

Three Studies in Athenian Demography

By MOGENS HERMAN HANSEN



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Contents

- I. Ephebic Inscriptions as Evidence for the Number of Athenian Citizens 336-22 3
- II. A Note on the Growing Tendency to Underestimate the Population of Classical Attica 7
- III. Athenian Population Losses 431-403. B.C. and the Number of Athenian Citizens in 431 B.C. 14

Synopsis

In recent years ancient historians have tended to underestimate the size of the population of Attica in general and the number of Athenian citizens in particular. This trend is closely connected with the new orthodoxy, that the Athenian economy was based on subsistence agriculture and that the import of grain necessary to feed the population of Attica has been much overrated. Against this prevailing tendency I advocate higher population figures. In 1985 I argued that the number of adult male citizens living in Attica in the 4th century B.C. totalled some 30,000 rather than ca. 20,000 as often assumed.

The purpose of my three studies is to corroborate that conclusion.

In the first study I discuss a new roster of ephebes (nineteen-year-old recruits) of Kekropis (one of the ten tribes) of ca. 332/1 which, compared with the other rosters we have, indicates that a year class of ephebes in the 320s presumably numbered some 600 and that many young Athenians, though fit for military service, did not serve as ephebes.

In the second study I investigate the population of Attica (citizens, metics and slaves alike) and argue that, in the age of Demosthenes, Attica must have had a population of at least 200,000-250,000 rather than the ca. 150,000 recently suggested.

The third study deals with the number of adult male Athenian citizens in the age of Perikles. Around 400 B.C. there must have been at least some 25,000 citizens and, adding up all the population losses suffered in the period 431-403, I conclude that there must have been some 60,000 citizens in 432/1 B.C. and that this figure is perfectly compatible with Thoukydides' estimate of Athenian manpower at 2.13.6-8.

The higher population figures advocated in these studies help us to understand the astonishing political participation in classical Athens (e.g. 6,000 citizens attending an ordinary session of the people's assembly) and the constant emphasis in our sources of how much Athens depended on imported grain even in good years, not to speak of years of bad crops.

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I. Ephebic Inscriptions as Evidence for the Number of Athenian Citizens 336-22

The recent publication of yet another roster of ephebes of Kekropis¹ is an obvious occasion for me to pursue my studies of the number of citizens in fourth-century Athens and to consolidate the views I stated in *Demography and Democracy*.² The new roster (of 332/1) combined with the information we have about an unpublished roster of 333/2³ and with a restudy of the roster of 334/3⁴ provides us with the numbers and demotics of almost all the ephebes from Kekropis in the years 334/3, 333/2, and 332/1. The evidence can be tabulated as follows:

Ephebes:	334/3	333/2	332/1	Total
Aixone (11?)	7	7	15	29
Melite (7)	11	4	9	24
Xypete (7)	2	5	3	10
Halai Aix. (6)	5	17	13	35
Athmonon (6?)	?	5	8	13+
Phlya (5?)	?	7	9	16+
Pithos (2)	2	6	4?	12
Sypalettos (2)	?	0	1	1+
Trinemeia (2?)	?	1	2	3+
Daidalidai (1)	1	0	0	1+
Epieikidai (1?)	?	0	1?	1+
Total	28	52	65?	145+
	+14? = 42			= 159

(The numbers in brackets are the bouletic quotas)

- 1 J. S. Traill, *Demos and Trittys* (Toronto 1986) 1-13: an ephebic inscription of Kekropis from about 332/1 B.C.
- 2 M. H. Hansen, *Demography and Democracy. The Number of Athenian Citizens in the Fourth Century B.C.* (Herning 1985) 47-50.
- 3 Cf. Hansen (*supra* n. 2) 109 note 237 and O. Reinmuth, *The Ephebic Inscriptions of the Fourth Century B.C.* (Leiden 1971) no. 5.
- 4 In *IG II²* 1156 (= Reinmuth no. 2) the first 16 lines of Col. I are missing and the first line of Col. II (with a demotic). The names lost in lines 1-16 plus the two broken names

This table prompts several observations on the nature of the *ephebeia* and the use of ephebic numbers as evidence for the number of Athenian citizens:

First, it is worth noting that the number of ephebes goes up from year to year. Ca. 42 ephebes from Kekropis in 334/3 become 52 in 333/2 and even 65 in 332/1. The two ephebic rosters from Leontis seem to reflect the same development: in 333/2 the tribe had ca. 44 ephebes as against 62 in 324/3.⁵ Also, the rather small tribe Oineis had more ephebes in 330/29 than the probably larger tribe Erechtheis had in 333/2 (56? from Oineis as against 48 from Erechtheis).⁶ The evidence we have for Pandionis, on the other hand, is too fragmentary to be of any value.⁷ The *ephebeia* was reshaped in 336/5⁸ and one result of the reform may well have been an increased participation so that the number of ephebes after a few years was considerably higher than the number immediately after the reform. Thus, as a rough guess we may assume that the total number of ephebes may have been ca. 450-500 in the first years after the reform, but had risen to some 600 or more a decade later. For demographic calculations it is, of course, the higher figure that matters.

Second, now that we have rosters of ephebes from one tribe in three consecutive years, the disproportion in several demes between the number of ephebes and the bouleutic quota becomes even more apparent. To illustrate my point I will discuss the figures for Xypete and Halai Aixonides.

Xypete (with 2 ephebes in 334/3, 5 in 333/2 and 3 in 332/1) had seven seats in the council of five hundred. There is no reason to suppose that Xypete did not fill its quota.⁹ But in order to return, year in and year out, 7 citizens aged thirty or more, the nineteen-year-old Xypetaiones must, on average, have numbered some 8-9,¹⁰ i.e. instead of the $2+5+3 = 10$ ephebes actually attested in the three rosters, we should expect at least 25. The inference must be that many of the Xypetaiones who served in the *boule* in the late 320s and onwards never served as ephebes, or, to put

preserved in lines 17-18 (= 16-17) cover the demes Athmonon, Phlya, Sypalettos, Trinemeia and Epieikidai. There were undoubtedly some ephebes from the two fairly large demes Athmonon and Phlya. If then one of the remaining three small demes was unrepresented, the 18 lines missing will have contained 4 demotics (Athmonon, Phlya and two small demes) and the names of 14 ephebes. Thus, the roster will have recorded the names of 42 ephebes. – The demotic missing at Col. I.19 (= 18) must be Halaieis, cf. Traill (*supra* n. 1) 8 note on line 18. The demotic missing at the top of Col. II must be Meliteis, cf. Traill in *Hesperia* 38 (1969) 483 note on line 17.

it differently, that far from all citizens were enrolled as ephebes when they came of age and had been inscribed in their deme. In addition to those who were unfit for military service – at least 10 % of all¹¹ – there must have been quite a few other young Athenians who became citizens without having been through the *ephebeia*. A further conclusion is that it is impossible to calculate the total number of citizens on the basis of the number of ephebes. The population figures obtained by such calculations will be much too small, and there is no way of telling whether the 500-600 ephebes constituted, say 50 % or 60 % or 80 % of a year class of Athenians aged nineteen.

