The Myth of the Middle-Class Army: Military and Social Status in Ancient Athens[1]

Hans van Wees

'The wiry, sunburnt working man' cannot help thinking rebellious thoughts when he sees beside him in the line of battle 'a rich man, who lives his life in the shade and carries lots of superfluous flesh, all out of breath and without a clue'. In private, he will mutter to his peers: 'These men are ours; they are nothing'. Or so Plato imagined (*Republic* 556ce). This vignette of class antagonism within a citizen army reminds us that historians simplify in speaking of the hoplites, the Greek heavy infantry, as if these constituted a single social group, a 'hoplite class'. The infantry included both the wealthy, leisured classes (*plousioi*) and those who had to work for a living, the 'poor' (*penêtes*). At the start of the Peloponnesian War, the life of the conspicuously rich Alcibiades was saved in battle by the ostentatiously poor Socrates (Plato, *Symposion* 219e-220e), and at the outbreak of the Corinthian War, 'capable and enthusiastic' soldiers who could only afford to serve if provided with 'travel money' by their richer neighbours (Lysias 16.14) served alongside the likes of Mantitheus—the very model of an upper-class Athenian, with his long hair, his cavalry service, and his royal connections abroad (ibid. 4, 13, 18).

Modern scholars have generally played down such class distinctions. It is widely believed that the vast majority of hoplites were of roughly the same social and economic status and formed a 'middle class', consisting mostly of independent farmers. Indeed, many have argued that it was above all the shared experience of warfare which turned these farmers into a self-aware and more or less cohesive social group. As heavy infantry became the dominant military force in archaic Greece, those who could afford the hoplite panoply of bronze armour and took their place in the phalanx not only came to look down on the lower classes too poor to afford this kind of equipment, but also became less deferential towards the upper classes, and developed a sense of solidarity and equality amongst themselves. Borrowing from Aristotle, it has been claimed that military developments of the seventh century BC led local aristocracies to cede power to the new 'middle class' (*to meson*) and introduce a form of democracy (*Politics* 1297b16-28).[2] War is thus seen as a driving force in shaping social and political structures.

Some aspects of this model have been challenged,[3] but the idea that hoplites formed a largely unified, cohesive group has not been questioned. I shall argue, however, that in Athens, and perhaps elsewhere, hoplites were economically and politically divided right down the middle. The split was not just between a few rich men on the one hand and a broad middle class on the other, but between the wealthier half of the hoplites who had certain political privileges and duties, and the poorer half of the hoplites who had neither. Recognizing this internal division has serious implications for our understanding of archaic and classical Athenian history: it means that the structure of society and politics was shaped by the distribution of wealth, regardless of the differentiation of military functions, and that most 'democratic' rights were, officially at any rate, much less widely shared than we normally imagine.

Property classes in politics and war

In the early sixth century BC, Solon's reforms established the principle that access to political office in Athens depended on property qualifications. 'Solon', says Aristotle,

> established the democracy of our forefathers by finely blending the constitution ... because [he] appears to have ceded to the people the most necessary power—to vote for and audit the government offices (for if it did not have that right the people would be a slave and an enemy)—while he reserved all these offices for those who were notable (*gnôrimoi*) and wealthy (*euporoi*): the *pentakosiomedimnoi* and the *zeugitai* and [between these two] a third class known as 'hippad'. The fourth class was the 'thetic' and its members had no access to any office.[4]

These property classes retained their political significance at least until the end of the fifth century. The office of archon was officially opened to the *zeugitai* as late as 457 BC, and in 403, at the end of the civil war, officials were required by decree to render account only to the top three classes.[5] Solon's classes still existed in the late fourth century, but by then their political role had become nominal: property qualifications for office, although legally still in force, were no longer upheld.[6]

That the property class system had a military dimension is attested in Thucydides' account of the Peloponnesian War. We are told that among the hoplites mobilized for the Sicilian expedition 'there were of the Athenians themselves 1,500 from the list (*ek katalogou*), and 700 *thêtes* as marines for the ships' (6.43.1). In other words, those of zeugite status and above had their names placed on a list—whether a permanent register or a list drawn up for the occasion[7]—while the members of the lowest class did not. By implication, the top three classes, unlike the bottom class, were under an obligation to serve as infantry. This was a legal, not just a moral obligation: a lawcourt speech *For The Soldier*, dating to the Corinthian War, for instance, speaks of generals fining and threatening to imprison a man who protests at being 'listed' too often (Lysias 9.4-6). We will return to the precise military status of the class of *thêtes*. The role of property classes in the allocation of military duties is confirmed by the Athenians' response to a crisis in 428, when they were forced to man a fleet exclusively with citizens and metics, but exempted the top two classes, *hippeis* and *pentakosiomedimnoi* (Thucydides 3.16.1).

Although we have no explicit evidence that the property classes already had a military dimension in early Greece, it is safe to infer that they did. The name *zeugitai*, 'yoked men', almost certainly refers to fighting in a rank, sometimes called 'a yoke' in Greek, which strongly suggests that from the moment it was created, whether as part of Solon's reforms or even earlier, this class was defined primarily by its duties in war.[8] In the course of the fourth century, however, the property classes seem to have lost their role in military organization along with their political role, as mobilization 'from the list' was replaced with different systems and the obligation to serve was eventually extended to almost the entire adult male citizen population.[9]

So, from the beginning of the sixth century (if not earlier) to the end of the fifth century (if not later) only the top three property classes had access to political office and the obligation to fight in the heavy infantry, while the lowest class had only 'the most necessary power' and was under no obligation to serve. The question is: where did the dividing line between the two groups lie?

Scholars have usually—and on the face of it quite reasonably—assumed that the obligation to serve, and the attendant political rights, extended to *all* who could afford to serve as hoplites, perhaps up to half of all adult male citizens. The evidence, however, suggests that the *zeugitai* were a much more *exclusive* group. In discussing Solon's restriction of officeholding to those of zeugite or higher status, Aristotle, as cited above, speaks of these men as '*notable and wealthy*'. Later in the *Politics*, he again says: 'in Athens, when they were unsuccessful with the infantry, the notables became fewer, because during the Spartan [i.e., the Peloponnesian] war they levied armies from the list' (1303a8-10). Clearly, the *zeugitai*, who

constituted the bulk of those 'on the list', are, to his mind, among the 'notables'.[10] Despite thinking of hoplites as a 'middle class', Aristotle thus saw the *zeugitai* as part of a distinguished elite. Plutarch concurred that Solon's intention in using property classes was 'to reserve *all* existing offices for the *wealthy* (*euporoi*)' (*Solon* 18.1). An investigation of the zeugite property census shows that the 'yoked men' were indeed very well-to-do, and that their number must have been much smaller than the total number of citizen hoplites.

The relative wealth of the *zeugitai*

Three different sources tell us that Solon's property classes were defined in terms of annual agricultural produce expressed in 'dry and liquid measures'. The highest class, the *pentakosiomedimnoi* or 'five-hundred-bushel men', produced, as their name indicates, at least 500 *medimnoi*. This amounts to more than 20 metric tonnes of wheat or 16 tonnes of barley; or, assuming that the equivalent liquid measure was the *metrêtês*, it might have amounted to almost 20 hectolitres (*c.* 440 gallons) of wine or olive oil. The second class, the *hippeis* or 'horsemen', produced at least 300 *medimnoi*. The third class, the *zeugitai*, produced at least 200 *medimnoi*, amounting to about 8 metric tonnes of wheat, or almost 6.5 tonnes of barley, or just under 8 hectolitres (*c.* 175 gallons) of wine or oil. Anyone producing less was rated among the *thêtes* or 'hired labourers'.[11]

The gap between the *hippeis* and the *zeugitai* is remarkably narrow.[12] An annual harvest of 300 *medimnoi* apparently enabled landowners to keep horses, as the label 'horsemen' indicates,[13] and art and literature leave no doubt that from the Dark Ages onwards horses were the ultimate symbol of wealth in Greece. The zeugite census thus amounted to no less than two-thirds of what it took to be regarded as very 'rich'. The gap becomes even narrower when one considers just how high is the maintenance cost of horses. Apart from grass and hay, a horse would eat at least 30 *medimnoi* of barley per year,[14] and since it was customary to keep at least two horses—yoked to a chariot or ridden as a pair by the owner and a mounted attendant—no less than 60 *medimnoi*, or 20% of the minimum annual income of a *hippeus*, would go towards feeding the animals.[15] Without even counting the cost of acquiring horses, *hippeis* at the bottom of the scale would therefore be left with a 'disposable income' of only 240 *medimnoi* per annum, *less* than that of *zeugitai* halfway up their census class.

The absolute wealth of the *zeugitai*

The impression that the 'yoked men' were quite wealthy is confirmed by a calculation of just how much food and drink 200 measures of agricultural produce represent—a point overlooked until recently, when Lin Foxhall suggested that the annual grain harvest of a zeugite farm would have been enough to feed up to 40 people (1997, 130). We shall see that this is an overestimate, but the vital point remains: a zeugite's income far exceeded his family's subsistence needs.

Part of any grain harvest must serve as seed for the next and is ploughed back into the soil rather than consumed. How large a part varies greatly with the fertility of the soil and the techniques of cultivation. With intensive cultivation, Greek farmers might have achieved a seed:yield ratio of 1:10, but this theoretical maximum was rarely reached. Scattered figures for modern Greece prior to the introduction of chemical fertilizers suggest ratios as low as 1:3 and no more than 1:5, while surveys of early modern European agriculture (not including Greece) show that in most places ratios ranged from 1:4 to 1:7. The Roman agronomist Columella claimed that 1:4 was usual for Italy.[16] For the sake of argument, we will adopt a worst-case scenario and assume the least favourable figures, 1:3, which would mean that a zeugite expended one-third of his harvest, 67 *medimnoi*, on seed grain.

A further proportion of the produce must be set aside as fodder for the plough oxen. Although oxen eat great

quantities of food, Columella's detailed discussion of their rations shows that the bulk of their nutrition came from grass, hay, leaves, and waste products such as chaff and grapeskins, none of which would have counted as part of the farm's yield of 200 measures. Of fodder crops, which presumably did count, the animals were fed relatively little: either 20 litres of bitter-vetch, or 39 litres of chickpeas, or 69 litres of lupines, per ox per year.[17] Even this last quantity amounts to less than 3 *medimnoi* per year for a span of oxen.

After subtracting the maximum for seed and animal fodder, then, the zeugite is left with 130 measures. In principle, this is still enough to feed 20-25 people, for it is generally agreed that 5 or 6 *medimnoi* (200-250kg) of wheat produce enough calories to sustain one adult for a year.[18] At the other extreme, however, Spartans are each said to have contributed to their messes 18 Attic *medimnoi* of barley meal and 12 Attic *metrêtai* of wine per year. At this rate, the zeugite farm could have fed only about four people, but this diet must have been highly untypical, since it provides almost twice as many calories as required even by 'soldiers on active duty'.[19] Other figures for daily rations, less excessive than the Spartan diet, suggest a norm of one *choinix* of grain (or just over a litre) and one or two *kotylai* of wine (at most half a litre), which has been called a 'generous sufficiency'.[20] This adds up to 7.5 *medimnoi* plus 2.5 to 5 *metrêtai* per year, and we may add 1 or 2 *metrêtai* of olive oil to complete the annual requirement of an adult male.[21] Given a total requirement of between 11 and 14.5 measures, the zeugite farm could feed between nine and twelve adult men. Bearing in mind that women, children, and slaves will have received smaller quantities of food (Garnsey 1999, 100-12), and especially of wine, such a farm could sustain *ten to fifteen* persons.

Assuming a family of five, the *zeugitês* could thus easily afford to keep, say, three slaves, and still have a surplus of some 26-60 measures, 13-30% of the harvest, to store, barter, or sell. A farmer in this position was clearly far above subsistence level. More to the point, since hoplite arms and armour cost the equivalent of about thirty *medimnoi* of grain,[22] he might have been able to afford a new set of equipment *every year*. Most to the point, many members of the lowest property class, even if they had only half the annual income of the zeugite, might have been in a position to feed their households and still, over the course of a few years, save up enough to buy themselves sufficient arms and armour to join the hoplite phalanx.[23]

The size of the zeugite farm

A third approach to assessing the wealth of the *zeugitai* is to calculate how large their farms had to be in order to produce a harvest of 200 dry and liquid measures. In the absence of sufficient ancient evidence for average yields per hectare or acre, we can only proceed by comparing yields in modern Greece. Many earlier attempts to do so were forced to rely on evidence for the harvest of only one or two years—which not surprisingly produced widely different results[24]—but recently more extensive and reliable data have been made available by Eberhard Ruschenbusch and Thomas Gallant (see *table 1*). The main question is now how to derive ancient yields from modern statistics.

Since Gallant's figures are based on the broadest range of harvests, it seems best to adopt his average modern barley and wheat yields of 732 and 674 kg/ha across Greece, and, most relevant for our purposes, of 794 and 629 kg/ha for Attica, as the basis for estimating yields in antiquity. He himself claims 'that ancient yields may well have been higher': modern yields may have fallen due to a shortage of labour power.[25] Most scholars, however, believe that, in the absence of chemical fertilizers, ancient yields must have been lower. The introduction of fertilizers in the early 1930s certainly caused yields to climb steeply, as Ruschenbusch's figures demonstrate: barley yields rose by 46% and wheat by 61%.[26] An additional argument for assuming lower ancient yields is that selective seeding practices must have bred superior, more productive strains of cereal over the last two-and-a-half millennia (Sallares 1991, 313-72).

Most ancient evidence is far too anecdotal to be of use, since it highlights fantastically good and cata-

Table 1: Modern Greek grain yields (kg/ha)

	Ruschenbusch 1988, 141-53			Gallant 1991, 77
	1921-32	1933-38	1921-38	1911-50
a. Barley				
Range:				
– of regional yields	440-880	640-1,200	540-970	-
– of annual averages	560-860	740-1,050	560-1,050	529-1,097
Average	640	880	720	732
Attica/Boeotia	630	920	730	794
b. Wheat				
Range:				
– of regional yields	410-750	560-1,000	460-770	-
– of annual averages	360-620	620-1,080	360-1,080	470-903
Average	510	820	620	674
Attica/Boeotia	*490*	*790*	*590*	*629*

strophically poor harvests, but it does offer some support for the view that ancient averages were low. A relatively sober assessment is that of Columella, who recommends sowing rates of 4 or 5 *modii* of wheat per *iugerum* (4 or 5 x 8.62 litres per 0.25ha), which equals 138-172 litres or 107-133kg per hectare, and 5 or 6 *modii* of barley per *iugerum*, equalling 172-208 litres or 106-129kg per hectare (*De Re Rustica* 2.9.1; 2.9.15-16) Given his seed:yield ratio of 1:4, this would amount to a harvest of 425-530kg/ha.[27] Columella's estimated sowing rates, of course, relate to Italy, but they are quite similar to what is known of modern Greek practice.[28]

An inscription listing the offerings of first fruits of wheat and barley from the territory of Athens and its dependencies to Demeter at Eleusis in 329/8 BC (*IG* II^2 1672) has also been used to try and calculate the yields for that year. On the assumption that only 10% of Attica was under grain cultivation, the offerings imply an average yield of 518kg/ha, which fits with nineteenth-century figures, but 10% is a low estimate, and higher percentages produce dismally small harvests.[29]

We should, therefore, take Gallant's averages for 1911-50 not as a minimum, nor as 'standard' (Garnsey 1992, 148), but as the *highest* probable level of ancient yields. In order to produce 200 *medimnoi* of barley (6,448kg) at a maximum rate of 794kg/ha, or the same amount of wheat (8,056kg) at a rate of 629kg/ha, a *zeugitês* would thus have needed to cultivate *at least* 8.1ha (*c.* 20 acres) of barley or 12.8ha (*c.* 32 acres) of wheat.[30]

The total acreage needs to be raised to allow for part of the arable land to lie fallow. Some scholars uphold the traditional view that all farmers at any one time had only half their land under cultivation, leaving the other half uncultivated so as to allow the soil to recover; others argue that a range of more intensive systems of cultivation existed, involving crop-rotation and the integration of agriculture with animal husbandry. Many farmers probably would indeed have been forced or tempted to adopt a regime without fallow, but the sources clearly show that biennial fallow was common and regarded as desirable.[31] We must conclude that many, but not necessarily all, *zeugitai* would have needed a farm of 16.2 to 25.6ha (40-64 acres).

