

# The Greek Census Inscriptions of Late Antiquity\*

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## I INTRODUCTION

Trustworthy numbers, reliable glimpses of rural life, and documentary sources from outside Egypt are rare in ancient studies. A dossier of evidence, then, which records officially measured quantities of land and labour in the Eastern countryside of the Late Roman Mediterranean should be of tremendous interest. Such evidence exists, in the form of Greek census inscriptions from eleven cities — Astypalaia, Chios, Cos, Hypaipa, Magnesia on the Meander, Miletos, Mylasa, Mytilene on Lesbos, Perissa on Thera, Samos, and Tralles.<sup>1</sup> Nevertheless, the census inscriptions present a forbidding jumble of abbreviations, fractions, and bureaucratic jargon, a fact which has rendered the stones of little use outside the specialist literature on Late Roman fiscal assessment.<sup>2</sup> A. H. M. Jones offered the standard analysis of the documents in 1953. His study has the virtue of making the dry, technical information of the inscriptions meaningful for economic history, and it has held the field for over half a century.<sup>3</sup>

Despite its enduring value, Jones's study is flawed in small but significant ways. More importantly, the recent discovery of a new fragment from Thera radically changes the economic profile of the Greek countryside offered by this collection, not to mention that

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<sup>1</sup> ASTYPALAIA: *IG XII.3*, nos 180–2; A. Déléage, *La capitation du Bas-Empire* (1945), 190–4. CHIOS: Déléage, *op. cit.*, 182–6, pl. III. COS: R. Herzog, *Koische Forschungen und Funde* (1899, repr. 1983), no. 14; M. Segre, *Iscrizioni di Cos* (1993), ED 151. HYPAIPIA: J. Keil and A. Premerstein, 'Bericht über eine dritte Reise in Lydien und den angrenzenden Gebieten Ioniens', *Kaiserliche Akademie der Wissenschaften, philosophisch-historische Klasse, Denkschriften* 57 (1914), nos 85–7; *IGSK 17.2*, R. Meriç *et al.*, *Die Inschriften von Ephesos 7.2* (1981), nos 3804–6. MAGNESIA: O. Kern, *Die Inschriften von Magnesia am Maeander* (1900), no. 122. MILETOS: *I. Milet 3*, 1389–90. MYLASA: *IGSK 34.1*, W. Blümel, *Die Inschriften von Mylasa* (1987), nos 271–81. MYTILENE: *IG XII.2*, nos 76–80; S. Charitonides, *Hai Epigraphai tēs Lesvou: simplērōma* (1968), no. 17; E. Erxleben, 'Zur Katasterinschrift Mytilene *IG XII 2*, 77', *Klio* 51 (1969), 311–23; R. Parker and H. Williams, 'A fragment of a Diocletianic tax assessment from Mytilene', *EMC* 39 (1995), 267–73. SAMOS: *IG XII.6*, 2.980. THERA: G. Kiourtzian, *Recueil des inscriptions grecques chrétiennes des Cyclades* (2000), nos 142a–g; E. Geroussi-Bendermacher, 'Propriété foncière et inventaire d'esclaves: Un texte inédit de Perissa (Thera) tardo-antique', in V. Anastasiadis and P. Doukellis (eds), *Esclavage antique et discriminations socio-culturelles* (2005), 335–58. TRALLES: *IGSK 36.1*, F. Poljakov, *Inschriften von Tralleis und Nysa* (1989), no. 250; P. Thonemann, 'Estates and the land in Late Roman Asia Minor', *Chiron* 37 (2007), 435–77, provides a new edition of the inscriptions from Tralles and Astypalaia, along with some new readings for Magnesia, Thera, and Lesbos. I thank Dr Thonemann for generously making his work available to me in advance, and I have benefited from his careful study.

<sup>2</sup> The basic discussions are Déléage, *op. cit.* (n. 1), 163–96; A. H. M. Jones, 'Census records of the Later Roman Empire', *JRS* 43 (1953), 49–64; J. Karayannopoulos, *Das Finanzwesen des frühbyzantinischen Staates* (1958), 43–53; A. Cerati, *Caractère annonaire et assiette de l'impôt foncier au Bas-Empire* (1975), 244–60; W. Goffart, *Caput and Colonate: Towards a History of Late Roman Taxation* (1974), 113–21; R. Duncan-Jones, *Structure and Scale in the Roman Economy* (1990), 199–210; G. Kiourtzian, 'Note sur l'inscription cadastrale *IG XII 3*, N° 343 de Thèra', in E. Magnou-Nortier (ed.), *Aux sources de la gestion publique* (1993), vol. 1, 35–44.