This conclusion, however, does not support the view that only citizens belonging to the “hoplite class” were called up for ephebic service. Ca. 500-600 ephebes aged 19, plus ca. 10 % unfit for military service, correspond to some 16,500-20,000 adults aged 18-80+,¹² and this figure is incompatible both with the 9,000 hoplites assumed by some historians¹³ and with the ca. 14,500 assumed by others.¹⁴ Thus we can dismiss the view that the *ephebeia* applied to citizens of hoplite status only. Furthermore, as has often been noted, Lykourgos says explicitly (1.76) and Aristotle implies (*Ath. Pol.* 42.1 & 3) that the *ephebeia*, in principle, was meant to be a training of all citizens.¹⁵ I do not doubt that citizens

- 5 Leontis 333/2: Reinmuth no. 9; 324/3: Reinmuth no. 15. The ephebes of 324/3 were probably born in an intercalary year (344/3), cf. Hansen (*supra* n. 2) 48; but the addition to the year of one month accounts for an increase of 4-5 ephebes only.
- 6 Oineis 330/29: Reinmuth no. 12; Erechtheis 333/2: Reinmuth no. 13, cf. *SEG XXXI* 162. On the relative size of the tribes cf. J. S. Traill, *The Political Organization of Attica*. *Hesperia* Suppl. 14 (1975) 32.
- 7 Pandionis 333/2: Reinmuth no. 8. Pandionis 332/1: Reinmuth no. 10. On the fragmentary state of the Pandionis rosters cf. Traill (*supra* n. 6) 32 with note 20.
- 8 Harp. s.v. *Epikrates* (= Lycurg. fr. V.3, Conomis).
- 9 Cf. *Agora XV* 31 lines 1-8 and Traill (*supra* n. 6) Table VII, Kekropis.
- 10 A life table of the model population adopted in Hansen (*supra* n. 2) 11-12 shows that about 1/6 of the males die between 18 and 30, cf. A. J. Coale & P. Demeny, *Regional Model Life Tables and Stable Populations* (Princeton 1966) 5.
- 11 Cf. Hansen (*supra* n. 2) 16-21, 49.
- 12 Cf. Hansen (*supra* n. 2) 12.
- 13 E.g. A. H. M. Jones, *Athenian Democracy* (Oxford 1957) 81; E. Ruschenbusch, ‘Zum letzten Mal: Die Bürgerzahl Athens im 4. Jh. v. Chr.’, *ZPE* 54 (1984) 258.
- 14 E.g. A. W. Gomme, *The Population of Attica in the Fifth and Fourth Centuries B.C.* (Oxford 1933) 8.
- 15 Cf. M. H. Hansen, *Det Athenske Demokrati i 4. årh. f.Kr. 1. Staten, Folket, Forfatningen* (København 1978) 33-34, 88-92; E. Ruschenbusch, ‘Die soziale Herkunft der Epheben um 333’, *ZPE* 35 (1979) 173-76.

belonging to the upper three census classes served as ephebes and as councillors more frequently than the *thetes*, but the evidence we have speaks strongly against the assumption that *thetes* were excluded from the *ephebeia*.

The deme Halai Aixonides illustrates the reverse phenomenon. In order to provide 6 councillors every year, the deme must have had an average annual increment of 7-8 citizens coming of age and being inscribed as citizens. But the three years attested give a total of 35, and if we assume that it took a few years for the *ephebeia* to become an established institution, the sources indicate an average increase of more than 10 ephebes per year. Given that the ephebes constituted only a part of the young citizens inscribed in the deme (cf. the discussion of Xypete *supra*) the inference is that Halai must have been underrepresented in the council of five hundred, and this assumption is corroborated by the reform of 307/6 when Halai was one of the six demes to have no less than 4 seats added to its quota.¹⁶

A comparison between Halai and Xypete shows that, in the 330s, the bouletic quotas did no longer match the distribution of citizens over the demes. All demes were (still) big enough to fill their quota (apart from a few very small demes)¹⁷ but some demes had many more citizens than required to fill the quota. Thus we can safely disregard all calculations which attempt to estimate the number of citizens required to run the *boule*, but pay no attention to the fact that some demes were "overpopulated" in the sense that they had more citizens than necessary to fill the quota.¹⁸ But this fact, now corroborated by the ephebic lists, is one of the necessary conditions for the reform of 307/6 whereby the council of five hundred was changed into a council of six hundred.

¹⁶ Cf. Traill (*supra* n. 6) 59.

¹⁷ Cf. Traill (*supra* n. 6) 58.

¹⁸ E.g. R. Osborne, *Demos: The Discovery of Classical Attika* (Cambridge 1985) 43-44; E. Ruschenbusch, 'Die soziale Zusammensetzung des Rates der 500 in Athen im 4. JH'. *ZPE* 35 (1979) 177-80.

II. A Note on the Growing Tendency to Underestimate the Population of Classical Attica

A recent trend among British historians studying ancient Athens is to assert that agriculture was the basis of the economy even in classical Athens, that the typical Athenian citizen was the subsistence farmer, and that the Athenians' dependency on imported grain has been much overrated. The trend is exemplified by Peter Garnsey in his impressive article 'Grain for Athens' and, even more extremely, by Robin Osborne in his two pioneer monographs: *Demos* and *Classical Landscape with Figures*.¹

The new approach is based on two lines of argument which both question traditional views about ancient agriculture and ancient demography. On the one hand it is argued that historians have underrated the agricultural productivity of Attica but overrated a man's annual consumption of grain. Thus, Attica had the capacity to support a much larger population than previously believed. On the other hand it has become fashionable to accept much lower population figures (for citizens, metics and slaves alike) than most historians did one or two generations ago. The combined effect of these two factors leads to the view that in normal years the Athenians' demand for imported grain must have been less urgent than suggested in almost all descriptions of the Athenian economy. In Osborne's opinion, Attica had the capacity to support a population of around 150,000, and in the classical period it did have a total population of around 150,000 (*Landscape* 46). The inference is (*Landscape* 99) that Attica could have been farmed in such a way as to feed the whole population and that there may even have been a few years in the fourth century when Athens did not need imported grain.

The revised view of the nutritive value of ancient agricultural products seems well founded,² but the new assessments of ancient agricultural

1 P. Garnsey, Grain for Athens, 'Crux. Essays Presented to G. E. M. de Ste Croix on his 75th Birthday' (Exeter 1985) 62-75; R. Osborne, *Demos: The Discovery of Classical Attika* (Cambridge 1985); *Idem*, *Classical Landscape with Figures* (London 1987).

2 H. Forbes & L. Foxhall, 'Sitometreia: the Role of Grain as Stable Food in Classical Antiquity', *Chiron* 12 (1982) 41-92.

productivity are questionable.³ For the sake of argument, however, I will accept them in this article. Thus, I accept the more optimistic estimate of per capita consumption advanced by Forbes and Foxhall as well as e.g. Sandars' views about a higher cereal production per hectare even in the 2nd millennium B.C.⁴ What I shall object to in this study is the growing propensity to suggest impossibly low population figures whereby, in good years, the need for imported grain almost disappears and the subsistence farmer can be presented as the typical Athenian citizen. In this article I will focus on Osborne's two recent monographs and question his estimate of the population of classical Attica as stated in *Demos* 42-46 and in *Landscape* 46 where he offers the following figures: "the ancient literary texts give enough information to enable an estimate of citizen numbers in the fifth and fourth centuries to be made with some confidence: citizen families probably accounted for some 60,000-80,000 people. The population of resident foreigners fluctuated considerably, but probably never exceeded about 20,000. The difficult calculation is that of the number of slaves. Scholars have disagreed radically about slave numbers in Athens, estimating anything from 20,000 upwards. What is interesting in the context of the question of food supply is that on a conservative, but not unreasonable, estimate of 50,000 slaves, Attica will have had a total population of around 150,000."

Osborne, concerned with agricultural productivity and food supply, accordingly prefers population figures which comprise both sexes and all ages. But the information to which he refers reports the number of adult males only. Thus a discussion of his population figures must be opened with a discussion of the model population on which he has based his calculations.

