 1979, Type 5:15, no 1281. The exact find-spot of this piece is uncertain. These two brooches, incidentally, are the only "imported decorative items" of Roman metalwork found at Gordion and so must be what Marston (2012, 384) had in mind when he refers to how these signified that those living at Gordion in the Roman period were able to import metal "objects over long distances": he has missed the point that they came with the garrison assigned to Gordion.

81 Cf. http://antiquity.ac.uk/projgall/bennett315/ Fig 4, with Radman – Livaja 2004, 111, and Tab 66, 480.

82 Cf. cf. Bennett 2010, 427-429, with Goldman 2010, 139-140.

83 E.g., either of the cohortes I or III Augusta Cyrenaica (Bennett 2009), or the Cohors I Hispanorum equitata or Cohors I Apula civium Romanorum (?)equitata (Bennett 2007b).

84 Tacitus Ann. 13.35.

85 Cf. Todd 1985.

not the case with the re-occupation of Gordion, situated within an area that began to be provincialised in 25/20 BC. In which case it seems logical to seek an answer to this matter by associating Gordion's use as a military base with the evidence presented by Marston, namely that the Roman period saw a distinct change in the agrarian regime hereabouts, from the prevailing low-risk strategy of mixed barley and wheat cultivation to one that focussed on a much riskier strategy in which naked wheat, most probably bread wheat, was the principal crop[86]. In other words, this change in strategy is directly related to the arrival in Central Anatolia of large numbers of troops, initially for Corbulo's Armenian campaign, but subsequently to garrison the Pontic-Cappadocian frontier and other parts of the joint province of Galatia-Cappadocia.

To begin with, we should note how this relatively sudden and certainly major change in agrarian strategy in the Gordion region implies that much of the landscape was estate land, the change being directed by estate-owners. Such a view finds some confirmation from the Roman period settlement pattern in this region. Although the numbers of Roman-period inscriptions found in Western Galatia points to a relatively close network of contemporary occupation sites[87], none of these seem to be anything more than hamlets or in some cases simple small-holdings, supporting the perception that this area was primarily estate land[88]. In which case common sense suggests that much of this land was quite probably Imperial property: Augustus, by right of conquest, would have inherited for himself the lands of Amyntas, the last ruler of Galatia. And it just so happens that sub-literary evidence indicates how Imperial lands were used for providing food for the troops[89]. That said though, the epigraphic evidence strongly suggests that much of Central Anatolia was in the hands of private landowners from a relatively early date[90].

But whoever owned the ground around Gordion in the early 1st century AD, the existence there of large areas of good agrarian land bisected by the main route between western and eastern Anatolia could hardly have gone

86 Marston 2012, 387-388.

87 Cf. the map in Mitchell 1982.

88 Mitchell 1993, 149.

89 Cf. P.Dura 64, reporting grain supplied from the prata fiscalia, presumably Imperial estates in Syria.

90 Mitchell 1993, 149-158, espec. 157.

unnoticed by the local Roman governor and his staff when faced with the need to provision the large numbers of troops assembled in Cappadocia for Nero's Armenian campaign[91]. Nor is it likely to have escaped the notice of the provincial *procurator Augusti,* the emperor's personal financial official within the province, and an official specifically responsible for military supply[92]. After all, whatever the level of food production in Galatia and Cappadocia in the early Imperial period this doubtless operated on an essentially subsistence basis, suffice to produce enough to sustain the local population and provide adequate seed corn for the future, along with a portion for land-rent. It is highly unlikely to have been sufficient to cope with the sudden demands of the 20,000+ troops who arrived in Central Anatolia in AD 57 for what eventually became a ten-year campaign[93], or the equivalent number of men based in the joint province of Galatia-Cappadocia from the Flavian period onward. What was needed was an organised and improved system that provided them with a steady supply of sufficient quantities of both food and fodder. In which case it could be that those who owned the land around Gordion were now encouraged or obliged to enlarge the amount under cultivation and introduce the riskier strategy of focussing on wheat over barley to satisfy an increase in taxation in kind to meet the demands of the large numbers of soldiers army now stationed in Eastern Anatolia.