Producing 200 measures of wine would have taken far less land; producing the same quantity of olive oil far more. Columella claims that an absolute minimum yield of wine in Italy was *c.* 20hl/ha (20 *amphorae* per *iugerum*), and that yields of 30 and 40hl/ha were quite ordinary (3.3.4). Among the very few modern figures cited are averages of 17-19hl/ha for eighteenth- and nine-

teenth-century France.[32] For ancient yields, French surmised a range of 11-17hl/ha on the grounds that the ancient yield could 'hardly ... have been much above half that of modern times', while the highest estimate is *c.* 30hl/ha, offered by De Sanctis and Jardé. Most commonly cited is the middle of this range. A recent survey notes that '25 hectolitre is an average very often used for Greece', and this would seem to be a not ungenerous figure to adopt.[33] At this rate, it would take a farm of only 3.1 hectares (*c.* 7.5 acres) to produce 200 liquid measures.

The yield of olive trees varies widely but scholars are now largely agreed on a 'pan-Mediterranean average' of about 2kg (or 2.3 litres) of oil per tree. Due to less efficient pressing, ancient yields must have been rather lower. The maximum number of trees per hectare is thought to be 180. Assuming a yield of 2 litres per tree, the total yield would be 3.6hl/ha, and the production of 200 *metretai* would have required 21.6ha (*c.* 54 acres).[34]

Finally, if we are to establish the minimum size of a zeugite holding, we need to know what proportion of the average zeugite farm was devoted to each of these major crops.[35] Gustave Glotz guessed that wine and barley would each account for half the measures produced,[36] but he assumed too large a proportion of wine. Expressed in terms of 'measures', both the abundant Spartan mess contributions and the common ration of 1 *choinix* of wheat (1/48th of a *medimnos*) and 2 *kotylai* of wine (1/72nd of a *metrêtês*), cited above, contained grain and wine in a proportion of 60:40. In less large rations, we find a proportion of 75:25, and still smaller proportions of wine are attested.[37] Measures of grain eaten must have outnumbered measures of wine drunk by at least 3:2. The pattern of 'home' consumption—whether directly by the producing household or more generally by the population of Attica—should be closely reflected in the pattern of production: a higher share of land would have been devoted to viticulture only if Attic wine were widely produced for export, but there is no sign of that. Indeed, a law of Solon prohibited the export of any agricultural produce except olive oil (Plutarch, *Solon* 24.1-2). On the other hand, more grain would have to be produced than would be consumed, since some of it had to be used for seed, and we must accordingly raise the proportion of grain cultivated to at least 65:35.[38]

Since the Athenians not only used, but famously exported olive oil, a considerable part of the land must have been given over to the cultivation of olives, and some part of the average *zeugites*' 200 measures must have been in olive oil. A survey of one small and marginal deme, Atene, shows that 28% of its cultivable land consisted of terraces on which olive trees were most probably grown (Lohmann 1993, 34), but we cannot tell whether this was at all representative, and we have no other evidence on which to base calculations.

Lastly, in the First Fruits inscription from Eleusis the proportion of barley to wheat offered is about 11:1. It has been plausibly argued that this represents a bad year, which would have affected wheat more seriously than barley, and that the normal proportion of measures produced would have been about 9:1 or 8:1 in favour of barley (Garnsey 1988, 102-3).

Taking all this into consideration, and setting an arbitrary, but low, amount of 10 *metretai* as the average production of olive oil per farm, we arrive at the following figures. It would take at least 1.1 ha to produce ten measures of oil (390 litres). If the remaining 190 measures are divided 65:35 between grain and wine, the vineyard contributes 66.5 measures (25.9hl), which would require about 1ha. The arable land contributes 123.5 measures, divided 9:1 between wheat and barley, which means 12.35 *medimnoi* of wheat (497 kg) and 111.15 *medimnoi* of barley (3,583 kg), requiring 0.8 and 4.5ha, respectively. The total requirement is thus 7.4ha without fallow, and 12.7ha with biennial fallow for both wheat and barley. Assuming that, despite its apparent commonness, only about a quarter of farmers actually practiced biennial fallowing, a farm producing 200 measures would on average require *8.7 hectares* of land.[39]

This is an 'average' figure only in the sense that it represents the mean of a range of no doubt very different 200-measure farms, as small as 3ha where the farmer chose to produce nothing but wine, or as large as 26ha where the farmer practiced extensive fallowing and grew nothing but wheat. The figure of 8.7ha is, on the other hand, a *minimum* insofar as it represents the average amount of land required if one assumes the highest plausible yield figures, the highest plausible proportion of crops which require proportionally least space (wine and barley), and a minute proportion of fallow land. Zeugite

farms may perfectly well have been much larger; it seems inconceivable that they were any smaller.[40]

At the minimum average ratio of 8.7ha per 200 measures, then, the property class of *zeugitai* covers farms with an average size of 8.7-13ha, *hippeis* 13-21.75ha, and *pentakosiomedimnoi* 21.75ha or more. A farm falling in the middle of the *thêtes* property bracket would on average be 4.3ha in size, and this happens to be almost exactly the size of what, by common consent, was the typical 'family' or 'hoplite' farm. Both textual and archaeological evidence show that land was often allotted in parcels of 40 to 60 *plethra*, 3.6 to 5.5ha (or 9 to 14 acres), and it has been convincingly argued that this was enough not only to feed a family but to enable military service.[41] Moreover, a farmer would need to own about 5 ha before he could afford to keep a team of plough oxen, 'one of the most distinctive elements of social differentiation within the peasantry'.[42] A 'natural' dividing line apparently ran through the farming population around the 4 or 5 hectare mark—but the line between *zeugitai* and *thêtes* was drawn at a level *twice as high*.[43]

In classical Athens a *plethron* of land often sold for at least 50 drachmas, and the monetary value of the 'typical family farm' would thus have been some 2,000 or 3,000 drachmas. The average zeugite farm, at 10.85ha or 120 *plethra*, on the other hand, would have been worth 6,000 drachmas, or 1 talent—just reaching the magical property threshold which, as defined by John Davies, separated the *leisure class* from the working classes.[44]

The number of *zeugitai* and the number of hoplites

If zeugites were as affluent as we have argued, they cannot have been very numerous, simply because space for their large farms was severely limited.[45] How much of Athens' territory was under cultivation in antiquity is another matter of debate, but on the most generous estimate 40% of Attica's 2,400km² 'was probably exploited for agriculture of some sort', and for our purposes it is enough to adopt this figure.[46] How many farms of each property class could this area of 96,000ha accommodate? We have some figures for classical Athens which allow us to calculate at least some parameters of the possible, and to establish that *zeugitai* probably provided only *half*, or less, of the number of citizen hoplites available to Athens at the beginning of the Peloponnesian War.

Thucydides tells us that in 431 BC the Athenians could levy 1,200 cavalry and 13,000 citizen hoplites, not including 'the oldest and the youngest' who were assigned to guarding the city walls and other fortifications (2.13.6-7). Even if these guard troops included only those aged 18-19 and 50-59, the total number of hoplites of all ages must have reached about 18,000. Given the scale of Athens' fortifications, emphasized by Thucydides, the home guard may well have demanded a larger proportion of hoplites, and some have suggested totals of up to 25,000.[47] For the sake of argument, we will adopt the lower figure, and calculate what percentage of it could have consisted of men of zeugite census and above.

A simple multiplication shows the scale of the problem: at an average 10 hectares each,[48] 18,000 hoplites need almost twice as much cultivable land as was available in Attica. This sum, it must be said, is too simple, because 18,000 hoplites cannot be simply equated with 18,000 farming households. For one thing, it is likely that, by the late fifth century if not earlier, income derived from sources other than land would also—somehow—count towards one's property assessment, so that we must allow for a larger number of households than could be sustained by the land alone. If we liberally assume that as much as a quarter of the hoplites' collective incomes derived from sources other than land, the requirement falls from 180,000 to 135,000 ha. Secondly, some households must have provided more than one hoplite. The average number of able-bodied adult males between 18 and 59 in each household may have been as high as 1.25,[49] which means 108,000 ha would have sufficed for them—if there *had* been that much farmland.

Evidently, not all hoplites could have been *zeugitai*. The problem becomes even more acute when we consider how much land must have been owned by the other property classes. Some land must have been in the hands of those who were too poor to serve as hoplites.

The total number of adult male citizens at this time has been variously estimated, but never at less than 40,000, and the most careful discussion suggests that it may have been as high as 60,000.[50] Apart from the 18,000 hoplites, there were thus another 22,000-42,000 citizens, and they cannot all have been landless. At the end of the war, at most a quarter of citizens of any class did not own land.[51] Deducting the same proportion from our figures for 431 BC, we are still left with between 12,000 and 27,000 'sub-hoplite' citizens, or 9,600-21,600 households, owning a least a little land. Even if these households derived two-thirds of their bare subsistence from sources other than their tiny plot, they needed at least an average 1 ha each, adding up to 10-22.5% of the cultivable land.

The top two property classes also made great inroads. We know that Athens had three boards of ten Treasurers, a position which in the fifth century was open only to *pentakosiomedimnoi*, and could apparently be held only once. In order to fill these boards, a cohort of at least thirty 30-year old *pentakosiomedimnoi* would be required, and according to demographic models this would indicate a total of 1,111 adults in that property class. Since some boards were not fully manned, we may lower this number to, say, 1,000.[52] Applying the same assumptions as above concerning the number of adult males per household, this corresponds to 800 households. If we set the size of the average estate at 24 ha, only a little above the minimum property qualification of 21.75ha, and we deduct a quarter for non-landed sources of revenue,[53] we may reckon with 800 estates of some 18ha, or 14,400ha, occupied by *pentakosiomedimnoi*. The next property class can hardly have been any smaller, so if we posit a modest 800 households averaging 12 ha—three-quarters of a low average of 16 ha—the *hippeis* would occupy a further 9,600 ha. This puts at least 24,000 ha (25%) of the land in the hands of 1,600 households of the top two classes, providing at most 2,000 horsemen and hoplites.

The remaining 16,000 hoplites, or 12,800 households, then, had at most between 52.5% and 65% of the cultivable land, 50,400-62,400ha, to share between them. If all these households were of zeugite status, and if only three-quarters of their income came from land, so that they needed only 7.5 ha each, they would have still required 96,000ha; in other words, 100% of the cultiva-

Table 2: The property classes in 431 BC: numbers and landownership

		Citizens	Households		Land required	Proportion of land	Proportion of population	Proportion of hoplites
a. 60,000 adult male citizens								
Thêtes	landless	15,000	12,000	-	-	-	25%	-
Thêtes	'subhoplites'	27,000	21,600	@ 1ha:	21,600	22%	45%	-
Thêtes	hoplites	12,667	10,133	@ 3ha:	30,400	32%	21%	70%
Zeugitai		3,333	2,667	@ 7.5 ha:	20,000	21%	5.6%	19%
Hippeis		1,000	800	@ 12 ha:	9,600	10%	1.7%	5.5%
Pentakosiomedimnoi		1,000	800	@ 18 ha:	14,400	15%	1.7%	5.5%
b. 40,000 adult male citizens								
Thêtes	landless	10,000	8,000	-	-	-	25%	-
Thêtes	'subhoplites'	12,000	9,600	@ 1ha:	9,600	10%	30%	-
Thêtes	hoplites	9,333	7,467	@ 3ha:	22,400	23%	23%	52%
Zeugitai		6,667	5,333	@ 7.5 ha:	40,000	42%	17%	37%
Hippeis		1,000	800	@ 12 ha:	9,600	10%	2.5%	5.5%
Pentakosiomedimnoi		1,000	800	@ 18 ha:	14,400	15%	2.5%	5.5%

ble land. There could thus have been space in Attica for so many hoplites only if many of them were *thêtes*.

As we have seen, the minimum amount of land needed to support a hoplite ranged from 40-60 *plethra* (3.6-5.5ha), so if we very cautiously set the average thetic hoplite farm at 4 ha, and posit once more that farming provided only three-quarters of the collective income of this group, we arrive at a lowest average land requirement of 3 ha. We can then calculate the proportion of *zeugitai* and *thêtes* among the hoplites by working out for what value of X (the number of *zeugitai*) and what value of Y (the number of *thêtes*) 7.5X + 3Y = 50,400 (or 62,400: the available land) and X + Y = 12,800 (the number of hoplite households). The results are shown in *table 2*.

We find that the *zeugitai* and two higher classes combined can have contributed no more than 30-48% of the hoplites and horsemen (while constituting at most 9-22% of the citizen population and owning 46-67% of the cultivable land). Half or more of the soldiers are *thêtes*.

As we shall see in the next section, it is conceivable that the original zeugite census had at some point been lowered to 150 measures (but no less), which would have reduced the average size of a zeugite farm to about 8 ha.[54] Substituting three-quarters of this reduced figure, i.e. 6 ha, for 7.5 in our earlier formula, the proportions of *zeugitai* and hoplite *thêtes* change as shown in *table 3*.

The *zeugitai* and the two higher classes now contribute between 39 and 66% of the hoplites and horsemen (while constituting at most 12-30% of the citizen population and owning 50-75% of the cultivable land). In sum: if we posit the smallest likely citizen population and the largest feasible number of adult male citizens per household, the lowest possible zeugite census and the largest plausible proportion of non-landed sources of income, the smallest conceivable farms and the largest probable number of landless citizens, we must still conclude that at least a third of the soldiers were *thêtes*. A slightly less generous figure for any of these variables means that the proportion of *thêtes* quickly rises to 50% or higher, and it is entirely possible that as little as 30-40% of the infantry (and cavalry) was recruited from the top three property classes in Athens.