Following Hopkins,⁵ Osborne (*Demos* 43) adopts a life expectancy of ca. 25 years (as I do in *D&D* 11-12).⁶ On growth rate, however, Osborne is elusive and his account muddled. When he offers his own calculations (*Demos* 45) he adopts a percentage which corresponds to growth rate 0 (33,000 males of whom 20-21,000 would be over 18, i.e. 61-64 % of all males). But in n. 91 Osborne criticizes Patterson⁷ (44-45) for not allowing an annual growth rate of more than 1 %, and he refers approvingly to Snodgrass who in his inaugural lecture⁸ suggested a growth rate of ca. 4 % in the archaic period. Now, adopting a life expectancy of ca. 25 years, adult males (18-80+) constitute ca. 61 % of all males if the population is stationary, ca. 54 % if the annual growth rate is 1 %, and ca. 33 % if it is 4 % per year.⁹ Thus, if we apply Snodgrass' model to 4th century

Athens, 33,000 males would correspond to no more than ca. 11,000 citizens. I much appreciate Snodgrass' views on population growth in the archaic period, but his quantifications are impossible. A natural population growth of 4% per year is more than for Mexico in the 20th century. By letter (of February 1986) Snodgrass has informed me that he accepts the views on population growth advanced in *D&D* (i.e. max. ca. 1% and 0.5% for rough calculations). Thus 4% is out of the question, and even 2% is far too rapid a growth, as Osborne seems to admit¹⁰ in *JHS* by concurring with my criticism of Ruschenbusch, *D&D* 12-13. In conclusion, Osborne and I agree on life expectancy (ca. 25 years) and we also agree on population growth, if we adopt Osborne's own calculations and disregard his n. 91. Osborne's calculations are in fact slightly more pessimistic than mine (growth rate 0 rather than 0.5%) but this difference is insignificant, since we can make only very rough estimates. In the following I will use the model population presented in *D&D* 11-12, namely: Coale and Demeny, Model West, mortality level 4, growth rate 0.5%.

After this introduction on which model population to use for calculations of ancient Greek populations I turn to a discussion of Osborne's figures: 60,000-80,000 Athenians, max. 20,000 metics and ca. 50,000 slaves.

First the citizens. Ca. 60,000-80,000 Athenians (of both sexes) correspond to ca. 30,000-40,000 males, of whom ca. 17,250-23,000 will have been adult citizens aged 18-80+ (constituting 57.5% of all males). But in his review of *D&D* in *JHS* Osborne accepts that the sources relating to fourth-century Athens point to a total of ca. 30,000 adult male citizens

- 3 J. E. Skydsgaard, 'Transhumance in Ancient Greece', PCPhS Suppl. 1988. Idem, 'L'agricoltura greca et romana: tradizioni a confronto', *Analecta Romana Instituti Danici* 16 (1988) 7-24.
- 4 G. Sandars, 'Reassessing Ancient Populations', *BSA* 79 (1984) 251-62.
- 5 M. K. Hopkins, 'The Probable Age Structure of the Roman Population', *Population Studies* 20 (1966) 245-64.
- 6 M. H. Hansen, *Demography & Democracy. The Number of Athenian Citizens in the Fourth Century B.C.* (Herning 1985). = *D&D*
- 7 C. Patterson, *Pericles' Citizenship Law of 451-50 B.C.* (New York 1981) 44-45.
- 8 A. M. Snodgrass, 'Archaeology and the Rise of the Greek State', Inaugural Lecture. (Cambridge 1977) 13.
- 9 A. J. Coale & P. Demeny, *Regional Model Life Tables and Stable Populations* (Princeton 1966) 128.
- 10 R. Osborne, Review of M. H. Hansen: *Demography and Democracy* in *JHS* 107 (1987) 233.

living in Attica, and for the Periclean period all calculations (based on Thuc. 2.13.6-8) point to a minimum of ca. 40,000 citizens and may allow a maximum of 60,000 or even more; cf. my third study page 26. Now, 30,000-40,000 adult male citizens correspond to some 52,000-69,000 male Athenians of all ages and to a total population, not of 60,000-80,000, but of at least 100,000-140,000 Athenians.

Next the metics. By contrast with the almost stationary citizen population metic numbers must have fluctuated considerably according to the economic situation (cf. Garnsey 79 with note 26). Peace and prosperity may have caused the number of Athenian metics to grow rapidly in a few years and, conversely, in a protracted economic crisis their numbers may have dwindled again in less than a decade (cf. e.g. Xen. *Vect.* 2.1-7). On the other hand, there can be no doubt that a *maximum* of ca. 20,000 is far too pessimistic an estimate. When Demetrios of Phaleron conducted his population census in a year around 315 he counted 21,000 Athenians and 10,000 metics living in Attica (*Ath. Deipn.* 272C). If both figures comprise adult males only (as they probably do cf. *D&D* 31-34) and if we use the same method of calculation for metics as for citizens, there must have been some 35,000 metics living in Attica when Demetrios conducted his census, *viz.*, $10,000 \div 57.5 \times 100 = \text{ca. } 17,500$ males of all ages $\times 2 = \text{ca. } 35,000$ metics of both sexes and all ages). But, following Whitehead,¹¹ one might object that women and children constituted a much smaller fraction of metics than of citizens, since many metics may have stayed in Attica for a few years only and without their family. Thus, a total of, say, 20,000-25,000 is much likelier than my total of ca. 35,000. I have two answers to Whitehead's objections: first, Demetrios ascertained only the number of metics *living in Attica* (*D&D* 31-32), i.e. short-term metics (most of whom were males) are not included in the 10,000 actually counted. Second, the tombstones set over metics (recording ethnics instead of demotics) show a higher proportion of women than the tombstones commemorating citizens. The ratio is 2/5 metic women as against 1/3 female citizens. The resident metics seem to have had families just like the Athenians, and ca. 35,000 in a year around 315 is not an inflated figure but rather a minimum. First, short-term metics must be added to the 10,000 (adult male) metics settled in Attica, and second the figure 10,000 probably included only metics of military age and fit for military service. Thus, adult male metics must have numbered, not 10,000, but rather some 12-14,000.

Demetrios' population census, however, may have been conducted in a

period when Attica was crammed with metics; we do not know. The only source of information we have about the *average* number of metics in fourth-century Athens is the tombstones mentioned above. They are an important but neglected source of information for Attic demography. The preserved private funerary monuments dated to the fourth century B.C. record the names of some 1,800 citizens as against some 650 metics.¹² *A priori* one would assume that citizens put up funerary monuments more frequently than metics. Furthermore, the tombstones give evidence only of metics who resided and were buried in Attica. In order to find the total number of metics we must add an unknown number of short-term metics. Thus, the epigraphical evidence indicates that the regular ratio between citizens and metics was at least 3:1, and accordingly some 100,000-140,000 Athenians correspond to a population of some 33,000-46,000 resident metics. Summing up, both the population census conducted ca. 315 and the tombstones point to a much higher number of metics than the max. 20,000 estimated by Osborne.

Third the slaves. In the ancient Greek city states slaves were never counted since they were neither taxable nor liable to military service. The Athenians themselves did not know the number of slaves in Attica and we shall never come to know the number either, no matter how many and how valuable sources we may still recover. On the other hand, the Greeks never refrained from producing rough estimates of the number of slaves. We hear about 460,000 slaves in Corinth (Timaios, *FGrHist* 566 fr. 5), 470,000 slaves in Aigina (Arist. fr. 472, Rose) and 400,000 slaves in Attica (Ktesikles, *FGrHist* 245 fr. 1) a figure which matches Hypereides' estimate of 150,000 (adult male) slaves (Hyp. fr. 33, Sauppe). Several of these estimates come from good sources but cannot, of course, be trusted. For example, for Aigina to have 470,000 slaves, it must have had a population density of about 5,500 per square kilometre of slaves alone!

So the numbers 400,000 slaves and 150,000 adult male slaves in Attica are pure guesswork. They tell us nothing about how many slaves there actually were in Attica but only how many there were presumed to have been. Have these estimates then any value at all? This question is best

¹¹ D. Whitehead, *The Ideology of the Athenian Metic* (Cambridge 1977) 97-98 with note 185.