However, as the Roman administration doubtless realised, the collection of taxes paid in kind requires a high level of supervision, given the potential for problems over the quality, quantity and the delivery of what was being taxed in this way. As such, then, we can visualise a scenario in which it was decided perhaps at an early stage in Nero's Armenian campaign to install a garrison at Gordion to oversee this matter. Evidently, this garrison was a unit that had recently arrived in Central Anatolia after service in Central Europe. They brought with them their own distinctive cultural artefacts and their cultural preferences, to the extent of making locally the pottery forms they were familiar with[94], while also giving the

91 Cf. Erdkamp 2002, 53. The best case of this is when Pliny the Younger, as governor of Pontus-Bithynia, sent soldiers to assist Maximus, the local procurator Augusti collect corn in Paphlagonia: Pliny Ep. 10.27.

92 Strabo 3.4.20; also Remesal Rodriguez 1990.

93 Bennett, 2006, 83-87.

94 Cf. Swan – Bidwell 1998.

place a toponym, Vindia, which made sense to them. As it turned out, the evidence is that Gordion/Vindia continued to function as a military base until the Trajanic period, presumably continuing to operate throughout this period as a logistics base in connection with provisioning the garrison of what had become the joint province of Galatia-Cappadocia. In which case the arrival at Gordion/Vindia of the *cohors VII Breucorum equitata* in *c*. AD 114 might be explained by need for this unit to replace and assume the responsibilities of one previously stationed there but which had been deployed further east in connection with the preparations for Trajan's Parthian War. Indeed, it seems probable that Gordion/Vindia continued to function as a supply-base until the autumn of AD 117, when Hadrian reorganised the army of Galatia and Cappadocia, redeploying to the west many of those units originally transferred from there for Trajan's Parthian War, so that he could better respond to threats then being made against the Danube region[95].

A natural objection to the hypothesis presented here, that Gordion was somehow involved in the provisioning of garrisons in Galatia and Cappadocia throughout late Neronian/Flavian-Trajanic period, is the matter of transport. As is well known, the long-distance land transport of low cost bulk items was a commercially and so economically unviable proposition in the Roman period[96], not the least because draught animals carrying a cereal load over a long distance would quite probably – depending on the distance involved - have eaten its equivalent before reaching its destination. Thus logic leads us to believe that as far as was possible the garrison of Galatia-Cappadocia obtained their food and fodder requirements from local sources. And yet the collective evidence is that the Roman period was the only time in pre-modern history that cereal cultivation dominated the Central Anatolian landscape[97], while Marston's analysis points to a substantial increase in the cultivation of bread wheat in the Gordion region at this same time. If, as argued above, this change in the agricultural strategy can best be explained by the need to satisfy the demands of the Roman military in Anatolia, then as most of the units involved were stationed well to the east of Gordion there had to be some means of moving this surplus to where it was required in an efficient and economic fashion. The solution

95 Cf. Bennett 2010, 435.

96 Hopkins 1983 remains the standard work on the subject.

97 Mitchell 1993, 245.

must surely lie, as Mitchell divined, in a state run military relay system that depended to a great extent on locally requisitioned transport.[98] However, such a state run system required at the very least routes that were capable of year-round travel. Good enough motive, then, for introducing the extensive road-building programme reported in Central and Eastern Anatolia in the years 80–82, at which time the main west-east and some subsidiary routes were converted from rough and ready tracks into paved roads more suitable for wheeled transport[99]. After all, it is unlikely that the more experienced generals of the day had forgotten how a failure in the supply system played a large part in the collapse of L.Iunius Caesinius Paetus' Armenian campaign in AD 62/63[100].