Table 3: The property classes in 431 BC, assuming a reduced zeugite census

		Citizens	Households		Land required	Proportion of land	Proportion of population	Proportion of hoplites
a. 60,000 adult male citizens								
Thêtes	landless	15,000	12,000	-	-	-	25%	-
Thêtes	'subhoplites'	27,000	21,600	@ 1ha:	21,600	22%	45%	-
Thêtes	hoplites	11,000	8,800	@ 3ha:	26,400	28%	18.3%	61%
Zeugitai		5,000	4,000	@ 6 ha:	24,000	25%	8.3%	28%
Hippeis		1,000	800	@ 12 ha:	9,600	10%	1.7%	5.5%
Pentakosiomedimnoi		1,000	800	@ 18 ha:	14,400	15%	1.7%	5.5%
b. 40,000 adult male citizens								
Thêtes	landless	10,000	8,000	-	-	-	25%	-
Thêtes	'subhoplites'	12,000	9,600	@ 1ha:	9,600	10%	30%	-
Thêtes	hoplites	6,000	4,800	@ 3ha:	14,400	15%	15%	33%
Zeugitai		10,000	8,000	@ 6 ha:	48,000	50%	25%	55%
Hippeis		1,000	800	@ 12 ha:	9,600	10%	2.5%	5.5%
Pentakosiomedimnoi		1,000	800	@ 18 ha:	14,400	15%	2.5%	5.5%

Everything points in the same direction. *Zeugitai* were not much less wealthy than those who could afford to keep horses, the ultimate Greek symbol of wealth; they were twice as wealthy as they needed to be to afford hoplite service; their properties and income ranked them among the leisure class. Accordingly, they formed only a part—perhaps a minority—of the armed forces, and a small part—perhaps as little as 9%, certainly no more than 30%—of the citizen population. All this vindicates Aristotle's description of them as 'notable' and 'rich'.

Such a disjunction between military role on the one hand, social, economic, and political status on the other, is seriously at odds with common ideas about the outlines of Athenian political history in general, and about Solon's reforms in particular. Kurt Raaflaub, one of the very few scholars who has faced the issue—most have been unaware of it, or swept it under the carpet—has concluded that there must be some mistake in our sources, since this disjunction is 'plainly impossible', incompatible with political and military ideals central to Greek society.[55] We will first turn to the accuracy of the sources and then to Greek ideology.

The reliability of the evidence

Although they regularly mention the property classes, only three of our sources tell us what the census levels were. The two main texts, the Aristotelian *Athenian Constitution* (7.4) and Plutarch's *Solon* (18.1), give these details in connection with Solon's reform, and do not specify whether the same levels still applied in the classical period. In principle, it is therefore possible that the census levels changed, or indeed that fourth-century scholars simply invented ('reconstructed') what seemed to them suitable census levels and attributed these to Solon—along with much else. But a good deal of evidence suggests that the property qualifications as we have them are indeed genuine and changed only marginally, if at all.

The first such evidence comes from the third source to stipulate the census levels, a passage from Julius Pollux' *Onomasticon* which has been almost universally ignored or misunderstood:

> There were four census classes: the *pentakosiomedimnoi, hippeis, zeugitai, thêtes*. The first were named for their production of 500 dry and wet measures; they contributed (*anêliskon*) one talent to public funds. Those who belonged to the hippad class seem to have been named for their ability to keep horses; they produced 300 measures, and contributed half a talent. Those who belonged to the *zeugision* were reckoned from 200 measures upwards, and they contributed 10 minae. Those of the *thêtikon* held no government office and contributed nothing. (8.130)

This is a puzzling text: if the 'contributions to public funds' are supposed to be taxes paid by individuals, the sums are far too high, and if they are supposed to be taxes paid by each property class collectively, the sums are too puny to be credible. The usual explanation is that every time Pollux says 'contributed' we should read 'owned': the lexicographer misunderstood and conflated two versions of the property qualifications: the Solonian form, in measures of agricultural produce, and a classical form, expressed in monetary values of property.[56] A solution which takes such liberties with the text is clearly far from satisfactory.

A much better, and entirely convincing, interpretation was suggested by Rudi Thomsen (1964, 104-18) but it has received little attention, presumably because it was part of a long, complex, and sometimes tenuous argument about Athenian fiscal practices. Yet one need not accept the whole of Thomsen's case to see the force of his explanation of Pollux' comments. He noted that tax levies (*eisphorai*) were paid neither by individuals nor by property classes, but by *groups* of taxpayers, the so-called symmories, of which—at some point in the fourth, and probably already in the fifth century—there were one hundred. He further noted that the standard amount raised by levies was 200 talents, and that the metics were expected to pay 'a sixth'. The citizens thus needed to contribute the remaining 166 talents and 4,000 drach-

mas. It can hardly be a coincidence that the contributions listed by Pollux, when multiplied by 100, add up to exactly 166 talents, 4,000 drachmas. Pollux' figures must represent the amounts paid collectively by the members of each property class within each of the symmories.

What we have in Pollux' discussion, then, is not some material copied from the *Athenian Constitution* and conflated with garbled material from some other source, but an independent and accurate account of the roles of the property classes in contributing *eisphorai*—a form of taxation first attested, and probably first set up, in 428 BC (Thucydides 3.19.1). Pollux' comment that 'those who belong to the hippad class seem to have been named for their ability to keep horses' confirms that his information about the census levels did not come from the *Athenian Constitution*, since this view is explicitly rejected by pseudo-Aristotle (*Ath.Pol.* 7.4). Whoever Pollux' source was, he listed the same property qualifications as the *Athenian Constitution* did, despite disagreeing on the origin of the name 'horsemen'. [57] What is more, he cited these qualifications, not in the context of Solon's reforms, but in describing the workings of a fiscal system of the late fifth and early fourth century. Evidently these census levels (still) applied in the classical period.

An interesting feature of this fiscal system was the drastic lightening of the tax burden for the *zeugitai*. If there were, as suggested above, some 1,000 *pentakosiomedimnoi* in late fifth-century Athens, each of these would have had to contribute 600 drachmas to meet the overall target. Since *hippeis*' properties were valued at three-fifths of a *pentakosiomedimnos*' estate, a proportionate contribution would have been 360 drachmas, but they paid only 300, or less if they were more numerous than the richest class. The real gap, however, opened up between the *hippeis* and the *zeugitai*. A proportionate contribution for the latter would have been 240 drachmas, but even if we assume the lowest of the numbers of 'yoked men' calculated above, 3,333, each individual's contribution amounted to a mere 30 drachmas. In this light, we can understand why the emergency levy of citizen troops in 428 BC, mentioned earlier, mobilized all *thêtes* and *zeugitai*, but exempted the top two classes (Thucydides 3.16.1): the *pentakosiomedimnoi* and *hippeis* did their bit by making large financial contributions, but the *zeugitai* did not pay so much that they could be excused military service. The *thêtes*, of course, did not pay anything at all.[58]

A second piece of evidence for the level of property qualifications in the classical period is a law on heiresses, cited in a law-court speech of the mid-fourth century, *Against Makartatos*:

> Concerning heiresses who belong to the thetic class, if the next of kin does not want to take [the heiress] in marriage, he must give her away with a dowry of 500 drachmas if a *pentakosiomedimnos*, 300 if a *hippeus*, and 150 if a *zeugitês*, in addition to her own property. (Pseudo-Demosthenes 43.54)

This law was evidently in force at the time, and the size of the dowries shows that it can hardly have been introduced before the late fifth century. In the late sixth century, paying a dowry of 500 drachmas would have meant parting with the equivalent of a *pentakosiomedimnos*' entire annual yield, which is surely an inconceivably large amount to have to pay on behalf of a poor niece or more distant relative. Even a century or so later, raising 500 drachmas might mean selling the equivalent of up to 250 measures of barley, or mortgaging a hectare of land.[59]

The terms of this law have two important implications. First, they confirm that in the fourth century the *pentakosiomedimnoi* were still very wealthy men, whose incomes can hardly have been less than the equivalent of the 'five hundred bushels' from which their class derived its name. This conclusion tallies with pseudo-Aristotle's claim that only *pentakosiomedimnoi* were formally eligible to serve as Treasurers of Athena, 'according to the law of Solon—for that law is still in force', although in practice whoever was selected by lot would serve, 'even if he were a very poor man' (*Ath.Pol.* 47.1). If the Athenians chose to ignore the law rather than adapt it to new circumstances, it is likely that not only the name but also the property qualification of the richest class was preserved unchanged.[60]

The second implication of the law on heiresses is that the census levels of *hippeis* and *zeugitai* in the fourth century cannot have been lower than the equivalent of

300 and 150 measures, respectively. It is unthinkable that the dowry payments imposed on them would have been proportionately larger than those imposed upon the richest class. The property qualification of the *hippeis* is thus clearly confirmed. As for the *zeugitai*, the law may have set a dowry sum either in the same proportion to the property census as for the other classes, or in a lower proportion. If it was in the same proportion, then obviously the zeugite census of the fourth century must have been 150 measures. And if so, it may have been the same or higher under Solon, but could not possibly have been less: a greater degree of democratization, or significant population growth leading to a reduction of the average size of properties, or both, might have led to a lowering of the threshold, but a raising of the property qualification after Solon would imply reduced participation in politics and a greater average size or concentration of property, which flies in the face of all other evidence.[61] Conceivably, then, an original census of 200 measures might have been reduced to 150—but no less. On the other hand, it is very probable that the dowry payment imposed on *zeugitai* was proportionately less than that required of the other two classes, just as the amount of tax which they were required to pay was proportionately smaller than the *eisphorai* demanded of the truly rich. Their census thus may well have been 200 measures even in the fourth century.

Finally, the very fact that Solonian property classes were defined by measures of agricultural produce harvested annually is a strong indication that they are genuine. By the fourth century, Athenian society had become so used to monetary values that the author of a blatantly bogus 'Constitution of Draco' (*Ath.Pol.* 4) could only imagine that this earliest Athenian lawgiver had imposed census levels by rating property (not annual income) in terms of its value in currency (not in kind). Even the unmistakable meaning of 'five-hundred-bushel men' was not enough to make this author realize that different criteria would have been used in the past.[62] If what we are told about Solon's property qualifications were merely speculation, our sources would, like the inventor of the Constitution of Draco, have spoken of ratable values of estates expressed in drachmas, minae, and talents. Since they do not, classical authors must have had information which revealed the origins of Solon's census system in a pre-monetary society. In all likelihood, they knew what the system had been like because it survived—formally unchanged, though in practice no doubt adapted, and later ignored—to their own day.

At a minimum. we may conclude, with Peter Rhodes, that 'we have no information which would justify us in rejecting [the sources'] figures as correct for Solon's definition of the classes' (1993, 145). I would go further and add that we have some information which positively supports these figures, not only for Solon but also for classical Athens. In any case, even on the most sceptical reading of the evidence, the property qualification for *zeugitai* cannot have fallen below 150 *medimnoi*, and such a hypothetical lowering of the census by a quarter does not fundamentally affect the arguments set out above: the *zeugitai* are still richer than they need have been to afford hoplite service, and still take up too much land for all hoplites to have been 'yoked men'. Since we cannot explain away the evidence which reveals the politically enfranchised *zeugitai* as an elite among the hoplites, we must ask ourselves whether this situation is indeed incompatible with the ideal of the citizen-soldier so prominent in Greek culture.

Money and military service in Athenian political thought

Our accounts of the oligarchic *coup d'état* in Athens in 411 BC report that, when the oligarchs were eventually deposed, the powers of government were turned over to 'the Five Thousand from the hoplites' (*Ath.Pol.* 33.1,2) and, more explicitly, 'the Five Thousand; they are to be *all* those citizens who also provide arms and armour' (Thucydides 8.97.1). During the coup of 404 BC, too, some are said to have argued that 'the best thing is to govern the state together with those most able to serve with horses and shields' (Xenophon, *Hellenika* 2.3.48). Such a regime had allegedly already existed two centuries earlier, under Draco (*Ath.Pol.* 4.2). For Aristotle it was a universal rule that 'the body politic must consist *only* of those who possess arms and armour' (*Politics* 1297b1).

This notion, that all those and only those who served their city as hoplites deserved a share in political power, at first glance seems to leave no room for *thêtes* to fight in the heavy infantry and yet be barred from office. A second glance shows that Greek thinking on war and politics was not quite so straightforward. [63]

The episode of the Five Thousand is particularly instructive. When the oligarchs first began advocating the creation of this body, they suggested 'that *not more* than 5,000 men were to take part in political affairs, and that these were to be such men as brought the greatest benefit [to the city] by means of their *possessions* (*khrêmasi*) *and persons* (*sômasin*)' (Thucydides 8.65.3). By the time a formal proposal was put to the Assembly in a meeting at Kolonos, its wording had been subtly but significantly modified: 'to turn over the entire government to those of the Athenians best able to provide services by means of both their *persons and possessions, no fewer than 5,000*, for the duration of the war' (*Ath.Pol.* 29.5). Reflected in these formulations is a certain tension between two criteria for political power: 'possessions', given pride of place in the first proposal, which aimed to keep the number of participants below 5,000, and service in 'person', as a hoplite, given priority in the second proposal, which aimed to have more than 5,000 men taking part in politics. It was not until the oligarchs had been deposed that the criterion of wealth was abandoned altogether and the Five Thousand were equated simply with *all* hoplites.

What happened next shows the significance of this last re-formulation. As a speech attributed to Lysias later reminded the Athenians:

> when you voted to turn over affairs to five thousand, [Polystratos], in his capacity as Enrolment Officer, registered *nine thousand*, so that no one among the people should have a complaint against him, and so that whoever wished might be placed on the list. And if it was not possible for him, he did it as a favour' (20.13).

Thucydides' account of casualties between 431 BC, when the number of hoplites was at least 18,000, and the year of the *coup* shows that the number of citizen hoplites in Athens at the time was indeed about 9,000, rather than 5,000. The major loss of manpower occurred during the years of plague, which killed about a third of the population and thus reduced the number of hoplites to 12,000.[64] As for casualties of war and emigration by colonists, Mogens Hansen's calculations (1988, 20-28) have shown that population growth would easily have compensated for all these losses, except the disaster of the Sicilian expedition, a couple of years before the *coup*. The first force sent to Sicily included 1,500 Athenian hoplites and 700 *thêtes* serving as hoplite marines. They were reinforced in the next year by 280 cavalry, and the year after that by another 1,200 hoplites and 60 ships, which presumably carried another 600 marines.[65] The vast majority of these 4,280 hoplites and horsemen were destroyed: 'few out of many returned' (7.87.6). Assuming that 4,000 died, Athens at its lowest ebb still had at least 8,000 soldiers, and a figure of 9,000 in 411 is perfectly plausible.