¹² At Copenhagen University, Institute of Classics a group consisting of Lars Bjertrup, Mogens Herman Hansen, Thomas Heine Nielsen, Lene Rubinstein and Torben Vestergaard has built up a data base of all Athenians recorded on private funerary monuments ca. 400 B.C.-ca. 300 A.D.

answered by a comparison with a still more fantastic figure from the history of Greece, *viz.*, Herodotos' report that the Persian army was 1,700,000 strong. This is an impossible figure, but there is no reason to doubt that Herodotos and many of his audience believed it. The inference is that the Greeks in general and Herodotos in particular did not know the size of the Persian army; nor did they have a very secure grasp of numerical magnitudes. On the other hand, all historians agree that one may assume from Herodotos' figure that Xerxes' army was larger than that of the Greeks. The figures 400,000 and 150,000 are equally impossible but reveal the Athenians' own estimate that there were more slaves than free men, and there is no reason to doubt this impression. We shall never know the number of slaves in Attica, but we may conclude that if the number of free is set at X , then the number of slaves must be $> X$.¹³ We must, however, allow for an important modification of this very rough general assumption: like the number of metics, the number of slaves must have fluctuated considerably. Many Athenian slaves were bought and not bred. In a protracted crisis like the famine during the 320s, when, for example, a mining slave barely produced the amount of silver he cost his master (cf. Dem. 42.20-21, Isager & Hansen 200), slaves were undoubtedly not replaced and perhaps even allowed to run away (cf. Thuc. 7.27.5). Given the short life expectancy in the ancient world, the non-replacement of slaves will, in less than a decade, have had an enormous effect on the total number of slaves living in Attica (cf. Xen. *Vect.* 4.25). Summing up, for the sake of argument and to be on the safe side, I will assume that if the number of free is set at X , the number of slaves must be at least $\frac{1}{2}X$. As argued above, the total free population numbered some 133,000-186,000. Accordingly there must have been at least some 66,000-93,000 slaves in Attica, during a protracted crisis perhaps less than 66,000 and in a prosperous period probably more than 93,000.

Adding up citizens, metics and slaves, I conclude that in the fourth century the number of persons living in Attica must have amounted to at least some 200,000 and more probably 250,000, whereas in the Periclean period the population of Attica must have totalled 300,000 or more.

These much higher population figures show that self-sufficiency was impossible even in good years, and instead of Osborne's rather extreme position I prefer the more cautious view stated by Garnsey:¹⁴ "My own (very tentative) calculations suggest that Athens in the fourth century had to find grain for perhaps one-half of its resident population from

outside Attica, narrowly defined, in a normal year.” If about one-half of the population in a normal year, and a much higher proportion in a bad year had to buy their daily provisions in the market, it does not make sense to speak about a subsistence economy. Instead of a territory which in good years was almost self-sufficient, we must imagine an Attica which in all years depended heavily on the import of grain and in bad years very much so. And the typical Athenian citizen was not the subsistence farmer who tended to stay in his deme of origin, but was rather like Chremes whom Aristophanes describes as a citizen who attends the meetings of the *ekklesia* and, on other occasions, carries his wine to the market in order to buy flour (Ar. *Eccl.* 376ff, 815-22). I do not quarrel with “the new orthodoxy which stresses the cellular self-sufficiency of the ancient economy”,¹⁵ but Osborne seems to forget that classical Athens was the exception and not the rule (*ibidem*). His account of classical Attica is stimulating and often convincing, but there are some serious distortions in his *Classical Landscape with Figures*. One of them is that there are too few figures in the landscape.

13 S. Isager & M. H. Hansen, *Aspects of Athenian Society* (Odense 1975) 14-16.

14 Cf. Garnsey (*supra* n. 1) 74.

15 Cf. *Trade in the Ancient Economy* ed. P. Garnsey, K. Hopkins and C. R. Whittaker (Cambridge 1983) xi.

III. Athenian Population Losses 431-403 B.C. and the Number of Athenian Citizens in 431 B.C

Historians who estimate the number of Athenian citizens in 431 base their calculations on Thoukydides' information about Athenian manpower at the outbreak of the Peloponnesian war (2.13.6-8) supplemented with the army strengths reported by him for e.g. the Megara campaign in 431 (2.31.2) and the battle of Delion in 424 (4.93.4-94.1). Very little attention, on the other hand, is paid to all the information we have about Athenian losses during the Peloponnesian war.¹ Even Gomme, who devoted several studies to Thuc. 2.13.6-8, never gave a comprehensive account of the population losses which Athens suffered in the period 431-403.² Nevertheless, anyone who reads the eight books of Thoukydides and the first two books of Xenophon's *Hellenika* is astonished when on every second or third page he learns about Athenian casualties, some of them not too severe, but others almost catastrophic; and I suspect that many readers have asked themselves the question I will discuss in this study: are the rather low population figures accepted by most historians compatible with the losses sustained by the Athenians during the Peloponnesian war? In order to answer this question I will first attempt to estimate the number of Athenians who succumbed to the plague, or were killed in action, or died in the Sicilian quarries, or were starved to death during the final siege of Athens.

1. According to Thuc. 3.87.3 plague mortality totalled no less than 4,400 hoplites, 300 knights and an unknown number of other Athenians. Thoukydides states explicitly that by hoplites he means front-line troops (ἐκ τῶν τάξεων) and not citizens "of hoplite status".³ Thus mortality amounted to 4,700 out of 14,000 (13,000 hoplites + 1,000 knights cf. Thuc. 2.13.6-8), i.e. about a third of all. There is no reason to suppose that the plague affected hoplites and knights more severely than other social groups. Accordingly, if we accept Gomme's total of ca. 47,000 adult male Athenian citizens in 431, the plague which descended upon Athens in 430/29, 429/8 and 427/6 must have caused the death of some 15,000 adult male Athenians.

2. The other major disaster which struck Athens in the Peloponnesian

war was the annihilation of the forces sent to Sicily in 415-413. The losses cannot be ascertained with any exactitude, and all I can present here is a rough calculation of what I take to be a minimum. First the army. The original Athenian contingent consisted of 1,500 hoplites and 700 *thetes* (Thuc. 6.43.1). Later reinforcements included first 250 *hippeis* and 30 *hippotoxotai* (6.94.4); later again 1,200 more hoplites (7.20.2). Very few escaped the disaster (7.87.6) and the total loss must have been some 3,000 Athenians. It is much more difficult to assess the number of Athenians serving in the fleet. Of the first fleet, 100 triremes were Athenian (6.43.1). Later on the Athenians sent a squadron of 10 Athenian triremes commanded by Eurymedon (7.16.2) and a squadron of 60 Athenian triremes under Demosthenes' command (7.20.2). But of the 60 ships 10 triremes under Konon were sent to Naupaktos (7.31.5). Thus of the 73 triremes which arrived in Syracuse (7.42.1), 51 were Athenian, i.e. 50 sent with Demosthenes and one commanded by Eurymedon who had joined Demosthenes with one of his 10 triremes. Consequently the Athenian fleet lost in Sicily totalled 160 triremes (= 100+9+51). I exclude the allied contingent which is of no consequence for my investigation. The crew of a trireme was composed of 200 men, but the ships were often undermanned.⁴ On the other hand, it is apparent from Thoukydides'

- 1 This article is a continuation of my three previous studies in Athenian demography: 'The number of Athenian Hoplites in 431 B.C.', *SymbOslo* 56 (1981) 19-32; 'Demographic Reflections on the Number of Athenian Citizens 451-309 B.C.', *AJAH* 7 (1982) 172-89; *Demography and Democracy* (Herning 1985). The only serious attempt to add up all the Athenian casualties during the Peloponnesian war is Barry Strauss' seminal study: *Athens after the Peloponnesian War* (New York 1986) 179-82; but his account does not include all the evidence we have and his total (5,500 hoplite and 12,500 thetic casualties) is, in my opinion, somewhat too low, cf. *infra*.
- 2 A. W. Gomme, 'The Athenian Hoplite Force in 431 B.C.', *CQ* 21 (1927) 142-50; *The Population of Athens in the Fifth and Fourth Centuries B.C.* (Oxford 1933); *A Historical Commentary on Thucydides* II (Oxford 1956) 33-39; 'The Population of Athens Again', *JHS* 79 (1959) 61-68.
- 3 Cf. Gomme (*supra* n. 2) (1927) 149; (1933) 6; (1956) 388; (1959) 63-64. According to A. H. M. Jones, *Athenian Democracy* (Oxford 1957) 165-66 the reference is to all hoplites of military age. Strauss (*supra* n. 1) 75-76 discusses the meaning of *taxis* and, in my opinion correctly, he sides with Gomme against Jones.
- 4 M. Amit, *Athens and the Sea. A Study in Athenian Sea-Power* (Brussels 1965) 39-49; J. S. Morrison, 'Hyperesia in Naval Contexts in the Fifth and Fourth Centuries B.C.', *JHS* 104 (1984) 48-59; Hansen (*supra* n. 1) (1985) 22-24. On the crews of transport vessels and the often undermanned squadrons cf. the important article by H. T. Walling, 'The Trireme and its Crew', *Studies ... H. L. W. Nelson* (Utrecht 1982) 463-82.

account that this fleet was the best manned and best equipped ever launched (6.31.1) and that Athenian citizens must have constituted a substantial part of the crews (e.g. 6.24.3; 31.3; 7.61.1, 3; 64.1; 8.1.2. etc.). Of the first 100 triremes, however, 40 were transport vessels (6.43.1) and so were some of the 60 triremes sent under Demosthenes (7.20.2). A transport vessel probably had a crew of some 60-80 men only (cf. *IG II²* 1628.154-61). On the cautious assumption that, on average only 50 men of a ship's crew were Athenians, the total number of Athenians serving in the fleet must have been ca. 8,000; and almost all were killed. Thus estimating the total number of citizens lost in the Sicilian campaign, I suggest that 10,000 is an absolute minimum.