Conclusions

The archaeobotanical and palaeoenvironmental evidence that has been recovered from Gordion and its immediate vicinity reveals that the Roman period saw the introduction there of a pattern of intensive and ultimately unsustainable land use associated with a change from a low risk mixed barley-wheat regime to an intensive and high risk strategy focussing on the production of (bread)wheat. It has been argued that the likely cause for this change was the need for over-production by local estate-owners to satisfy the tax demands of the provincial administration. However, although we lack conclusive proof on this point, the evidence we do have strongly suggests that in general terms, taxation in kind, and specifically in the form of wheat, was a method regularly utilised by the Roman administration to satisfy the food requirements of the Roman army. As such, therefore, it is tempting to see this change in agrarian strategy at Gordion as one that came about due to the arrival in Central and Eastern Anatolia during the mid-1st century AD of some 20,000+ legionary and auxiliary soldiers, initially for service in Nero's Armenian campaign of AD 57-67, and subsequently to garrison the Pontic-Cappadocian frontier and the joint province of Galatia-

98 Mitchell 1976, with ibid, 1993, 251. This is not to deny the existence of evidence indicating that the Roman military used and paid private traders for the supply of some foodstuffs (e.g., Tab. Vindol. 2.343, reporting the purchase of 5,000 modii of wheat): however actual transport costs would be minimal if locally requisitioned transport and fodder were involved.

99 E.g., French 1981, 32A; cf. Mitchell 1976, and ibid 1993, 124-126; also Dionysus of Halicarnassus 3.67.5, for the near-contemporary view that paved roads, along with aqueducts and sewers, were amongst the three greatest achievements of Rome.

100 Tacitus *Ann*. 15.8.

Cappadocia. The point being that the arrival of these men and the need to satisfy their regular food and fodder supplies would have placed a heavy burden on the existing agrarian strategies of Central and Eastern Anatolia. Indeed, as was shown above, an extra 26,315 ha. of land would have been needed to be brought under cultivation just to satisfy the wheat requirements of this number of soldiers.

In which case it does not seem entirely coincidental that sometime in the late Neronian or early Flavian period, the Citadel Mound at Gordion was re-occupied by a Roman military unit of probable Central European origin, who then set about levelling the western part of the Mound to facilitate the construction of a series of buildings that either have or appear to have the typical plan and other characteristics of Roman barrack blocks. There is no indication that any part of Central Anatolia was under threat of attack or local revolt at this time. Therefore it seems highly probable that this Roman garrison was installed at Gordion in connection with the need to organise and facilitate the supply of locally produced foodstuffs and other necessities initially required by Corbulo's campaign army and subsequently by the garrison of Cappadocia-Galatia. Indeed, it was probably in connection with the setting up of a Roman military base at Gordion that the place now became known as Vindia, a name of Celtic origin that was certainly applied to this location by Hadrianic times. Either way, it also seems clear that the Flavian formalisation of the Pontic-Cappadocian frontier was associated with the building of paved roads linking Central and Eastern Anatolia. Such roads, evidently built on Imperial initiative, were intended primarily for the movement of soldiers and of their supplies, and so would have facilitated the wheeled transport of foodstuffs and other goods from collection centres in Central Anatolia, such as Gordion/Vindia, to the garrison of Galatia-Cappadocia.

To be sure, it seems likely that Gordion/Vindia continued to function as a nodal point in the supply system into the later Trajanic period, when the *cohors VII Breucorum equitata* was based there for a time, perhaps two years in all, but certainly in connection with the preparations for and the initial stages of Trajan's Parthian War. However, the evidence is that this military base on the Citadel Mound was abandoned during the early Hadrianic period. This was most likely a result of Hadrian's reorganisation of the garrisons of Galatia and Cappadocia, which doubtless saw a revised Imperial policy under which individual units in these provinces now

obtained their supplies from immediately local sources, perhaps even military land, the *prata* around a fort, cultivated either by the soldiers themselves or, more probably, by lease-holders[101]. By that time, however, such had been the intensification of wheat cultivation around Gordion/Vindia that a process of degeneration was already set in place, eventually resulting in a severe degradation of the local landscape that was only reversed by purely natural factors as the level of population hereabouts declined, most probably as a direct result of this same increased degradation[102].

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101 Cf. Mócsy 1967; also von Petrikovits 1979, where it is suggested that the prata around Vindonissa covered an area of 11 x 3 km, and could supply the legionary garrison there with all its annual wheat requirements.

102 Kealhofer 2005, espec. 145 and 147.

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