Evidently, the original proposal concerning the Five Thousand had envisaged admitting only the richer half of the citizen hoplites to government, separating them from the rest of the hoplites on the grounds that they contributed to the common good not only military services but 'possessions' as well, which is surely a reference to the payment of taxes and performance of liturgies. It seems very likely that the aim was, in effect, to draw a line between zeugite hoplites, who paid taxes, and thetic hoplites, who did not. In any case, the proposal reveals an ideology according to which wealth, not military service, was the primary criterion for a share in political rights.[66]

How widely acceptable was this notion emerges not only from the praise lavished on the regime of the Five Thousand by Thucydides (8.97.2) and the *Athenian Constitution* (33.2), but equally from the remarkable adherence to the concept that five thousand was the legitimate number of citizens even by those who in practice supported a much wider franchise and eventually opened the door to the enrolment of larger numbers by pretending that the number 5,000 corresponded to 'all those citizens who also provide arms and armour'. What is more, the very same notion turns out, on closer examination, to have been supported by Aristotle.

Immediately after announcing that 'the body politic must consist only of those who possess arms and armour', Aristotle continues:

> yet it is not possible to define the amount of the property qualification in absolute terms and say that it should be so much, but one must consider the kind [of amount] that imposes the highest [qualification] which allows those who take part in government to be more numerous than those who do not, and prescribe this. For the poor will stay quiet even if they have no share in government, so long as no one treats them with *hybris* or takes away any of their property... And they usually refuse to serve in time of war if they do not receive rations and have no means, but if someone gives them rations they are prepared to go to war. (*Politics* 1297b2-6)

The argument is that, although power should be confined to hoplites, hoplite service in itself is not a sufficient criterion. There must be a property qualification, and it must be set as high as possible, provided that those who fall within it still outnumber those outside it.[67] Since Aristotle began by categorically excluding all non-hoplites from power, he is clearly not arguing that, where hoplites form a minority, one should reduce the property census below the hoplite level in order to extend power to a narrow majority of the citizen population. Rather, he is talking about *raising* the census above the basic hoplite level in order to *exclude as many hoplites as possible* without turning the disenfranchised into a majority. These 'poor' hoplites will not rebel, he reassures the reader, and they will still be available for military service, except that they cannot be expected to pay for themselves and must therefore be maintained at the expense of others.

Perhaps Aristotle has in mind a city where the hoplites form a clear majority of the citizen population, and he is advocating that their number should be trimmed by means of a property qualification so that they are reduced to a bare majority. This is conceivable, even if it was probably rare for the hoplites in any Greek city to form more than half of the population. More probably, Aristotle, having excluded all non-hoplites, is arguing that only a narrow majority among the hoplites—not among the citizens at large—should be admitted to power, and that the property qualification should be designed to *exclude nearly half of the hoplites.*

This second interpretation may seem startlingly elitist, but, as we have seen, it matches exactly the goal of the Athenian oligarchs in 411. It also helps explain an otherwise curious discrepancy between the sources' highly favourable opinion of the regime of Five Thousand and their damning criticism of the regime of Three Thousand proposed in 404 BC. Both Xenophon's *Hellenika* and the *Athenian Constitution* report at length and with evident approval the objections of the oligarch Theramenes to having a mere 3,000 enfranchised citizens:

> First, that, when they wanted to give a share in power to the decent folk, they extended it to only three thousand, as if excellence was confined to that number. Second, that they were doing two contradictory things: setting up a regime based on force, yet making it weaker than its subjects (*Ath.Pol.* 36.2; cf. *Hellenika* 2.3.19).

If the issue here were the proportion between the enfranchised elite and the rest of the entire adult male population, it would be difficult to see why a ruling group of 5,000 was deemed excellent while a group of 3,000 met with derision as ludicrously small: both numbers are but a small fraction of the tens of thousands who made up the rest of the citizen body. If the issue were the proportion between the enfranchised and the rest of the *hoplite* population, however, the distinction would have been crucial: the Three Thousand would have been outnumbered two-to-one by the rest of the 9,000 hoplites, but the Five Thousand would have formed a narrow majority of just the kind that Aristotle, three generations later, recommended.[68]

Whether Aristotle meant to advocate the political exclusion of almost half of the hoplites, or merely wished to suggest that some hoplites might have to be excluded if there were too many of them, it is clear that he approved of dividing the heavy infantry into a group of richer hoplites with political privileges and poorer hoplites without such privileges. The affair of the Five Thousand shows that in fifth-century Athens, too, a property-based franchise which excluded thousands of hoplites was far from unthinkable: such a franchise was acceptable enough not only to be imposed by oligarchs, but to be commended by 'moderates' such as Thucy-

dides and Xenophon, and to be retained for some time by democrats at least in name, even when it was abandoned in reality.

No doubt many subscribed to more inclusive ideals and would grant equal political rights to all hoplites and indeed all citizens, but some of the best-known and most articulate expressions of the citizen-soldier ideal turn out to hide a more complex and less democratic conception, which holds that hoplite service is an important requirement for membership in the political community, but that among hoplites only the wealthiest, who contribute taxes and liturgies, should be entitled to full political participation. The line which we have found drawn between *zeugitai* and *thêtes* within the Athenian army is, after all, quite compatible with this particular form of Greek political ideology.

Property classes in the Athenian fleet and army

One final problem remains. As we saw at the outset, Thucydides contrasted the regular hoplites 'from the list' with *thêtes* serving as hoplite marines (6.43.1), and the recruitment of marines among the *thêtes* appears to have been standard fifth-century practice.[69] On the one hand, this confirms that there were hundreds of *thêtes*, at least, who owned hoplite arms and armour and were capable of fighting.[70] On the other hand, it has suggested to many that *thêtes* served *only* in the fleet.[71] There is indeed a passage in Harpokration's *Lexicon* which supports this view:

> When among the Athenians the citizen body was divided into four, the poorest were called *thêtes* and belonged to the *thêtikon*. These people had no share in government, as Aristotle explains in the *Athenian Constitution*. Aristophanes, in *The Banqueters*, says that *they did not serve in the army*.[72]

Remarkably, there is no other explicit evidence for the common view that *thêtes* were excluded from the army than this claim by a lexicographer of the second century AD based on an Attic comedy now lost.

If Harpokration was right, and if modern scholars have drawn the correct inference from Thucydides, we would have to accept that all of Athens' 18,000 hoplites belonged to the three highest property classes, after all. Yet brief comments in Aristotle's discussion of military service by 'the poor' show that both Harpokration and modern scholars have jumped to conclusions.

When Aristotle urges the exclusion of the poorer hoplites from his ideal political community, he argues, as we have seen, that the disenfranchised will continue to fight for the city—in return for maintenance. Only the highest property classes are thus *liable* for service, as in Athens, but the less well-off are not excluded from the army. They retain the right to own arms and armour, and indeed are fully expected to 'want to go to war', at a price. Later, Aristotle lists a similar arrangement as among the typical features of an oligarchic state: here, 'the poor are *allowed not to possess arms*,[73] but the rich are liable to a fine if they do not have them' (*Politics* 1297a29-39). In these states, it is again only the rich who are liable to military service, but the poor are not excluded: they are *under no obligation* to own hoplite equipment—or serve in the army—but evidently they can do so if they wish. If the lower property classes were not categorically excluded from the heavy infantry even in oligarchic constitutions and if they were expected to play an active part as hoplites in Aristotle's 'moderate' ideal state, they can hardly have been wholly excluded from the army of democratic Athens.

The *thêtes*, I would suggest, did serve in the Athenian army, but on a voluntary basis, rather than under compulsion. Being exempt from obligations was certainly characteristic of thetic status in other respects: unlike the other classes, they paid no tax and were not required by law to provide dowries for heiresses; under the fictional Constitution of Draco, they were the only class not liable to a fine for absence from the Council.[74]

The major occasions for voluntary hoplite service by *thêtes* will have been mass levies, as opposed to levies 'from the list'. When large armies were needed to defend the country against invasion, as at Marathon in 490 or Plataea in 479 BC, or to mount invasions of neighbour-

ing states, as repeatedly of Megara at the start of the Peloponnesian War, or of Boeotia in 424 BC, mobilization took place 'by the whole army' (*panstratiai*) or 'by the whole people' (*pandêmei*). At Marathon and Plataea, 9,000 and 8,000 citizens were assembled; before the plague, 10,000 citizens invaded Megara, and after the plague 7,000 could still be found to invade Boeotia.[75] In each case, a large proportion of these hoplite field armies and of the thousands forming the hoplite home guard must have consisted of *thêtes*, who joined not because they were formally obliged to, but out of patriotism and the hope of reward, in pay or booty.

By contrast, for longer and more distant expeditions, usually overseas, the levy was often, perhaps always, 'from the list', that is to say, from among the top three property classes. In such expeditions, *thêtes* need have played no part, but the presence of the notoriously poor Socrates in a select force at Potidaea suggests that they could and did volunteer. How common this was we cannot tell.[76] Volunteers aside, this type of levy drew primarily on a relatively small and wealthy section of the hoplite population, so it is not surprising that the numbers mobilized were quite limited: the largest-ever Athenian armies sent overseas each consisted of 4,000 hoplites, while forces of one or two thousand men were far more common.[77] The narrow basis of recruitment in these cases also explains Aristotle's otherwise puzzling claim that 'the notables' became fewer as a result of mobilization 'from the list'. Even more crucially, it explains why the Athenian state funded the besieging army at Potidaea on the assumption that all or most of its 3,000 hoplites brought along a personal servant: the bulk of these troops were not average hoplite farmers, but members of the leisure class who could afford at least a couple of slaves.[78]

As for naval service, it was apparently performed on a voluntary basis, except in rare instances when an emergency levy was imposed. The captains assigned to the ships could and would recruit anyone prepared to work for pay as an oarsman, ship's officer, or marine, but could not force anyone to serve.[79] For three reasons, this resulted in a predominance among naval personnel of *thêtes*: first, they simply constituted the great majority of citizens; secondly, they were the poorest citizens and thus most in need of the money offered for their services; and thirdly, they were the only citizens not already under a military obligation. Conversely, there were few *zeugitai* in the fleet because they did not need the money and therefore had little incentive, and because the chance that they might be called up for the cavalry or infantry discouraged them from volunteering for other duties. But, just as some *thêtes* might join a largely zeugite force levied 'from the list', some members of the elite might, if they so chose, join the largely thetic crew of a warship.

That there was no more a formal barrier to naval service by *zeugitai* than to infantry service by *thêtes* is illustrated by Lysias, who in his speech *Against Andocides* accuses his opponent of never having served his country: 'not as a horseman, not as a hoplite, not as a trierarch, not as a marine' (6.46). Apparently, serving as a marine—though not as sailor or rower—fell within the range of what a member of the elite might conceivably do. Cimon was said once to have made the dramatic gesture of dedicating his cavalry gear on the Acropolis before joining the fleet to fight as a marine at Salamis (Plutarch, *Cimon* 5). Considerations of prestige need not have deterred the elite from serving, since marines were held in the same high regard as regular infantry. Aristotle, as concerned as anyone to exclude 'the naval mob' from the political community, made one exception: 'the marines ... are free men and belong to the infantry, and it is they who are in charge and command the fleet' (*Politics* 1327b9-11). Most striking is Thucydides' epitaph for 120 hoplites killed by the Aetolians: 'the best men from the city of Athens to die in this war' (3.98.4). That they were marines (3.91.1, 95.2) did not detract anything from their glory.[80]

In sum, *zeugitai* predominated in many of the smaller infantry forces, but in every mass mobilization of hoplites half or more of the troops consisted of *thêtes*. In the navy, the principle of voluntary service resulted in a *de facto* predominance of *thêtes*, but not to the exclusion of the other classes. Thucydides' and Aristotle's comments on the division of military labour between *thêtes* and soldiers 'from the list' are consistent with this state of affairs. Harpokration, on the other hand, must have been wrong to imagine that the lowest property class had been banned from the Athenian army: presumably, he simply read too much into a comic allusion to the

fact that the *thêtes*, unlike their richer fellow-citizens, were not *obliged* to fight.

Although there clearly were great differences between the armed forces of classical Athens and their predecessors of Solon's day, the basic organizational principle was in all likelihood the same: infantry duty for the *zeugitai*, *hippeis*, and *pentakosiomedimnoi*; exemption, but not exclusion, for the *thêtes*. Again, if the oligarchic states known to Aristotle exempted their 'poor' without excluding them, why would Solon have opted for a more exclusive and thus smaller and weaker army?[81] Indeed, the very names *zeugitês* and *thês* may hint that the compulsory-voluntary distinction was integral to the public roles of these classes from the beginning.

'Yoked men' is, as we have seen, an appropriate designation for hoplites, but the *zeugitai* have turned out not to be the only men who took their place in the 'yoke' of the phalanx; nor, on the alternative interpretation of their name, were they the only 'yoke-owners'. Similarly, 'hired men' would have been a singularly insulting label for the many independent hoplite farmers who fell within the lowest property bracket.[82] The names fit better if they are understood as agriculturally-inspired metaphors coined to describe, not only specific military and agricultural roles, but also general roles in Athenian society: the *zeugitai* were 'yoked' in the sense that they were obliged to make military and financial contributions to the community, while the *thêtes* were 'hired' insofar as they would render service to the community only for a reward.

Conclusion: war, class, and democracy

Neither the supposed unreliability of the evidence, nor the supposed dictates of ideology, nor even Harpokration's *Lexicon*-entry can be brought to bear against the conclusion that the *zeugitai* were wealthy men, probably multiple slave-owners and certainly rich enough to count as members of the leisure class. Aristotle may sometimes think of *zeugitai* as a 'middle class', and probably they did indeed think of themselves as 'middling' citizens, by comparison with the truly rich, the horse owners and liturgists. Elsewhere, however, from a less elevated point of view, Aristotle sees them as 'notable and wealthy' citizens. Their small numbers (between 9% and 30% of the population), high status, and large properties surely demand that *we* call the *zeugitai* part of the Athenian *elite*.

The 'yoked men' and their fellows in the other elite property classes cannot have constituted the whole of the Athenian hoplite army of the Peloponnesian War, which must have included a large proportion of *thêtes*. The same is likely to be true of the Athenian army of Solon's day. To speak of the hoplites as a 'class', let alone a 'middle class', is therefore misleading—and no ancient source does so.[83] It is true that all hoplites share in the prestige accorded to the heavy-armed infantry man and as such are set apart from the rest of society, but at the same time deep divisions cut across the hoplite army, along the lines drawn by the property census. The *zeugitai* are in effect a middle class *among the hoplites*, as opposed to the population at large. Their much more limited financial obligations to the community separated them from the top two classes,[84] but their leisure class status separated them even more sharply from the *penêtes*, the working men, who constituted the bottom half of the hoplite army.

Until the mid-fifth century at least, Athens was thus less democratic than we tend to imagine. Aristotle and Plutarch were right to say that Solon extended the right to hold office only to 'the notable and wealthy'. Full participation in politics was limited to the leisure class not only because other citizens could rarely afford it, but also as a matter of principle: the less wealthy were formally banned from standing for office. The crucial significance of Solon's reforms in abandoning birth as a criterion for power is not to be denied, but we must not forget how narrow a group benefited from the application of the new criterion of wealth. The *zeugitai* are so close to the rich that they must have been part of the elite which, according to the sources, owned almost all the land and subjected the poor to severe economic exploitation.[85] Perhaps Solon's restructuring of political privileges was designed to reconcile non-aristocratic landowners to Solon's programme of economic reform,

the *seisakhtheia*, which did much to loosen their control over the poorest sections of the population.