3. Apart from the Sicilian disaster, the Athenians sustained several other severe losses during the nineteen years of war from 431 to 421 and again from 413 to 404. The first major defeat inflicted upon the Athenians was at Spartolos in 429/8. Thoukydides estimates the losses at 430 citizens (2.79.7). At Delion in 424 the Athenians lost almost 1,000 citizens (Thuc. 4.101.2) and adding those killed at Sikyon (4.101.4) we can safely assume that casualties totalled more than 1,000 Athenians. The engagement outside Amphipolis in 422 cost the Athenians 600 citizens (Thuc. 5.11.2). The Sicilian disaster has been discussed above and I turn to some of the more severe casualties in the Decelean war. In 411/0 the Athenians lost 22 triremes off Eretria; of the men some were killed and some taken prisoners (Thuc. 8.95.7). A loss of 500 citizens is, in my opinion, a cautious guess. Next year (410/09) 100 hoplites and 300 other Athenians were killed near Ephesos (Xen. *Hell.* 1.2.9). In 406 the Athenians won the sea-battle of Arginoussai but suffered heavily. Because of the storm 25 triremes were lost with all hands (Xen. *Hell.* 1.6.34). To man the fleet the Athenians had mobilized both slaves and free, both foreigners and citizens; even some of the knights had been drafted (1.6.24). The number of citizens serving in the fleet must have been considerable (cf. 1.7.8), and the loss of 1,000 citizens is, in my opinion, too low rather than too high an estimate. A year later the Athenians suffered the crushing defeat at Aigospotamoi. They were taken by surprise and losses due to fighting may have been slight, but after the battle Lysandros executed all the Athenians he had captured. According to Plutarch, no less than 3,000 citizens were killed (*Lys.* 13.1; *Alk.* 37.4); according to Pausanias (9.32.9) the total was 4,000. To sum up: in addition to the 10,000 citizens lost in Sicily, the casualties in major engagements must have totalled at least 7,000 citizens.

4. Casualties in major battles, however, do not exhaust the Athenian losses. First, there were innumerable other battles, skirmishes and raids. Occasionally the losses are indicated by our source. Thus 120 Athenian hoplites were killed in a battle in Aitolia in 426 (Thuc. 3.98.4). In the following year 50 Athenians were killed at Solygeia (Thuc. 4.44.6). At Mantinea in 418 Athenian losses were light, i.e. no more than 200 citizens (Thuc. 5.74.3).

Second, most of the major battles listed above were Athenian defeats. When the Athenians won, losses were usually much slighter,⁵ but some citizens must have lost their lives in the numerous successful campaigns, e.g. the siege of Poteidaia 432-29, the subjugation of Mytilene in 428/7, the Pylos campaign in 425, the attack on Megara in 424, the reconquest of Torone in 422 and of Skione in 421, etc.

Third, in descriptions of sea-battles the historians tend to record only the number of ships lost; only occasionally are we told that the men escaped or were drowned or captured or killed. In most cases we have no guide-lines on the number of men lost in a sea-battle. In several cases we do not even have any information about the number of ships lost. The battle of Arginoussai is exceptional in that we know that 25 triremes were lost with all hands. A further complication is that we never know whether Athenian citizens constituted a quarter or a half or an even larger proportion of the crew of a trireme. Let me illustrate the problems by listing the naval engagements in 412-410 reported in Thuc. 8 and in Xen *Hell.* 1.1. (a) In a surprise attack from Speiraion a Peloponnesian squadron captured four Athenian triremes (Thuc. 8.20.1). (b) Three triremes were lost off Chios. Of the men some were taken prisoner, some were killed and some escaped (8.34.1). (c) The Athenians lost six triremes in a battle near Syme (8.42.4). (d) An Athenian squadron of 32 ships was defeated by the Chians (8.61.3). (e) In a battle near Eretria the Peloponnesians captured twenty-two Athenian triremes and either killed or made prisoners of the crew (8.95.7). (f) The battle of Kynossema was an Athenian victory, yet the Athenians lost fifteen ships (8.106.3). (g) In the Hellespont the first naval battle was a Peloponnesian victory (Xen. *Hell.* 1.1.1). (h) Shortly afterwards, however, the Athenians won a major victory off Abydos (1.1.7). (i) In the subsequent battle near Kyzikos the Athenians annihilated the remaining Peloponnesian fleet (1.1.18). In my list above,

5 P. Krentz, 'Casualties in Hoplite Battles', *GRBS* 26 (1985) 13-20.

I have included only the 22 triremes lost at Eretria. All the other losses are passed over in silence.

Fourth, there must have been many other battles or campaigns not even mentioned by the sources we have. The best illustration of Athenian losses that have not left any mark in the literary sources is a preserved casualty list, which probably records Athenians killed in battle in 409 (*Agora XVII 23*). As reconstructed by Bradeen, the funerary monument must have contained between 900 and 1,400 names. But the only Athenian casualties in 409 reported by Xenophon are the 400 men lost at Ephesos (*Xen. Hell.* 1.2.9 cf. *supra*). Thus in 409 some 500-900 men must have been killed in other battles of which we have no information at all. The discrepancy between actual casualties and casualties known to us cannot have been of the same magnitude in all years. But if we list all the battles, skirmishes, sieges and raids which the historians report without mentioning the number of men killed, and if we keep in mind that many other military operations are passed over in silence, we must assume that, apart from the min. 7,000 Athenians killed in major battles, the number of Athenians killed in action every year must have totalled several hundred. The Archidamian war lasted ten years, and the Decelean war nine more years. To be on the safe side, I will assume a loss of only 200 Athenians per year (but 500 in 410/09, cf. the casualty list discussed above) i.e. a total of some 4,000 citizens during the entire war.

5. Aigospotamoi was the last battle in the Peloponnesian war. But further losses were inflicted upon the Athenians in the two following years. In the winter of 405-404 Athens was besieged by Lysandros and starved into surrender. According to the description given by Xenophon (*Hell.* 2.2.11, 21; 2.3.41), Diodoros (13.107.4) and Justinus (5.8.1-3) citizens must have died by the thousand and most Athenians would have died if the siege had lasted much longer. No figure is stated in any source, but some 3,000 adult males is probably a cautious guess. Furthermore, 1,500 Athenians were killed by the Thirty during the eight months they ruled Athens (*Arist. Ath. Pol.* 35.4; *Isoc.* 20.11; 7.67; *Aeschin.* 3.235). Many of these may have been Eleusinians (*Xen. Hell.* 2.4.8). Finally, in the battle between the Spartans under Pausanias and the democrats under Thrasyboulos first 30 and then 150 democrats were killed (*Xen. Hell.* 2.4.34). To sum up, after the defeat at Aigospotamoi and until democracy was restored in the autumn of 403, some 5,000 more Athenians were starved to death, executed by the oligarchs or killed in the civil war.

6. The number of Athenian citizens was reduced not only by war, plague and famine, but also by emigration. During the Peloponnesian war the Athenians sent out a considerable number of citizens either as klerouchs or as colonists.⁶ The best attested klerouchy is Mytilene which, after its surrender in 428/7, was settled with 2,700 Athenians (Thuc. 3.50.2). But klerouchs retained their Athenian citizenship. Some of the Lesbian klerouchs may even have stayed in Athens as absentee landlords, and in any case, the Mytilenaia probably got their territory back a few years later (Tod 63). To be on the safe side, I will disregard Lesbos and assume that, eventually, the Mytilenaian klerouchs did not in the long run diminish the total number of Athenian citizens living in Attica. The Athenian colonists (*epoikoi*), on the other hand, were probably emigrants who left Attica for good and lost their citizen rights. An unknown number of colonists were sent to Aigina in 431/0 (Thuc. 2.27.1; 8.69.3). When Poteidaia was conquered in 430/29 the city with its territory was handed over to 1,000 colonists (*IG* I²397; Thuc. 2.70.4; Diod. 12.46.7); and the *andrapodismos* of Melos in 416/5 was followed by the sending out of 500 Athenian settlers (Thuc. 5.116.4). Judging from the 1,000 colonists to Poteidaia and the 500 to Melos I assume that 500 colonists sent to Aigina in 431/0 is a very cautious estimate. In the same period the Athenians probably founded other colonies as well,⁷ but we have no information. Thus, during the Peloponnesian war, 2,000 colonists sent out from Athens with their families must be the minimum loss of population due to emigration.

7. All the losses enumerated above add up to no less than 43,000 Athenian citizens. But these losses were sustained over a period of twenty-eight years. Thus they were balanced by the number of young Athenians who in the period 431-404 were inscribed in the demes. But from this number we must subtract the "normal" mortality caused by factors other than plague, warfare and emigration. Population changes during the Peloponnesian war must be calculated by the year, and I suggest the following method. For the sake of argument, I use Gomme's figure as my starting point, i.e. 47,000 adult male citizens in 431.⁸ If life expectancy at

⁶ Jones (*supra* n. 3) 167-77.

⁷ Ph. Gauthier, 'A propos des clérouquies athéniennes du V^e siècle', *Problèmes de la terre en Grèce ancienne* ed. M. I. Finley (Paris 1973) 163-78. Gauthier shows that colonists apparently were more important than believed by most historians, who tend to concentrate on klerouchies.

⁸ Gomme (1933) 26 estimates a total of 43,000 citizens aged 18-59, to which figure we

birth was ca. 25 years, and if the natural population growth was ca. 0.5-1 % per year,⁹ males aged eighteen must have constituted some 3.3 % of all adult males. Thus, the number of new citizens inscribed in 431/0 must have totalled ca. 1,550. But in the years 430/29, 429/8 and 427/6 the severe plague mortality must have affected boys as well as men, thus diminishing the eighteen following year-classes to be inscribed as citizens. Furthermore, many females of marriageable age must have died from the plague, thus diminishing the number of births and, consequently, the number of young citizens to be inscribed from 412/1 onwards. On the other hand, the severe losses in Sicily in 413 and the casualties during the Decelean war will not have had any effect on the number of young Athenians to be inscribed as citizens in the years 413-403. The demographic repercussions of the defeats which Athens suffered in the years 413-403 will not have left their mark on the number of citizens coming of age until the decade 395-385.

Summing up. The three major disasters were the plague (430-26), the defeat in Sicily (413) and the defeat of Aigospotamoi followed by the siege of Athens (405-404). For the period down to the Sicilian disaster I have calculated the eighteen-year-olds year by year and rated a year class at 3.3 % of all adult male Athenians alive in the preceding year. For the period 412-403 on the other hand, I have taken a year class to be 3.3 % of the year class of 413/2. This is undoubtedly too optimistic for the year 404/3 since the famine will have affected boys as well as men and reduced the number of Athenians coming of age in this and the following years. As to mortality, I have assumed that, in any year, 2.5 % of all adult males died "a normal death" i.e. their death was caused by anything but war and plague. Thus, the annual growth rate is estimated at $3.3 - 2.5 = 0.8$ %, which is optimistic, but not impossible. It is worth remembering what Thoukydides writes about Athens in 415: "the city had just recovered from the plague and the years of continuous war, and a great many of the young had grown to manhood" (6.26.2). In the three years of plague, a "normal mortality" of 2.5 % per year is probably too pessimistic since, according to Thoukydides, "during all this time there was no serious outbreak of any of the usual kinds of illness" (2.51.1). A mortality in this short period of 1.5-2.0 %, however, would not affect my calculations significantly.

After this discussion of the various factors involved, the calculation of must add an estimate of the number of citizens above 60, probably some 9-10 % of the citizens aged 18-59, i.e. at least 4,000 citizens, cf. the following note.

the Athenian citizen population during the Peloponnesian war is as follows. First (a) I record mortality due to major disasters and defeats reported in our sources;¹⁰ next (b) an average number of casualties suffered in unknown campaigns and in battles for which our sources do not report the losses. In most years the number is set at 200; in 410/9, however, I estimate these losses at 500 on the basis of the preserved fragments of the year's casualty list. Third (c) I give the number of Athenians sent out as colonists, and finally (d) I estimate the mortality due to other reasons than war and plague at 2.5 % of all citizens alive in the preceding year. The total mortality ($E = a+b+c+d$) is then counter-balanced by the number of Athenians coming of age (F) and the resulting total number of citizens is recorded in (G). The starting point is, as stated

9 The model population I use here and elsewhere is: A.J. Coale and P. Demeny, *Regional Model Life Tables and Stable Populations* (Princeton 1966), Model West mortality level 4 (life expectancy at birth: 25.26 years) and growth rate 5.00 (an annual increase of $\frac{1}{2}\%$), cf. Hansen (*supra* n. 1) (1985) 9-13. In this model the age distribution of adult males is as follows:

Age	% of all males	% of all males 18-80+
18-19	3.85	6.7
18-59	52.47	91.3
18-80+	57.47	100.0
19	1.92	3.3
20-39	31.44	54.7
20-44	37.05	64.5
20-49	41.77	72.7
20-59	48.62	84.6
30	1.57	2.7
40	1.21	2.1
40-49	10.33	18.0
50	0.86	1.5
50-59	6.85	11.9
59	0.52	0.9
60-80+	5.00	8.7

Let me add that I might equally well have used, for example, mortality level 3 or growth rate 0, or more cautiously, I might have calculated the age distributions for mortality levels 2, 3, 4 and 5 at growth rates 0, 5.00 and 10.00, model west and model south. But for the present purpose it makes little difference, so I restrict myself to tabulating the age distribution for mortality level 4, growth rate 5.00, model west.

10 The plague mortality is estimated at $\frac{1}{3}$ of 47,000 = 15,666 and this loss has been distributed evenly over the three years of plague. Thus I print 5,200 in each of the years 430/29, 429/8 and 427/6.

above, the 47,000 adult male citizens calculated by Gomme on the basis of Thuc. 2.13.6-8.