Office-holding remained the preserve of the elite for a remarkably long time. It took until 457 BC before *zeugitai* were admitted to the archonship (*Ath.Pol.* 26.2), and formally none of the major offices were ever opened to the *thêtes* . In this respect, the turning point in the history of Athenian democracy must have been the introduction of pay for office from the 450s onwards, which implicitly recognized the right of the 'working' classes to play a role in politics beyond attending assemblies and law courts.[86] If the twin aims of the *coup* of 411 BC were the abolition of pay for office and the limitation of full citizenship to a group roughly the equivalent of the *zeugitai*, it was because both would lead to the restoration of a form of government which until recently had been open, not to all hoplites or all citizens, but only to the leisured classes.

War and military organization thus played a secondary role in shaping Athenian society and politics. A man's social and political status were clearly determined above all by his wealth, and property-class boundaries did not coincide with the ability to provide hoplite arms and armour. Since Solon's reforms appear to have excluded from power as many hoplites as they included, his actions can hardly have been motivated by a sense that those who fought for the city deserved a share in political power. No case can therefore be made that the rise of the hoplite phalanx brought with it the creation of 'hoplite democracy' in Athens. Again, it is hard to argue that the role of the *thêtes* in the fleet led to the development of 'radical democracy': if some *thêtes* had long fought in the phalanx without ever receiving political recognition, why would their service in the navy—for pay, and in the company of foreigners and slaves—have brought them any more credit? [87]

On the contrary, it was the political order which shaped military organization: the distinction between compulsory and voluntary hoplite service was created to legitimate a property-based political system. War, then, was not an autonomous force for change. Yet the willingness of the Athenian elite to accept military duties (as well as financial burdens) from which the common people were formally exempt is remarkable testimony to the centrality of warfare in Greek political ideology from Homer to the Hellenistic age.

Department of History, University College London

Bibliography

Amouretti, M.-C., and Brun, J.-P. (eds.) 1993. *La production du vin et de l'huile en Méditerranée* (BCH Supplément, 26). Paris: de Boccard.

Anderson, J.K. 1961. *Ancient Greek Horsemanship*. Berkeley and Los Angeles: University of California Press.

Andrewes, A. 1956. *The Greek Tyrants*. London: Hutchinson.

Andrewes, A. 1981. The hoplite katalogos, in: G.S. Shrimpton and D.J. MacCargar (eds.), *Classical Contributions. Studies in honour of M.F. McGregor*. New York: J.J. Augustin, 1-3.

Andreyev, V.N. 1974. Some aspects of agrarian conditions in Attica in the fifth to third centuries BC, *Eirene* 12, 5-46.

Barbagallo, C. 1904. La produzione media relativa dei cereali e delle vite nella Grecia, nella Sicilia e nell'Italia antica, *Rivista di Storia Antica* 8, 477-504.

Beloch, K.J. 1885. Das Volksvermögen von Attika, *Hermes* 20, 237-61.

Beloch, K.J. 1924. *Griechische Geschichte* I.1 (2nd ed.) Berlin: de Gruyter.

Brock, R. 1989. Athenian oligarchs: the numbers game, *JHS* 109, 160-64.

Burckhardt, L.A. 1996. *Bürger und Soldaten. Aspekte der politischen und militärischen Rolle athenischer Bürger im Kriegswesen des 4. Jahrhunderts v.Chr*. Stuttgart: Franz Steiner.

Burford Cooper, A. 1978. The family farm in Greece, *CJ* 73, 162-75

Burford, A. 1993. *Land and Labor in the Greek World*. Baltimore and London: Johns Hopkins University Press.

Ceccarelli, P. 1993. Sans thalassocratie, pas de démocratie? Le rapport entre thalassocratie et démocratie à Athènes dans la discussion du Ve et IVe siècle av. J.C., *Historia* 42, 444-70.

Davies, J.K. 1971. *Athenian Propertied Families 600-300 BC*. Oxford: Oxford University Press.

Davies, J.K. 1984. *Wealth and the Power of Wealth in Classical Athens*. Salem, N.H.: Ayer.

De Sanctis, G. 1912. *Atthis. Storia della repubblica ateniese dalle origini alla età di Pericle*, 2nd ed. Torino: Fratelli Bocca.

Demont, P. 1993. Le loisir (skholê) dans la Politique d'Aristote, in P. Aubenque (ed.): *Aristote Politique. Etudes sur la Politique d'Aristote*, Paris: Presses Universitaires de France, 209-30.

Figueira, T.J., 1991. *Athens and Aigina in the Age of Imperial Colonization*. Baltimore and London: Johns Hopkins University Press.

Figueira, T.J. 1993. The strange death of Draco on Aegina, in R.M.

Rosen and J. Farrell (eds.): *Nomodeiktes. Greek studies in honor of Martin Ostwald*. Ann Arbor, Mich.: University of Michigan Press, 287-304

Fisher, N.R.E. 1976. *Social Values in Classical Athens*. London and Toronto: Dent and Hakkert.

Fisher, N.R.E. 1993. *Slavery in Classical Greece*. London: Bristol Classical Press.

Forbes, H. 1992. The ethnoarchaeological approach to ancient Greek agriculture. Olive cultivation as a case study', in B. Wells (ed.), *Agriculture in Ancient Greece*. Proceedings of the Seventh International Symposium at the Swedish Institute at Athens. Stockholm: Swedish Institute at Athens, 87-101

Foxhall, L. 1992. The control of the Attic landscape, in B. Wells (ed.), *Agriculture in Ancient Greece*. Proceedings of the Seventh International Symposium at the Swedish Institute at Athens. Stockholm: Swedish Institute at Athens, 155-59

Foxhall, L. 1997. A view from the top. Evaluating the Solonian property classes, in L.G. Mitchell and P.J. Rhodes (eds.), *The Development of the Polis in Archaic Greece*. London: Routledge, 113-36.

Foxhall, L., and Forbes, H.A. 1982. Sitometreia: the role of grain as a staple food in classical antiquity, *Chiron* 12, 41-90.

French, A. 1964. *The Growth of the Athenian Economy*. London: Routledge and Kegan Paul.

Frost, F.J. 1984. The Athenian military before Cleisthenes, *Historia* 33, 283-94.

Fuks, A. 1953. *The Ancestral Constitution. Four studies in Athenian party politics at the end of the fifth century BC*. London: Routledge and Kegan Paul.

Gabrielsen, V. 1994. *Financing the Athenian Fleet. Public taxation and social relations*. Baltimore and London: Johns Hopkins University Press.

Gallant, T.W. 1982. Agricultural systems, land tenure, and the reforms of Solon, *BSA* 77, 111-24.

Gallant, T.W. 1991. *Risk and Survival in Ancient Greece. Reconstructing the rural domestic economy.* Stanford, Ca.: Stanford University press.

Garnsey, P. 1988. *Famine and Food Supply in the Graeco-Roman World. Responses to risk and crisis.* Cambridge: Cambridge University Press.

Garnsey, P. 1992. Yield of the land, in B. Wells (ed.), *Agriculture in Ancient Greece.* Proceedings of the Seventh International Symposium at the Swedish Institute at Athens. Stockholm: Swedish Institute at Athens, 147-53.

Garnsey, P. 1999. *Food and Society in Classical Antiquity*. Cambridge: Cambridge University Press.

Glotz, G. 1926. *Ancient Greece at Work*. London: Kegan Paul.

Gomme, A.W. 1933. *The Population of Athens in the Fifth and Fourth Centuries BC*. Oxford: Oxford University Press.

Gomme, A.W. 1956. *A Historical Commentary on Thucydides*, Vol. II: Books II-III. Oxford: Oxford University Press.

Gomme, A.W., Andrewes, A., and Dover, K.J. 1981. *A Historical Commentary on Thucydides*, Vol. V: Book VIII. Oxford: Oxford University Press.

Greenhalgh, P.A. 1973. *Early Greek Warfare. Horsemen and chariots in the Homeric and archaic ages*. Cambridge: Cambridge University Press.

Hammond, N.G.L. 1973. *Studies in Greek History*. Oxford: Oxford University Press.

Hansen, M.H. 1981. The number of Athenian hoplites in 431 BC, *SO* 56, 19-32.

Hansen, M.H. 1985. *Demography and Democracy. The number of Athenian citizens in the fourth century BC*. Herning: Systime.

Hansen, M.H. 1988. *Three Studies in Athenian Demography*. Copenhagen: Munksgaard.

Hansen, M.H. 1991. *The Athenian Democracy in the Age of Demosthenes. Structure, principles and ideology*. Oxford: Blackwell.

Hanson, V.D. 1995. *The Other Greeks. The family farm and the agrarian roots of western civilization*. New York: Free Press.

Hanson, V.D. 1996. Hoplites into democrats: the changing ideology of Athenian infantry, in J. Ober and C. Hedrick (eds.), *Demokratia. A conversation on democracies, ancient and modern*. Princeton: Princeton University Press, 289-312.

Hodkinson, S. 1988. Animal husbandry in the Greek polis, in C.R. Whitttaker (eds.), *Pastoral Economies in Classical Antiquity*. Cambridge: Cambridge University Press, 35-74.

Hopkins, K. 1983. Models, ships and staples, in P. Garnsey and C.R. Whittaker (eds.), *Trade and Famine in Classical Antiquity*. Cambridge: Cambridge University Press, 84-109.

Hornblower, S. 1991. *A Commentary on Thucydides,* Vol. I: Books I-III. Oxford: Oxford University Press.

Isager, S., and Skydsgaard, J.E. 1992. *Ancient Greek Agriculture. An introduction*. London and New York: Routledge.

Jameson, M.H. 1978. Agriculture and slavery in classical Athens, *CJ* 73, 122-45.

Jameson, M.H. 1992. Agricultural labor in ancient Greece, in B. Wells (ed.), *Agriculture in Ancient Greece*. Proceedings of the Seventh International Symposium at the Swedish Institute at Athens. Stockholm: Swedish Instute at Athens, 135-46

Jardé, A. 1925. *Les céréales dans l'antiquité grecque. La production*. Paris: de Boccard.

Jarva, E. 1995. *Archaiologia on Archaic Greek Body Armour*. Rovaniemi: Societas Historica Finlandiae Septentrionalis.

Jones, A.H.M. 1957. *Athenian Democracy*. Oxford: Oxford University Press.

Jongman, W. 1988. Adding it up, in C.R. Whittaker (ed.), *Pastoral Economies in Classical Antiquity*, Cambridge: Cambridge University Press, 210-12.

Krentz, P. 1982. *The Thirty at Athens*. Ithaca and London: Cornell University Press.

Lambert, S.D. 1997. *Rationes Centesimarum. Sales of public land in Lykourgan Athens.* Amsterdam: Gieben.

Latacz, J. 1977. *Kampfparänese, Kampfdarstellung und Kampfwirklichkeit in der Ilias, bei Kallinos und Tyrtaios*. Munich: Beck.

Lewis, D.M. 1973. The Athenian Rationes Centesimarum, in M.I. Finley (ed.), *Problèmes de la terre en Grèce ancienne*. Paris and the Hague: Mouton de Gruyter, 187-212.

Lintott, A.W. 1982. *Violence, Civil Strife and Revolution in the Classical City 750-330 BC*. London and Canberra: Croom Helm.

Lintott, A.W. 1992. Aristotle and democracy, *CQ* 42 (1992), 114-28.

Lohmann, H. 1993. *Atene. Forschungen zu Siedlungs- und Wirtschaftsstruktur des klassischen Attika*. Cologne: Böhlau.

Lonis, R. 1994. *La cité dans le monde grec. Structures, fonctionnement, contradictions*.

Markle, M.M., 1985. Jury pay and assembly pay at Athens, in P.A. Cartledge and F.D. Harvey (eds.), *Crux. Essays presented to G.E.M. de Ste. Croix on his 75th birthday*. Exeter: Imprint Academic, 265-97.

Morris, I., and Raaflaub, K. (eds.) 1998. *Democracy 2500? Questions and Challenges*. Dubuque.

Nilsson, M.P. 1929. Die Hoplitentaktik und das Staatswesen, *Klio* 22, 240-49.

Nippel, W. 1980. *Mischverfassungstheorie und Verfassungsrealität in Antike und früher Neuzeit*. Stuttgart: Klett-Cotta.

Ober, J. 1989. *Mass and Elite in Democratic Athens. Rhetoric, ideology and the power of the people*. Princeton, N.J.: Princeton University Press.

Osborne, R. 1985. *Demos: The Discovery of Classical Attika*. Cambridge: Cambridge University Press.

Osborne, R. 1987. *Classical Landscape with Figures. The ancient Greek city and its countryside*. London: George Philip.

Patterson, C. 1981. *Pericles' Citizenship Law of 451-50 BC*. New York.

Pleket, H.W. 1993. Agriculture in the Roman empire in comparative perspective, in H. Sancisi-Weerdenburg et al. (eds.), *De Agricultura. In memoriam Pieter Willem de Neeve*. Amsterdam: Gieben, 317-42.

Pritchett, W.K. 1956. The Attic Stelae, Part II, *Hesperia* 25, 178-317.

Pritchett, W.K. 1985. *The Greek State at War*, Vol. IV. Berkeley: University of California Press.

Raaflaub, K. 1992. *Politisches Denken und Krise der Polis. Athen im Verfassungskonflikt des späten 5. Jahrhunderts v.Chr*. Munich: Stiftung Historisches Kolleg.

Raaflaub, K. 1997. Soldiers, citizens, and the evolution of the early Greek polis, in L.G. Mitchell and P.J. Rhodes (eds.), *The Development of the Polis in Archaic Greece*. London and New York: Routledge, 49-59.

Raaflaub, K. 1999. Archaic and Classical Greece, in K. Raaflaub and N. Rosenstein (eds.), *War in the Ancient and Medieval Worlds: Asia, the Mediterranean, Europe, and Mesoamerica*. Cambridge, Mass.: Center for Hellenic Studies, 129-61.

Rhodes, P.J. 1982. Problems in Athenian eisphora and liturgies, *AJAH* 7, 1-19.

Rhodes, P.J. 1993. *A Commentary on the Aristotelian Athenaion Politeia* (2nd ed.). Oxford: Oxford University Press.

Ridley, R.T. 1979. The hoplite as citizen, *AC* 48, 508-48.

Ruschenbusch, E. 1979. *Athenische Innenpolitik im 5. Jahrhundert v. Chr. Ideologie oder Pragmatismus?* Bamberg: Aku Fotodruck.

Ruschenbusch, E. 1984. Zum letzten mal: die Bürgerzahl Athens im 4. Jh. v. Chr., *ZPE* 54, 253-67.

Ruschenbusch, E. 1988. Getreideerträge in Griechenland in der Zeit von 1921 bis 1938 n.Chr. als Maßstab für die Antike, *ZPE* 72, 141-53.