Year	(a)	(b)	(c)	(d)	(E)	(F)	(G)
431/0		200	500	1,175	-1,875	+1,550	46,675
430/9	5,200 plague	200	1,000	1,165	-7,565	+1,540	40,650
429/8	5,200 plague; 430 Spartolos	200		1,015	-6,845	+1,340	35,145
428/7		200		880	-1,080	+1,160	35,225
427/6	5,200 plague	200		880	-6,280	+1,160	30,105
426/5		200		755	-955	+995	30,145
425/4		200		755	-955	+995	30,185
424/3	1,000 Delion	200		755	-1,955	+995	29,225
423/2		200		730	-930	+965	29,260
422/1	600 Amphipolis	200		730	-1,530	+965	28,695
421/0				720	-720	+945	28,920
420/9				725	-725	+955	29,150
419/8				730	-730	+960	29,380
418/7	200 Mantinea			735	-935	+970	29,415
417/6				735	-735	+970	29,650
416/5			500	740	-1,240	+980	29,390
415/4				735	-735	+970	29,625
414/3				740	-740	+980	29,865
413/2	10,000 Sicily	200		745	-10,945	+985	19,905
412/1		200		500	-700	+985	20,190
411/0	500 Eretria	200		505	-1,205	+985	19,970
410/9	400 Ephesos, elsewhere	500		500	-1,400	+985	19,555
409/8		200		490	-690	+985	19,850
408/7		200		495	-695	+985	20,140
407/6		200		505	-705	+985	20,420
406/5	1,000 Arginoussai	200		510	-1,710	+985	19,695
405/4	3,000 Aigospotamoi; 3,000 siege	200		490	-6,690	+985	13,990
404/3	1,500 executed; 180 killed	200		350	-2,230	+985	12,745

To these 12-13,000 Athenians, however, we must add all the klerouchs and other Athenians who lived abroad but, after Aigospotamoi, were forced by Lykourgos to return to Attica so that Athens, during the subsequent siege, was crammed with people (Plut. *Lys.* 13.3; Xen. *Mem.* 2.8.1; cf. e.g. *IG* II²7180). We have no information about their numbers but they may well have totalled several thousand. Thus, accepting Gomme's 47,000 adult male citizens in 431 and subtracting all the losses sustained during the Peloponnesian war we are left with some 15,000 citizens in 403, and this figure is probably too high rather than too low. By contrast, Gomme suggests, as a rough estimate only, that there were some 24,000

Athenians around 400 B.C.¹¹ The discrepancy between Gomme's estimate and the calculation made above arises because Gomme used 19th-century population figures as his models and also because he did not face the demographic consequences of adding up all losses suffered by the Athenians in the period 431-403. Thus, my first conclusion is a dilemma: if we accept Gomme's figure of 47,000 citizens in 431 we must reject his estimate for 403 as much inflated. But if we accept his estimate for ca. 400, we must assume a considerably higher number of citizens in 431, *viz.* some 60,000 adult male citizens of whom ca. 55,000 will have been of military age (18-59 years).

What is the authority for Gomme's 47,000 citizens in 431? As is well known, his estimate is based on Perikles' survey, in Thuc. 2.13.6-8, of the army strength of Athens at the outbreak of the Peloponnesian war: ὀπλίτας δὲ τρισχιλίους καὶ μυρίους εἶναι ἄνευ τῶν ἐν τοῖς φρουραῖοις καὶ τῶν παρ' ἐπαλξιν ἑξακισχιλίων καὶ μυρίων. (7) τοσοῦτοι γὰρ ἐφύλασσον τὸ πρῶτον ὅποτε οἱ πολέμοι ἐσβάλοιεν, ἀπὸ τε τῶν πρεσβυτάτων καὶ τῶν νεωτάτων, καὶ μετοίκων ὅσοι ὀπλίται ἦσαν ... (8) ἰππέας δὲ ἀπέφαινε διακοσίους καὶ χιλίους ξὺν ἰπποτοξόταις, ἑξακοσίους δὲ καὶ χιλίους τοξότας, καὶ τριήρεις τὰς πλώιμους τριακοσίας. Gomme's interpretation of this passage is as follows: A field army consisting of 13,000 infantry, 1,000 cavalry and ca. 500 in the forts, i.e. a total of 14,500 Athenians of hoplite status and aged 20-49.¹² Next, a reserve of 16,000 men comprising the youngest (aged 18-19) and oldest (aged 50-59) of the citizen hoplites (= 10,500 plus the metic hoplites (=

11 Gomme (1933) 26 estimates 22,000 citizens aged 18-59, to which figure we must add some 2,000 citizens aged 60-80+, cf. *supra* notes 8 and 9.

12 It is a vexed question whether the field army did or did not include the year classes 40-49. Gomme (*supra* n. 2) contended that the field army consisted of hoplites aged 20-49, (1927) 142; (1933) 5-6; (1956) 34-37; (1959) 61. Jones (*supra* n. 3) 165 preferred to explain the 16,000 in the reserve by assuming that the oldest comprised the year classes 40-59, and not just 50-59. The debate has focused on Socrates who served at Delion in 424 when he was in his mid forties. Did he volunteer? Was he called up exceptionally? Or did men in their forties form a regular component of the Athenian hoplite army? First, it is worth remembering, as Gomme points out, that Socrates served again two years later at Amphipolis (Pl. *Apol.* 28 E). Second, the problem is, in my opinion, settled by Ar. *Ach.* 600-601 (never discussed in this context): ὄρων πολιοὺς μὲν ἄνδρας ἐν ταῖς τάξεσιν νεανίας δ' οἴους σὺ διαδεδρακότας. Grizzled men were regularly seen in the ranks, but men usually become grey-haired in their forties, not in their thirties. Similarly, Demosthenes was forty-six when he served as a hoplite in the battle of Chaironeia (Aeschin. 3.253; Plut. *Dem.* 20.2; *Mor.* 845F).

5,500).¹³ Apart from 200 *hippotoxotai* and 1,600 *toxotai* Thoukydides does not count the *thetes* (who rowed the 300 triremes), and Gomme, as a very rough guess, suggests a total of 18,000 *thetes*.¹⁴ Furthermore, Gomme takes the 16,000 in the home guard to be a population figure which included not only the youngest and oldest of hoplite status but also all citizens of hoplite status aged 20-49 but unfit for military service (the *adynatoi*, estimated at ca. 3,000).¹⁵ Similarly, we must assume that his 18,000 *thetes* is a population figure comprising all *thetes* aged 18-59. Now $14,500 + 10,500 + 18,000 = 43,000$ aged 18-59 and when we add some 4,000 aged 60 or more, the total is 47,000 adult male Athenian citizens.

Gomme's 43,000 Athenians of military age is one possible interpretation of Thuc. 2.13.6-8 but, as he admits, his calculations leave room for doubt and, more important, they are based on one wrong and two very weak assumptions. (1) According to Thoukydides the 16,000 in the home guard is not a population figure, but an army figure. Consequently, the total number of oldest, youngest and metic hoplites may be (e.g.) 20,000 or perhaps even 25,000. (2) There is no evidence that the oldest and the youngest comprise only citizens of *hoplite census*. The phrase ὄσοι ὀπλίται ἦσαν goes only with μετοίκων, and not with τῶν πρεσβυτάτων καὶ τῶν νεωπάτων. So the oldest and the youngest probably include the oldest and youngest of the *thetes*.¹⁶ (3) The number of *thetes* is unknown. Gomme estimates, rather arbitrarily, ca. 18,000. *A priori*, any estimate between, say, 10,000 and 40,000 is equally possible.

For the sake of argument, let us accept Gomme's ca. 10,000 Athenians in the home guard but assume, as a strict interpretation of Thuc. 2.13.7 requires, that they were composed of the youngest (aged 18-19) and the oldest (aged 50-59) fit for military service but recruited from all census classes including the *thetes*. In the model population described above (note 9) the year classes 18-19+50-59 constitute ca. $\frac{1}{3}$ of all males of military age (aged 18-59). Thus, 10,000 Athenians aged 18-19 and 50-59 correspond to ca. 50,000 Athenians aged 18-59. Again ca. 15,000 hoplites aged 20-49 in the field army correspond to ca. 18,000 hoplites of military age (18-59) and accordingly there will have been some 32,000 *thetes* to man the fleet, to serve as light armed troops in the field and to assist in defending the walls.

But in order to find the total number of Athenian citizens we must add to the army figures an estimated number of Athenians above military age and an estimated number of Athenians unfit for military service. The home guard will undoubtedly have included many who were unfit for

service in the field army or in the navy; nevertheless at least 10 % of all Athenians of military age must have been unfit for any kind of military service.¹⁷ Thus, the total number of Athenians aged 18-59 must, on this calculation, have been min. 55,000. Next, in the population model I have adopted, men over 60 constitute ca. $\frac{1}{12}$ of all adult males (18-80+), i.e. we must add ca. 5,000 to the ca. 55,000 aged 18-59. In conclusion, this sketchy calculation indicates that the number of male Athenian citizens living in Attica, including citizens unfit for military service and above military age, totalled some 60,000.