Ste. Croix, G.E.M. de 1953. Demosthenes' TIMHMA and the Athenian eisphora in the fourth century BC, *C&M* 14, 30-70.

Sallares, R. 1991. *The Ecology of the Ancient Greek World*. Ithaca: Cornell University Press.

Sanders, G.D.R. 1984. Reassessing ancient populations, *BSA* 79, 251-62.

Schwahn, W. 1936. Theten, *RE* VI.A.1, col. 186-204.

Sealey, R. 1966. The revolution of 411 BC, in *Essays in Greek Politics*. New York, 111-32.

Sinclair, R.K. 1988. *Democracy and Participation in Athens*. Cambridge: Cambridge University Press.

Skydsgaard, J.E. 1988a. Transhumance in ancient Greece, in C.R. Whittaker (ed.), *Pastoral Economies in Classical Antiquity*. Cambridge: Cambridge University Press, 75-86.

Skydsgaard, J.E. 1988b. Solon's *tele* and the agrarian history. A note, in E. Christiansen, A. Damsgaard-Madsen and E. Hallager (eds.), *Studies in Ancient History and Numismatics, presented to Rudi Thomsen*. Aarhus: Aarhus University Press, 50-54.

Spence, I.G. 1993. *The Cavalry of Classical Greece. A social and military history with particular reference to Athens.* Oxford: Oxford University Press.

Spurr, M.S. 1986. *Arable Cultivation in Roman Italy, c. 200 BC- c. AD 100*. London: Society for the Promotion of Roman Studies.

Starr, C.G. 1977. *The Economic and Social Growth of Early Greece, 800-500 BC*. Oxford and New York: Oxford University Press.

Starr, C.G. 1986. *Individual and Community. The rise of the polis 800-500 BC*. Oxford and New York: Oxford University Press.

Strauss, B.S. 1986. *Athens after the Peloponnesian War. Class, faction and policy 403-386 BC*. Ithaca, N.Y.: Cornell University Press.

Strauss, B.S. 1996. The Athenian trireme, school of democracy, in J. Ober and C. Hedrick (ed.), *Demokratia. A conversation on democracies, ancient and modern*. Princeton, N.J.: Princeton University Press, 313-25.

Thomsen, R. 1964. *Eisphora. A study of direct taxation in ancient Athens.* (Humanitas, 3). Copenhagen: Gyldendal.

Wallace, R.W. 1993. Aristotelian Politeiai and Athenaion Politeia 4, in R.M. Rosen and J. Farrell (eds.), *Nomodeiktes. Greek studies in honor of Martin Ostwald*. Ann Arbor, Mich.: University of Michigan Press, 269-86.

Wees, H. van. 1988. Kings in combat. Battles and heroes in the Iliad, *CQ* 38, 1-24.

Wees, H. van. 1995. Politics and the battlefield. Ideology in Greek warfare, in A. Powell (ed.), *The Greek World*. London and New York: Routledge, 153-78.

Wees, H. van. 1999. The mafia of early Greece. Violent exploitation in the seventh and sixth centuries BC, in K. Hopwood (ed.), *Organized Crime in Antiquity*. London: Duckworth, 1-51.

Welwei, K.-W. 1992. *Athen. Vom neolitischen Siedlungsplatz zur archaischen Großpolis*. Darmstadt: Wissenschaftliche Buchgesellschaft.

West, M.L. 1978. *Hesiod. Works and Days*. Oxford: Oxford University Press.

Whitby, M. 1998. The grain trade of Athens in the fourth century BC, in H. Parkins and C. Smith (eds.), *Trade, Traders, and the Ancient City*. London and New York: Routledge, 102-28.

Whitehead, D. 1981. The archaic Athenian zeugitai, *CQ* 31, 282-86.

Williams, J.M. 1983. Solon's class system, the manning of Athens' fleet, and the number of Athenian thetes in the late fourth century, *ZPE* 52, 241-45.

Wood, E.M. 1988. *Peasant-citizen and Slave. The foundation of Athenian democracy*. London and New York: Verso.

Notes

1 This paper was written at the Center for Hellenic Studies. Walter Donlan, Simon Hornblower, Peter Hunt, Peter Krentz, Franzeska Lang, Ted Lendon, Kurt Raaflaub, Barry Strauss, and audiences in London, Copenhagen, and Washington, D.C., have done much to improve it with their comments and suggestions. For its remaining failings the authors bears sole responsibility.

2 Classic statements of this view are Nilsson 1929; Andrewes 1956; Hanson 1995; 1996. (Hanson, however, argues that this hoplite middle class dissolved from the mid-fifth century onwards: esp. 1995, 347-50, 366-67). Note also Ridley 1979, 519: 'The Athenian hoplite army was very much a social group, the upper and middle class, with political repercussions of the first order, but that is well understood'.

3 Contra a radical break in styles of warfare in the seventh century: Latacz 1977; Pritchett 1985; Van Wees 1988; Raaflaub 1997. Contra the assumption that decisive military roles brought about class awareness and political ambition (let alone political power): Ceccarelli 1993; Van Wees 1995.

4 *Politics* 1273b36-9, 1274a16-22; also *Ath.Pol.* 7.3; Plutarch, *Solon* 18.1-2; Pollux 8.130. On Aristotle's approving attitude towards the Solonian constitution, see Lintott 1992.

5 Archonship: *Ath.Pol.* 26.2 (with Rhodes 1993, 330-31). Decree of 403: *Ath.Pol.* 39.6 (with Rhodes 1993, 470-71). A decree concerning the foundation of a colony at Brea (c. 445?) shows that property-class distinctions mattered sufficiently to be the subject of an amendment (*ML* 49.39-42; see also n. 84, below).

6 *Ath.Pol.* 7.4; 47.1 (with Rhodes 1993, 145-46, 551). Other evidence for the existence of the property classes in the fourth century: Isaeus 7.39; Demosthenes 24.144 (citing the bouleutic oath); [Demosthenes] 43.54 (discussed below, pp. 55-56); and a decree concerning settlers on Lemnos, *IG* II^2.30.12.

7 Permanent register: Andrewes 1981; ad hoc lists: Hansen 1981, 24-29; 1985, 83-89.

8 For the evidence and interpretation, see Whitehead 1981; Rhodes 1993, 138; cf. n. 42 below. Contra: Frost 1984, 283-84; Hansen 1991, 43-46. The notion of men 'yoked' together on the battlefield need not be taken as evidence of a very close and rigid formation, but refers more generally to the solidarity and hard work of the soldiers, and perhaps also, as I will suggest below, p. 61, to an element of compulsion in military service.

9 For mobilization 'by divisions' and 'by eponym', see Andrewes 1981, 2-3; Hansen 1981, 28-29; 1991, 88-89; for the high proportion of adult male citizens subject to military service after the ephebic reforms of 336/5, see, e.g., Hansen 1991, 108-9; Burckhardt 1996, 33-43.

10 There is no doubt that by *euporoi* Aristotle really means 'wealthy' (and not merely 'well-off'): he describes the richest Athenians, the liturgical class, as such (*Politics* 1291a33-4; cf. Davies 1971, xx-xxi; 1984, 10-14). Note also *Ath.Pol.* 26.1 (with Rhodes 1993, 326-29): 'It happened that at this time [after the death of Ephialtes] the more decent people did not have a [powerful] leader ... Moreover, the majority of them had fallen in war, since in those days armies were levied from the list ... so that the decent folk among both the people and the wealthy were destroyed'

11 Sources: *Ath.Pol.* 7.4; Plutarch, *Solon* 18.1; Pollux 8.130 (the latter independently from *Ath.Pol.*, see below, pp. 54-55). The exact figures are as follows: a *medimnos* is 52.176 litres, or 40.28kg wheat, 32.24kg coarse barley, or 33.55kg barley meal (*alphita*); a *metrêtês* is 38.88 litres (Foxhall and Forbes 1982, 43-44). Thus 500 *med.* is 20,140kg wheat/ 16,120 (coarse) barley/ 19,440 litres oil or wine; 300 *med.* is 12,084kg wheat/ 9,672kg barley/ 11,664 litres oil or wine; 200 *med.* is 8,056kg wheat/ 6,448kg barley/ 7,776 litres oil or wine. The sources' claim that liquid produce was included in the annual yield figures is denied by some (Foxhall 1997, 130-31), but supported by the tradition that Spartan allotments produced '70 *medimnoi* of barley for a man [or: the husband] and 12 *medimnoi* for a woman [or: his wife], and a quantity of liquid produce in proportion' (Plutarch, *Lycurgus* 8.7). If the Athenian census figures had excluded the yield in wine and oil, the annual income of *zeugitai* would thus have been about twice as high as that of full Spartan citizens (bearing in mind that Peloponnesian *medimnoi* were rather larger than the Attic equivalent), which is unlikely. It seems perfectly plausible that, for the purposes of estimating annual yield, dry and liquid measures were regarded as rough equivalents, as the sources imply: on the one hand, the *metrêtês* was a smaller measure than the *medimnos*, but on the other hand, oil and wine were needed in smaller quantities for home consumption and would have been more valuable than grain in barter or sale. (Some other schemes of equivalence—all entirely hypothetical—are cited in Rhodes 1993, 141-42.)

12 As has occasionally been noted: Raaflaub 1999, 138; Hanson 1995, 440; de Ste Croix, unpublished paper (cited in Rhodes 1993, 145).

13 For ancient debate about the name and modern debate about the reliability of the figures, see below, pp. 54-56.

14 Careful calculations in Spence 1993, 280-6 (taking account of the small size of ancient Greek horses). Higher estimates in Anderson 1961, 137 (40 *med.*) and 138 (50 *med.*).

15 Pairs of horses: Greenhalgh 1973, 84-145; Spence 1993, 284-85; contra Burford 1993, 74, 151.

16 Theoretical maximum: Osborne 1987, 44-45, drawing on Sanders 1984, who shows that a seed:yield ratio of 1:10 was possible on Melos in 1848 (256) and 1670 (258); Sanders, however, also concludes that Melos was exceptionally fertile (262) and that the ratio on other Cycladic islands at the time was a much more ordinary 1:5 or 6. Other modern Greek ratios: Jameson 1978, 129 n. 39 (in Methana, 'in pre-fertilizer days 1:3 or 1:4 was not considered bad'); Sallares 1991, 374-75; 497 n. 239. Early modern Europe: Spurr 1986, 82-84; Pleket 1993, 326-28. Columella: *De Re Rustica* 3.3.4 (but it has been pointed out that he is advocating the superiority of viticulture and may well have played down the seed:yield ratio for grain: Pleket, ibid.).

17 *De Re Rustica* 6.3.3-8 (cf. 11.2.99-100). During summer the oxen eat only leaves, but from November to mid-June their diet may include 38 (6 x 4 + 2 x 7) *sextarii* of bitter-vetch (@ 0.539l per *sextarius*), or 72 (6 x 8 + 2 x 12) *sextarii* of chickpeas, or 8 *modii* of lupines (@ 8.62l per *modius*). How widespread the cultivation of fodder crops was in Greece is debated: Hodkinson 1988, 41-45, contra Skydsgaard 1988a, 76-78; Burford 1993, 149.

18 Foxhall and Forbes 1982, 68-72; also, e.g., Starr 1977, 153; Hopkins 1983, 106 n. 3; Garnsey 1988, 91, 102; Whitby 1998, 114-17.

19 Dicaearchus *FHG* ii.242, cited in Athenaeus 4.141c. Foxhall and Forbes 1982, 48-49, cite a requirement of 3,337 calories per day for 'very active' adult males, including 'soldiers on active duty'; they calculate the daily calorific value of the mess contibutions cited in Plutarch, *Lycurgus* 12.3, at 3,982 (3,416 + 568; ibid., 58). Since Dicaearchus' figures are 1.5 times as large, we arrive at *c.* 6,000 calories.

20 Foxhall and Forbes 1982, 57; ibid., 51-65, 86-9, for a tabulation and discussion of the ancient evidence.

21 There are 48 *choinikes* to a *medimnos*, and 144 *kotylai* to the *metrêtes*. Foxhall and Forbes 1982, 68, give a quantity of rather more than 50 litres (i.e. *c.* 1.25 *metrêtês*) of olive oil per person per year as the household rule of thumb in modern Methana. They argue that oil was a much less significant part of the ancient diet (ibid., 69-70), but I am assuming here that that would have been (more than) compensated for by its ancient non-food uses.

22 A late sixth-century decree stipulates that Athenian settlers on Salamis are to provide their own equipment to the value of at least 30 drachmae (*IG* I^3.1 = *ML* 14), and a law which is likely to date to the same time (since it was then that coinage was first introduced in Athens) decrees that one drachma is to count as the equivalent of one *medimnos* of grain (Plutarch, *Solon* 23.3). We are also told that an ox counted as the equivalent of 5 drachmae (Plutarch, ibid., citing Demetrius of Phaleron), and since the bronze armour of the hero Diomedes in the *Iliad* was 'worth nine oxen' (6.236), even this would have cost only 45 drachmae/*medimnoi*. In the classical period, a panoply is estimated to have cost 75-100 drachmae (Hanson 1995, 294-301; Jarva 1995, 148-54), at a time when the lowest recorded price for grain was 2 dr. per *medimnos* of barley (Plutarch, *Moralia* 470f: late fifth century), and 5 or 6 dr. per *medimnos* of wheat was apparently a normal price (in the late fifth and fourth century: see Pritchett 1956, 196-98; Markle 1985, 293-97). Wine and oil might sell for much more.

23 This possibility is cautiously admitted by Foxhall 1997, 131: 'Clearly the *thêtes* must have included ... the odd hoplite'. Hanson (1995) rightly argues that a hoplite panoply 'was not enormously costly' (294) and 'not necessarily beyond [the] economic reach' of *thêtes* (299), and that 'even as early as 440-430 BC' hoplite service was 'no longer' confined to the *zeugitai* (348-9), yet he assumes that in *early* Greece *thêtes* were 'perhaps ... incapable of buying armour' (112) and in any case '*not allowed* to buy or otherwise obtain heavy arms' (299; emphasis added). I believe to have disproved the first assumption above; for the second assumption, see below, pp. 59-61.

24 The harvests of 1922-23, chosen by Arnold Gomme (1933, 31), and of 1928, chosen by Alfred French (1964, 20; adopted by Rhodes 1993, 141), turn out to represent very bad years. The most often-cited figures, those of Auguste Jardé, are totally unreliable. Although he cited precise figures for the—rather good—harvest of 1921 (1925, 203-4; it should be noted that Ruschenbusch's figures for the same year are notably lower), he decided that 'these statistics are of little use' (1925, xiv n.2) and simply assumed that *higher* yields were the normal modern average. Barley, he claimed, produced 19 or 20 to 24hl (1,175-1,500kg) and wheat 12.5 or 13hl (*c.* 1,000kg) per hectare (1925, 57, 60). These quantities exceed his own figures for 1921 by 33-70% and 28%, respectively. As Gallant's averages for 1911-50 show, Jardé overestimated average yields of wheat by about half (48%), while his highest estimate for barley more than doubles the actual result (60-105%).