To sum up, calculations based on Thuc. 2.13.6-8 may give a total of ca. 47,000 Athenians (Gomme's figure) or ca. 40,000 (as suggested by other historians)¹⁸ or ca. 60,000 (as the above calculation indicates). 40,000 is probably a minimum, whereas 60,000 is not even a maximum. The only way of making a choice between 40,000, 47,000 and 60,000 is, in my opinion, to start with the fourth century figures and then to move backwards.

The most reliable sources we have for Athenian demography relate to the period ca. 350-322 and they point to an adult male citizen population of no less than 30,000 Athenians living in Attica.¹⁹ For the first half of the fourth century, we have no comparable information but are forced to rely on two general lines of argument. (1) Even in the first years of the restored democracy the institutions seem to have been run according to the rules, which requires a minimum of ca. 25,000 citizens. Ca. 15,000

13 The number of metic hoplites is another moot point. Thucydides tells us that the army sent against Megara in 431 included 3,000 metics (2.31.2). Gomme (1933) 5 assumes that there may have been some 2,500 other metics of hoplite census and military age. Thus, the metics in the home guard amount to some 5,500 men, and Gomme takes the remaining ca. 10,500 to be citizens of hoplite status. If, however, we apply the model population printed in note 9 and calculate the youngest (18-19) and the oldest (50-59) of the citizens on the basis of a field army numbering ca. 14,500 hoplites aged 20-49, the result is a much lower number of citizen hoplites in the reserve, viz. $14,500 \div 72.7 \times (6.7 + 11.9) = 3,710$. On this calculation the number of youngest and oldest in the reserve must be max. ca. 4,000 and the remaining ca. 12,000 must have been metic hoplites. This is the line of argument adopted by R. P. Duncan-Jones in his article 'Metic Numbers in Periclean Athens', *Chiron* 10 (1980) 101-09.

14 Gomme (*supra* n. 2) (1933) 26.

15 Gomme (*supra* n. 2) (1927) 144-46; (1933) 5; (1956) 35-36; (1959) 61-62.

16 For a full discussion of these two points cf. Hansen (*supra* n. 1) (1981) 19-24.

17 For a brief treatment of this neglected problem cf. Hansen (*supra* n. 1) (1985) 18-24.

18 Cf. e.g. C. Patterson, *Pericles' Citizenship Law of 451-50 B.C.* (New York 1981) 66-68.

19 Cf. Hansen (*supra* n. 1) (1985) 66-69.

adult male citizens is simply too few to fill the *ekklesia*, the *boule* and the *dikasteria*.²⁰ (2) Perikles' citizenship law of 451 was reenacted in 403/2 and thenceforth, as far as we know, rigorously enforced.²¹ In the 4th century the demographic effect of naturalization was negligible, and thus the factors affecting the number of citizens were mortality and emigration balanced by fertility (but not by immigration, since immigrants became metics and not citizens). Due to the slow natural growth of populations before ca. 1700 and due to the fact that emigration of citizens was not balanced by immigration, the number of Athenians living in Attica cannot have grown very much. It must have been almost stationary, and in some years perhaps even declining.²² When democracy was abolished in 322/1 the number of adult male citizens totalled some 30,000. The inference is that the number of citizens in ca. 400 must have been at least ca. 25,000 and possibly ca. 30,000, i.e. twice as many as the estimate of 15,000 given above as a consequence of accepting Gomme's 47,000 citizens in 431.

So we are back at the dilemma outlined above: either the information we have about Athenian population losses 431-403 is misleading or the starting point, 47,000 adult male citizens, is wrong. It is in my opinion hard to question the sources for the losses suffered during the Peloponnesian war. We may of course reduce the estimated plague mortality by holding that Thoukydides' phrase ἐκ τῶν τάξεων is wrong or misleading, or that the *thetes* who rowed the ships suffered less from the plague than the hoplites. We may also reduce the demographic effect of the Sicilian disaster by assuming that, although Athenian citizens regularly formed a considerable part of a ship's crew, they constituted only a small fraction of the men who rowed the ships sent to Sicily in 415-413. Also, the 1,500 Athenians killed by the Thirty may be an exaggerated figure. But I suspect that all attempts to question our sources are merely escapes, to avoid the conclusion that a total of 40-47,000 Athenians in 431 is incompatible with the losses attested by Thoukydides and Xenophon and with the fourth century population figures.

Instead of calculating the Athenian manpower in 431 and then discussing the losses in the light of this calculation I recommend the reverse method: (1) to assume that ca. 25,000 must be the minimum number of adult male Athenians living in Attica ca. 400 B.C.; (2) to accept the population losses reported by Thoukydides and Xenophon; (3) to find, for the year 432/1, the number of citizens that will fit a citizen population of min. 25,000 in 403. The consequence is an estimate of min. 60,000

adult male Athenians in 432/1, as is apparent from the following revised version of the table on page 22.

Year	(a)	(b)	(c)	(d)	(E)	(F)	(G)
431/0		200	500	1,500	-2,200	+1,980	59,780
430/9	6,600 plague	200	1,000	1,495	-9,295	+1,975	52,460
429/8	6,600 plague; 430 Spartolos	200		1,310	-8,540	+1,730	45,650
428/7		200		1,140	-1,340	+1,505	45,815
427/6	6,600 plague	200		1,145	-7,945	+1,510	39,380
426/5		200		985	-1,185	+1,300	39,495
425/4		200		990	-1,190	+1,305	39,610
424/3	1,000 Delion	200		990	-2,190	+1,305	38,725
423/2		200		970	-1,170	+1,280	38,835
422/1	600 Amphipolis	200		970	-1,770	+1,280	38,345
421/0				960	-960	+1,265	38,650
420/9				965	-965	+1,275	38,960
419/8				975	-975	+1,285	39,270
418/7	200 Mantinea			980	-1,180	+1,295	39,385
417/6				985	-985	+1,300	39,700
416/5			500	995	-1,495	+1,310	39,515
415/4				990	-990	+1,305	39,830
414/3				995	-995	+1,315	40,150
413/2	10,000 Sicily	200		1,005	-11,205	+1,325	30,270
412/1		200		755	-955	+1,325	30,640
411/0	500 Eretria	200		765	-1,465	+1,325	30,500
410/9	400 Ephesos, elsewhere	500		765	-1,665	+1,325	30,160
409/8		200		755	-955	+1,325	30,530
408/7		200		765	-965	+1,325	30,890
407/6		200		770	-970	+1,325	31,245
406/5	1,000 Arginoussai	200		780	-1,980	+1,325	30,590
405/4	3,000 Aigospotamoi; 3,000 siege	200		765	-6,965	+1,325	24,950
404/3	1,500 executed; 180 killed	200		625	-2,505	+1,325	23,770

20 In the fourth century the *ekklesia* was regularly attended by no less than 6,000 citizens (cf. M. H. Hansen, *The Athenian Assembly in the Age of Demosthenes* [Oxford 1987] 14-19 & 125 with note 804); but it is unbelievable that the assembly was regularly attended by ca. 2/5 of all citizens. Next, only citizens above thirty could serve in the council of five hundred; but in the model population described in note 9 *supra* ca. 1/3 of all adult males are under thirty. Thus, a total of 15,000 citizens corresponds to some 10,000 citizens eligible for the *boule* which, again, is an impossibly low figure, cf. Hansen (*supra* n. 1) (1985) 51-64.

21 Cf. Hansen (*supra* n. 1) (1982) 176-77 with notes 14-15 & 20-21.

22 Cf. Hansen (*supra* n. 1) (1982) & (1985) 8-9. I would like to thank Theodore Buttrey and Poul Christian Matthiessen for reading and commenting on these three studies.

If to the ca. 24,000 citizens left in 403 we add the klerouchs and the other Athenians sent back to Athens by Lysandros, the number of Athenians living in Attica ca. 400 will have been at least 25,000, or rather a few thousand more. In conclusion: 30,000 Athenians in ca. 350-322 presupposes a minimum of 25,000 Athenians in ca. 400, which again presupposes some 60,000 Athenians in 431, if we accept the severe losses reported by Thoukydides and Xenophon; and this figure is perfectly compatible with Thoukydides' account of Athenian manpower in 431.

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