25 Gallant 1991, 78-80; also Osborne 1987, 44-45, on the possibility of higher yields with intensive cultivation (cf. n. 16, above). How widespread more intensive techniques were is debated, but it seems clear that extensive, plough agriculture was very common (see below, with n. 31).

26 On the introduction of fertilizer: Ruschenbusch 1988, 151-52 n. 19. Note the more anecdotal evidence from Methana, where the introduction of fertilizer is said to have raised seed:yield ratios from 1:3 or 1:4 to 1:9 (Jameson 1978, 129 n. 39).

27 Columella's recommended sowing rate (like his yield ratio, see n. 16, above) may be on the low side, since he himself sarcastically refers to people who would double his amounts (2.9.1), but higher rates of sowing would produce sharply diminishing yield ratios (Gallant 1991, 46-49).

28 A sowing rate of 115kg/ha of wheat and 154kg/ha of barley for Attica in 1864 is cited by Jardé 1925, 34 n. 2 (reversing the figures as given), who also adduces sowing rates for Crete of 115kg/ha of

wheat and 140kg/ha of barley, and for Greece of 154-256kg/ha of barley. Jameson 1978, 131; Garnsey 1988, 95, treat 130-135kg/ha as the 'standard' sowing rate, but Gallant argues that there is no such thing (1991, 46).

29 For discussion, see esp. Garnsey (1988, 98-101; 1992, 147-49), who argues that 329/8 BC was a bad year.

30 A selection of other estimates of ancient yields (some clearly influenced by Jardé's overestimates—see n. 24, above—others by the poor results of Columella and the Eleusis offerings) is tabulated below. Some of these figures are given explicitly in the works cited, others I have calculated on the basis of the information given. In converting litres into kilogrammes, I have adopted the weights given in Foxhall and Forbes 1982, 43-44: wheat 0.772 kg/litre, barley 0.618 kg/litre.

Estimated Ancient Greek Yields (kg/ha)

	barley	wheat	'grain'
Barbagallo 1904, 490	310	230	-
De Sanctis 1912, 235	-	-	925
Beloch 1924, 303 n. 2	750-875	-	-
Jardé 1925, 60	1,000-1,250	620-925	-
Glotz 1926, 246-47	650-1,100	-	-
French 1964, 20	450	-	-
Starr 1977, 154-55	1,000 (max.)	620-925	-
Jameson 1978, 131	-	-	400
Osborne 1987, 45	-.	1,000-1,500	-
Garnsey 1988, 102	500-1250	300-925	-
Garnsey 1992, 148	770	625	-
Sallares 1991, 374, 389	-	-	(average) 500
	-	-	(maximum) 650
Foxhall 1997, 130	-	-	600-1,000

On the lowest estimate (Barbagallo's 230kg/ha of barley), the zeugite farm would have to be 34.8ha; on the most generous estimate (Osborne's 1,500kg/ha of wheat), it would need to be only 5.4ha (excluding fallow).

31 Common, because it is taken for granted in Homer (*Iliad* 10.351-3; 13.703-7; 18.541-9; *Odyssey* 5.127; 13.31-33) and Xenophon (*Oeconomicus* 16.10-15); desirable, because it is recommended by Hesiod (*W&D* 464: 'fallow, defence against ruin, soother of Hades': see West 1978 ad loc.) and stipulated in a number of fourth-century Attic leases of land (Osborne 1987, 42-43). For the debate, see Whitby 1998, 104-5; Isager and Skydsgaard 1992, 108-14; Skydsgaard 1988a, 75-86; Sallares 1991, 303, 385-86 (universal biennial fallow); and Garnsey 1988, 93-94; 1992, 149-52; Hodkinson 1988, 35-74; Gallant 1982, 113-17; Jameson 1978, 125-30 (alternative regimes).

32 Jardé 1925, 186 n. 1; Amouretti and Brun 1993, 560.

33 French 1964, 21, 176 (adopted by Starr 1977, 153, and Rhodes 1993, 141); De Sanctis 1912, 236; Jardé 1925, 186 n. 3. Survey: Amouretti and Brun 1993, 557-61; cf. Barbagallo 1904, 503; Glotz 1926, 246-47 (20-25ha).

34 Figures derived from Amouretti and Brun 1993, 554; Lohmann 1993, 215-17; Forbes 1992, 98 ('pan-Mediterranean' average). See also French 1964, 20-21, 176 (again arguing that ancient yields would have been no more than half of modern yields, 'a crude guess' of just over 1.1hl/ha, adopted by Starr 1977, 153, and Rhodes 1993, 141), Osborne 1987, 45 (average 2.75hl/ha); De Sanctis 1912, 236 (3hl/ha); Jardé 1925, 186-87 n.4 (5-6hl/ha).

35 Gallant 1991, 68, argues (rather perfunctorily) that 'fruits, pulses, and vegetables' would have constituted a major part of the ancient diet and therefore of the crops. To what extent these products would have counted towards the overall yield in 'measures' is not clear, and it is difficult to quantify their contribution, but in any case Gallant's yield statistics for beans and lentils (1991, 77) suggest that these crops would yield no more per hectare than barley, while his estimates of acreage needed to produce the assumed minimum amount of pulses and vegetables (1991, 73, 79) show that this would take up proportionally far more land than grain.

36 Glotz 1926, 246-47: allowing for biennial fallow, he concluded that 'the man who produced his own wine and bread had not more than 25 acres [10 ha]' (a result implicitly adopted by Hammond 1973, 135 n. 2). More accurately, on his assumptions the farm would be between 7.4 and 12 ha (18.5-30 acres).

37 75:25 in the rations sent to the Spartans on Sphakteria (still quite generous, since they include meat; Thucydides 4.16.1) and in the smaller common ration, noted above, of 1 *choinix* of wheat and only 1 *kotyle* of wine. 80:20 for choruses in Phigaleia (Athenaeus 4.148f) and 6:1 for a Spartan king dining at home (Herodotus 6.57.3).

38 The maximum yield figures adopted in this section imply a seed:yield ratio of about 1:5. If from a proportion of 65:35 we deduct 20% for seed from the 65, the proportion becomes 52:35 = *c.* 60:40. At the worst seed:yield ratio of 1:3 (as used in the previous section), the proportion of grain to wine cultivated would have to be about 70:30.

39 Thus about 13% of the farmland would have been planted with olive trees (half of what has been calculated for the deme Atene, cited above), 11% vines, 9% wheat, and 52% barley; 15% would have been left fallow. Modern land use has changed dramatically, so that comparison may be pointless, but, for the record, the proportions for 1961 were 58% for all cereals, pulses, fruit and vegetables, and fodder crops; 26.4% for vines; no olives; and 15.6% apparently left fallow (long after the introduction of chemical fertilizers; statistics based on Sallares 1991, 296).

40 Note that the assumptions made in this section to arrive at the smallest conceivable farm size tend in the opposite direction from the assumptions made in the previous section to calculate

the minimum number of people that could live off 200 measures of produce. The high seed grain requirement assumed earlier implies lower yield figures and thus a larger farm; the lower seed grain requirement implied in the higher yield figures adopted here implies a larger grain surplus and thus a capacity for feeding more people. Farmland which produced 123.5 medimnoi of grain and which had a seed:yield ratio of about 1:5 (see n. 38) could sustain 12 or 13 adult males (and two oxen).

41 Surveys of the evidence in e.g. Burford 1993, 67-72, 113-16 (cf. Burford Cooper 1978, 168-72), who equates this not only with a 'hoplite', but also a 'zeugite' farm. Jameson 1978, 125 n.13, adds that the division of Melos among 500 Athenian *klêrouchoi* would also have resulted in average plots of 5ha. Hanson (1995, 188-89) adopts these figures as 'normative' for 'a hoplite farm of between 10 and 20 acres' (4-8ha); so do e.g. Skydsgaard 1988a, 81, and Isager and Skydsgaard 1992, 78-79. The latter (accordingly) explicitly reject calculations of farm size on the basis of Solonic property qualifications (so too Skydsgaard 1988b, 53); the other scholars appear to overlook the issue. Gallant 1991, 82-7, offers comparative evidence that across the Mediterranean 3-6ha was regarded as 'sufficient for supporting a subsistence farm' (84); cf. Foxhall's average of 3.5ha for subsistence holding on Methana (1997, 130). The largest plot sizes cited are between 200 and 300 *plethra*, i.e. 18-27ha, which seems to me encouragingly close to my figures for *pentakosiomedimnoi*.

42 Jongman 1988, 211; also Hodkinson 1988, 39-40. As Beloch already noted, this is another reason for believing that *zeugitai* means 'yoked men', not 'yoke owners': 'obviously very many farmers who harvested less than 200... bushels must have owned a span of oxen' (1924, 303 n. 1).

43 The discrepancy has been noted by Foxhall 1997, 131, and Raaflaub 1999, 151 n. 49. Jameson 1992, 145, and Lonis 1994, 210, place 'hoplites' above the 40-60 *plethra* level.

44 That 50 drachmas was a standard price for a *plethron* was first argued by Andreyev 1974, 14-18 (at the suggestion of A.A. Vayman), based largely on the so-called Rationes Centesimarum (see Lambert 1997, esp. 229-33, 257-65; Lewis 1973, 194-7); that it was at least a common price has been widely accepted. In *c.* 390, a farm of 'more than 300 *plethra*' is said to have been bought for 'more than 25,000 drachmas', i.e. at 83 dr. per *plethron* (Lysias 19.29, 42), but the context suggests that the sum is exaggerated. Another way of calculating property value which may have been used in Greece is to regard annual revenue as 8% of total value; 200 measures of barley, the cheapest form of produce, sold at 2 dr. per measure (in the late fifth century, see n. 22 above), was worth 400 dr. with an implied property value of 5,000 dr.: a few measures of wheat, wine, or oil, would easily bring the total up to a talent (see already, e.g., Beloch 1885, 246, who, however, took unjustifiable liberties with the numbers to make them fit a passage from Pollux, discussed below, pp. 54-55). Those who argue that the figure of 2,000 drachmas cannot be the rough equivalent of the 'hoplite census', on the grounds that the number of hoplite citizens at the time of the Lamian War was higher than the number of citizens above the 2,000-drachma property requirement imposed by Antipater shortly afterwards (e.g. Williams 1983, 243-44), forget that from 336/5 onwards the state had been providing hoplite equipment to all ephebes, thereby extending hoplite service well below the previous hoplite census. For brief discussions of the leisure class threshold: Davies 1984, 28-29; Ober 1989, 128-29.

45 The problem is hinted at by Skydsgaard 1988b, 51 ('The arable land in Attica will not suffice'), and Jameson 1992, 145 with n. 70, but only fully addressed by Raaflaub 1999, 151 n. 49, who concludes that 'if the census figure is correct, the zeugites are not identical with the hoplite class whose property qualification then was probably much lower, if one existed at all'; his provisional solution is to question the accuracy of our sources, but he notes that 'this problem needs to be investigated more thoroughly'.

46 Total surface area: Garnsey 1988, 90. Percentage under cultivation: Osborne 1987, 46, implicitly retracting his earlier estimate of 'up to 50%' (1985, 225 n. 82); similarly Garnsey 1988, 92, 102; Whitby 1998, 104 (35-40%). Foxhall 1992, 156, suggests 50% 'for broadly agrarian purposes', but this evidently includes pasture and woodland ('anything ... that was not built over, dug out, or nothing but bare rock'). Lower estimates: Sallares 1991, 303, 385-86 (30%, i.e. 72,000ha); Jardé 1925, 49-50, calculated the cultivable area at 68,736ha or c. 27% of 2,553km^2, only to reject it as 'not very likely' (50; it was nevertheless adopted by Starr 1977, 155); he went on to cite 20% as 'only a minimum' (52). French 1964, 176, assumed a mere 34,000ha in the major plains, plus 'smaller patches in the foothills'. Lohmann 1993, 34, 225, finds that the marginal deme of Atene only has 22% cultivable land, but estimates a much greater extent of cultivation elsewhere (e.g., 50% in Anaphlystos).

47 18,000: Hansen 1981, 23; 1988, 23-25. 18,500: Figueira 1991, 216 (who believes that this number includes cleruchs). 20,000: Jones 1957, 8-9, 161. 22,000: Strauss 1989, 78. 24,000: Ruschenbusch 1979, 140. 25,000: Gomme 1933, 4-6; 1956, 34-39. Thucydides gives 29,000 as the total number of hoplite field troops and home guard, but this includes a proportion of non-citizens (and, it has been argued, some non-hoplites as well: Hansen 1981, 19-24; 1988, 24; cf. Hornblower 1991, 256, ad 2.13.6-7). Slightly different figures in Diodorus 12.40.4.

48 This figure is adopted not only for ease of calculation, but also because it seems likely that the actual average will have fallen rather below the middle of the zeugite range of 8.7-13ha (10.85ha).

49 After setting up his own household at age 30, a man would be its sole hoplite for almost 20 years until his (eldest) son became eligible; if he survived long enough (and demographic models suggest that only about 1 in 5 men would have done: e.g. Hansen 1988, 21 (table)), he might then serve for up to ten years alongside his son; after that his son would be the household's sole hoplite again. If he had two sons, there would be a period of about 10

years in which the second son served first alongside his father and brother, later alongside his brother, until he in turn married and set up a new household. Assuming that the average household had 1.25 sons (i.e., 2.5 children) reaching the age of 30 (implying a growth rate of about 0.8% p.a., which is the rate implied by the rise of the number of 'field' hoplites from 9,000 in 490 to 14,200 in 431; see below), a rough calculation shows that it would provide 34.5 'hoplite years' over 30 years, i.e. 1.15 hoplites: 20 years of one-man service, plus up to 10 years in which 2.25 men serve in 20% of households (= 4.5 man years) and in which 1.25 men serve in the other 80% of households (= 10 man years). Factors ignored here are mortality rates after the age of 50 and rates of physical disability, both of which would tend to lower the figure of 1.15 somewhat.

50 40,000: Patterson 1981, 66-8; 43,000 (not including over-60s): Gomme 1933, 26; 50,000: Ruschenbusch 1979, 146; 60,000: Hansen 1988, 14-28.

51 The citizen population at the time had shrunk drastically, but was still at least 20,000 (Hansen 1988, 25-28), and the number of landless was 5,000 according to Dionysius of Halicarnassus, *Lysias* 32. Lysias himself indicates that the landless include 'many hoplites and cavalry and archers' (34.4).

52 Davies 1971, xxvi; 1984, 36-7, drew attention to the possible significance of the Boards of Treasurers, but rightly warned that in the fourth century these were *de facto* open to non-*pentakosiomedimnoi* as well. It seems clear, however, that the property class system was in operation at least until the end of the Peloponnesian War (above, p. 46, 54-56), so that it is legitimate to draw conclusions about the number of *pentakosiomedimnoi* in 431. On the demographic model used here (taken from Hansen 1988, 21 n. 9), the cohort of 30-year olds constitutes 2.7% of the adult male population (and should therefore constitute the same proportion within each property class).

53 That 25% may be deducted here and in subsequent calculations is merely a guess, but it seems to me to err on the side of generosity, since there were relatively few non-landed sources of revenue (chiefly paid labour, craft production, mining, and money lending). The figure is meant to include both a (presumably small) proportion of households with revenues purely from such non-landed sources, and a (presumably larger) proportion of households living mostly off the land, but with some additional income from elsewhere.

54 See below, p. 56. The bottom of the zeugite range would have become 6.5ha, but the top end stayed at 13ha, so that it would be an underestimate to take three-quarters of 10ha as the new mean.

55 Raaflaub 1999, 138, 150-51 n. 49. Foxhall 1997, 129-32, is the only scholar to date to have been prepared to conclude that the *zeugitai* were part of 'a very small elite'—but only under Solon, when they were 'something different' from 'whatever hoplites became by the middle of the fifth century' (131).

56 E.g., Davies 1984, 4; already Beloch 1885, 245-46, with uncharacteristically fanciful arithmetic (see n. 44 above), followed by De Sanctis 1912, 237-38.

57 Since both sources agreed on the level of the property qualifications, one cannot infer from their disagreement over the *hippeis* that they had no information about the actual census levels and were merely guessing (as argued by, e.g., de Ste Croix, unpublished paper, cited by Rhodes 1993, 143, 145). The issue was evidently not the accuracy of these figures, but whether they were the *original* criterion: 'some' argued that the name *hippeis* showed that they originally qualified by owning horses; pseudo-Aristotle's counter-argument was that the name of the *pentakosiomedimnoi* showed that this class was defined by their annual produce from the start and that the same was thus likely to have been true of the *hippeis*.

58 See below, pp. 57-59, for how this pattern matches classical Athenian political ideology. It has plausibly been argued that a sliding scale of taxes for the property classes did not feature under Solon (as Beloch 1885, 245, already pointed out, a *flat rate* tax of 5% or 10% is attested for Peisistratos and his sons by Thucydides 6.54 and *Ath.Pol.*16.4), and that property classes no longer featured in taxation after the reforms of Nausinikos in 378/7 BC (e.g., de Ste. Croix 1953, 42-5), but this is no reason to reject the validity of Pollux' statement for the late fifth and early fourth century (when, as de Ste. Croix, ibid., noted, there is otherwise 'no information whatever about the general system of assessment of *eisphora*'). The implication of accepting Pollux' evidence that *eisphora*-payments were imposed on *zeugitai*, too, is that the circle of tax-payers would have been close to the 6,000 suggested by, e.g., de Ste. Croix 1953, 33; Jones 1957, 28-29; Fisher 1976, 24; cf. Rhodes 1982, 5-11, but also that this group had a property census, not of *c.* 2,500 drachmas as suggested by these scholars, but of *c.* 6,000 dr, the census attributed to them by another group of scholars (e.g. Davies 1971, xx-xxx; 1984, 34-35; Sinclair 1988, 62-63, 122-23; Ober 1989, 128-29) who argue for a much smaller group of tax-payers of only 1,200-2,000 citizens. In other words, the present argument implies a significantly different distribution of wealth from that envisaged by both these schools of thought.

59 See also Welwei 1992, 181. One of the other laws on inheritance cited in the same speech features a clause stipulating that it is to be valid 'from the archonship of Eukleides' (i.e. 403 BC), and the law on dowries is likely to have been part of the same legislation. It was apparently still in force in the late fourth or early third century when the comic poet Poseidippos referred to the obligation 'to take the *thêssa* in marriage or give her five minae [500 dr.]' (Harpokration, sv. *thêtes and thêtikon*; Poseidippos F38 Kassel-Austin/F35 Kock).

60 That the Athenians ignored rather than adapted the law which excluded *thêtes* from serving as archons (*Ath.Pol.* 7.4) points to the same conclusion. An alternative explanation of pseudo-Aristotle's comment on the Treasurers, suggested as a possibility by Rhodes, namely that 'the assignment of citizens to Solonian

classes was now wholly unrealistic and a poor man might be a *pentakosiomedimnos*' (1993, 551), does not in fact seem feasible. It implies either (a) that even a poor man could now have an annual income of 500 *medimnoi* (so Schwahn 1936, col. 200), or (b) that the Athenians kept the name but lowered the census. (a) is impossible: 500 drachmas might lose their value as a result of inflation, but 500 'bushels' were always worth a small fortune; (b) would imply precisely the opposite of what [Aristotle] claims—that the law of Solon was no longer in use, and that a new law was now applied (rather than ignored).

61 *Contra* Thomsen 1964, 147-55. Beloch 1924, 303, suggests that the census was indeed 150 under Solon, but that it was subsequently lowered, for which there is no evidence. Note Aristotle's comments on the advisability of adapting the property census to changing circumstances (*Politics* 1308a35-b10).

62 The Constitution of Draco provides a few hints about the relative and absolute wealth of the property classes in the classical period. It decrees that for non-attendance in the Council fines are to be imposed: 3 dr. per day for *pentakosiomedimnoi*, 2 dr. for *hippeis*, and 1 dr. for *zeugitai* (4.3). The proportions would roughly fit either 500-300-200 or 500-300-150 (if the latter, the zeugitai would pay fractionally over the odds compared with *pentakosiomedimnoi*; if the former, they would pay just over an obol less than the proportionate sum). The daily fines are substantial, showing again that the absolute property levels are unlikely to have been significantly below the census attributed to Solon. The qualifications for office holding, it should be noted, are remarkably low: 10,000 drachmas for generals and cavalry commanders (only half of the unofficial liturgical census of 3-4 talents) and 1,000 drachmas for archons and treasurers (only half the presumed minimum necessary for hoplite service), while 'the lesser magistracies' are open to 'those who provide arms and armour' (4.2), which implies that many hoplites owned even less than 1,000 drachmas. I would suggest that this situation can only have obtained in the late fourth century, after the ephebic reform of 336/5, when the state began to provide equipment and training, thereby extending hoplite service to the bulk of the population (see e.g. Burckhardt 1996, 33-43). That fines for absence from the Council are imposed only on the top three property classes does not necessarily mean that the *thêtes* are meant to be excluded, but merely that fines were not imposed on them (in line with a general pattern in which *thêtes* are neither excluded not compelled to take part, see further below, pp. 59-61). On the general likelihood that, despite many similarities to the 'draft' constitution of 411, 'Draco's' constitution dates to the latter part of the fourth century: Fuks 1953, 84-101; for other views, see Wallace 1993; Figueira 1993.

63 For critical examination of Greek ideas on this subject, see Ceccarelli 1993; Van Wees 1995.

64 The plague killed 4,400 hoplites and 300 horsemen 'from the formations' (i.e. the field army of 14,200), or just under a third (Thucydides 3.87.3; that 'the field army' did not include the home guard stationed on the walls is clear from 8.69.1); so too Hansen 1988, 14; Ruschenbusch 1979, 140-1 (contra Figueira 1991, 206-7, 215-16). That in the space of only 40 days just over a quarter of Hagnon's troops died of the plague (2.58.3) seems consistent with a longer-term mortality of one third.

65 Thucydides 6.43.1; 6.94.4; 7.16.2; 7.20.2 (with 7.31.5); see Hansen 1988, 14-16; for casualties, see also Strauss 1986, 179-82.

66 Although some scholars have noted that the 5,000 were meant to be a more select group than the (9,000) hoplites (e.g. Raaflaub 1992, 32, 39; Brock 1989, 162-3; Strauss 1986, 79), others have simply glossed over the discrepancy in numbers: Fuks 1953, 86-88; Sealey 1966, 123 (who supposes that the earlier formulations referring to wealth are merely a 'colourful' way of describing the hoplites, and otherwise notes only that 'the so-called Five Thousand ... proved to number far more than five thousand'); Ruschenbusch 1979, 135 ('but in fact 9,000'); Nippel 1980, 79 (5,000 not to be taken literally), 93 ('the 5,000, or even 9,000 hoplites'); Lintott 1982, 137, 139; Hansen 1991, 41 ('nominally 5,000 men, actually a good many more than that, perhaps more like 9,000'); Hanson 1996, 303 ('a group called 'The Five Thousand,' but more likely numbering nine thousand or more'. All these glosses seem to imply that the number 5,000 was a rough guess at the number of hoplites, which turned out to be a very bad guess: it is quite incredible that the Athenians should have so little idea of what their actual hoplite numbers were. Even less plausible is Jones' assumption (1957, 178-79) that 9,000 qualified, but only 5,000 of these actually owned hoplite arms and armour.

67 Hanson 1995, 207, interprets this passage in the opposite sense: 'Aristotle confesses that he does not know the precise standard that might ideally result in the *largest* body of hoplite landowners running the government' (emphasis added). It is difficult to see how one might read this sense into the Greek or how it would suit the context, and all the commentators and translators I have consulted offer something similar to the translation offered above.

68 The choice of 5,000 as the number of enfranchised has not otherwise been adequately explained (see e.g. Nippel 1980, 89); for Aristotle, the richer half of the hoplites would presumably represent the leisure class (on the importance of leisure in his political thought, see Demont 1993). It is surely no coincidence that Plato's preferred number of citizens is 5,040 (*Laws* 745c, 746d). For the significance of the number 3,000, see Brock 1989, 163; Krentz 1982, 64-65; Lintott 1982, 164-65.

69 Thucydides' comment that an emergency levy of troops for an expedition to Chios in 411 'had hoplites from the list as marines *under coercion*' (8.24.2) suggests that those 'listed' would not normally serve as marines. Moreover, the navy sent out to Sicily was lavishly equipped and employed only the best crews, so that the recruitment of the socially and politically inferior *thêtes* would be most surprising unless it were common practice.

70 That they provided their own arms and armour seems self-evident: neither the assumption that the state provided equipment

and training for a body of specialist thetic marines, nor the idea that the state handed out equipment to untrained *thêtes* who volunteered to serve as marines, is at all likely or has any support in the sources (contra Hansen 1991, 45, following Gomme, Andrewes, and Dover 1981, ad 8.24.2).

71 So, e.g., Hansen 1991, 44-45, 85; 1981, 26; Ridley 1979, 519.

72 Harpokration, s.v. *thêtes kai thêtikon,*, citing *Ath.Pol.* 7.3, and Aristophanes F248 Kassel-Austin/F232 Kock (the *Etymologicum Magnum*, s.v. *thêtikon*, evidently does no more than abbreviate Harpokration, and cannot be regarded as an independent source). The same entry also notes: 'Antiphon, in the speech against Philinos [frg. B6], says 'to make all the *thêtes* hoplites'. Whatever the nature and context of this proposal, it only tells us that not all *thêtes* were hoplites, which is obviously true; it does not mean that many *thêtes* were not hoplites already.

73 Note that Aristotle does *not* say, as H. Rackham mistranslates in the Loeb edition (1959, 341), that 'the poor are *not allowed* to possess arms'.

74 Fines under Draco: see above, n. 62. Their exemption from contributing dowries (see above, p. 55) is most remarkable, since the next-of-kin to a thetic heiress was surely in the vast majority of cases himself a *thês*.

75 Marathon: Nepos, *Miltiades* 5.1; Plutarch, *Moralia* 305b; Pausanias 10.20.2; Suda s.v. *Hippias*. Plataea: Herodotus 9.28.2. Megara: Thucydides 2.31.3. Boiotia: Thucydides 4.93.3 and 94.1.

76 Socrates at Potidaea: Plato, *Symposium*, 219e-220e; Plutarch, *Alcibiades* 7.2-3 (his property is said to have amounted to no more than 500 drachmas: Xenophon, *Oikonomikos* 2.3; perhaps one of his rich friends provided him with arms and armour). That volunteers might be used in principle is clear from the story of Tolmides' raising of 3,000 volunteers for an expedition in addition to the 1,000 men 'from the list' which he was supposed to raise; here, however, the volunteers are apparently also men who might equally have been raised 'from the list' (Diodorus Siculus 11.84.4; Plutarch, *Pericles* 18.2).

77 Expeditions of 4,000: Tolmides (see previous note); Pericles (and Hagnon) in 430: Thucydides 2.56.2, 58.3; 6.31.2 (emphasizing its exceptionally large size). If all 4,000 hoplites in these forces were 'from the list' (Thucydides does not tell us), together with the permanent force of 1,200 horsemen and mounted archers, they would have added up to very nearly the total number of 'elite' soldiers calculated above in Table 2a (5,333). In other words, unless there were many thetic volunteers, one of our other calculations must be nearer the mark (implying a smaller population or a lowered property census).

78 Aristotle, above, p. 46. Servants at Potidaea: Thuc. 3.17.4. One cannot, therefore, conclude from this and other references to hoplites' slave attendants that slave-ownership extended to the average farmer as well (as suggested by e.g. Jameson 1978; 1992, 142-5; Hanson 1995, 47-89; contra e.g. Wood 1988, 42-80; see Fisher 1993, 37-47, for a concise survey of the debate on the extent of slave-owning).

79 That voluntary naval service was the rule is well-established (e.g. Gabrielsen 1994, 106-9; Ruschenbusch 1984, 265-6); despite occasional claims to the contrary (e.g. Schwahn 1936, col. 203).

80 See Hanson 1995, 371-2; Hornblower 1991, ad 3.98.4.

81 Contra Hanson's suggestion that *thêtes* may have been forbidden to own arms and armour, or at least discouraged from owning military equipment (1995, 296, 299; see above n. 23). Frost's argument that there was in effect no state army or fleet in Athens before Cleisthenes seems to me to go too far (1984, esp. 292-93). See on this issue also Cathy Morgan's contribution to this volume.

82 See also above, pp. 46, 51 and nn. 8, 42.

83 As pointed out by e.g. Starr 1986, 54 (contra Hanson 1995, 435-44, who argues that *mesoi*, *hoplitai*, and *zeugitai* all denote the same group; also e.g. Ruschenbusch 1984, 264).

84 That *pentakosiomedimnoi* and *hippeis* are bracketed together in opposition to the other classes in the crisis mobilization of 428 (see above, p. 46), while *zeugitai* and *thêtes* are similarly opposed to the richer classes in the Brea decree (see above, n. 5), suggests a significant social divide at this point (as noted by Hornblower 1991, 400, ad 3.16.1; Hansen 1991, 115-16).

85 I have argued that the sources' claims about the monopolization of landownership, although exaggerated, are essentially correct, and that the poorest *thêtes* were indeed severely exploited; it will be obvious that I do not accept the common theory that Solon's political and economic reforms were both directed at the same social group, the class of 'middling' farmers: see Van Wees 1999.

86 This reinforces Raaflaub's arguments in favour of treating the reforms of Ephialtes and Pericles as the decisive stage in the development of Athenian democracy, contra the claims made for Kleisthenes by Ober and for Solon by Wallace, all in Morris and Raaflaub 1998. See Markle 1985 on the significance of pay in extending political participation beyond the leisure class.

87 Again, see Ceccarelli 1993, and Van Wees 1995; contra, e.g., Ober 1989, 83-84; Strauss 1996; Raaflaub in Morris and Raaflaub 1998, esp. 44-48, 95-97.