<sup>3</sup> Consequently, most historians have followed his presentation: e.g. M. Jameson *et al.*, *A Greek Countryside: The Southern Argolid from Prehistory to the Present Day* (1994), 112; C. Wickham, *Framing the Early Middle Ages: Europe and the Mediterranean, 400–800* (2005), 277; W. Scheidel, 'The Roman slave supply', in K. Bradley and P. Cartledge (eds), *The Cambridge World History of Slavery, 1: The Ancient Mediterranean World* (forthcoming). Duncan-Jones, *op. cit.* (n. 2), 199–210, offered an under-appreciated dissent.

our knowledge of the Late Roman economy has expanded since the 1950s.<sup>4</sup> All of this justifies a reappraisal of the inscriptions.<sup>5</sup> This article begins by reopening the question of the date and context of the inscriptions, challenging the conventional wisdom which ascribes them to Diocletian or his immediate successors and arguing that they belong to the later fourth century (Section II). Then the article considers the economic data preserved in the inscriptions. The collection offers valuable documentary insights into the structure of wealth (III) and the deployment of labour (IV) in Late Antiquity. A final section (V) considers the demography of a large slave population recorded in the remarkable new fragment from Thera.

The goal of this article is to reframe what the inscriptions can and cannot say about economic history.<sup>6</sup> The interpretation which emerges stands in contrast to that presented by Jones, who saw in the inscriptions a structural crisis of Late Roman agriculture. The inscriptions should be seen, rather, as artefacts of a dynamic period in the Eastern Mediterranean, during which the composition of the aristocracy was mutating and the labour system was complex. Landed wealth was stratified but fragmented, in a rural sector that was deeply influenced, though not utterly dominated by urban landowners. The practice of assigning head-tax liability (*capitatio*) to the largest landowners was common, but the dossier suggests that land leasing, free of fiscal ties, remained a prominent strategy among smaller landlords. Most importantly, these documents insist that slave labour played a vital role in agricultural production on elite-owned land. The new fragment from Thera provides incomparable evidence for a slave-based estate in Late Antiquity. Demographic analysis of this population suggests reproductive success and meaningful levels of male manumission. The demographic findings have far-reaching implications for the nature of estate management and the complex character of social relationships in the rural economy of Late Antiquity.

## II THE DATE AND CONTEXT OF THE INSCRIPTIONS

The inscriptions come from eleven cities, all of them in the eastern Aegean islands or the mainland of far-western Asia Minor. The geography is interesting, both administratively and economically. Nine sets of inscriptions come from two provinces, Asia and Insulae.<sup>7</sup> Both Asia and Insulae fell within the proconsulate of Asia, an administrative unit independent from the normal diocesan hierarchy and under the control of a proconsul who was equal in rank to the vicar of Asiana.<sup>8</sup> The only census inscriptions originating outside of the proconsul's jurisdiction are those from Miletos and Mylasa, in the province of Caria. The provincial government of Caria was under the authority of the diocesan vicar of Asiana — the normal post-Diocletianic organization. More than a 'momentary regional fad', the inscriptions should be the products of an official administrative action that

<sup>4</sup> To name only a few recent contributions on the rural economy of the Late Empire: Wickham, *op. cit.* (n. 3), especially 259–302; P. Sarris, *Economy and Society in the Age of Justinian* (2006); A. Chavarria and T. Lewit, 'Archaeological research on the late antique countryside: a bibliographic essay', in W. Bowden, L. Lavan and C. Machado (eds), *Recent Research on the Late Antique Countryside* (2004), 3–51; J. Banaji, *Agrarian Change in Late Antiquity: Gold, Labour, and Aristocratic Dominance* (2001).

<sup>5</sup> This study is reliant upon the published editions. Thonemann, *op. cit.* (n. 1) has shown the value of closely re-examining the stones.

<sup>6</sup> The reflections of A. Bowman, 'Landholding in the Hermopolite nome in the fourth century A.D.', *JRS* 75 (1985), 137–63, on the Hermopolite land registers could be applied in this case: 'the result may be a greater rather than a lesser degree of uncertainty about many important issues... the picture is more complex, the developments more subtle and ambiguous than might once have appeared'.

<sup>7</sup> For Insulae, see J. Marquardt, *Römische Staatsverwaltung* (1881), vol. 1, 348–9; Hierocles, *Synecdemus*, 686–7 (Ed. G. Parthey (1866), 26–7).

<sup>8</sup> *Notitia Dignitatum* Or. XX.5–8 (Ed. O. Seeck (1876), 45–6); A. H. M. Jones, *The Later Roman Empire, 284–602: A Social, Economic, and Administrative Survey* (1964), 375.

included the provinces under the control of the proconsul as well as those under the power of the vicar.<sup>9</sup>

The inscriptions are key documents of post-Diocletianic fiscality, with its dual system of liability on land and persons, *iugatio* and *capitatio*.<sup>10</sup> It is important to recognize that these inscriptions record the tax liabilities of individual landowners; they are not a complete count of souls or things in the sense of a modern census. Large landowners could be liable for the capitation taxes of their registered dependents, whether slaves, tenants, or permanent employees.<sup>11</sup> A fundamental law of A.D. 371 drew a distinction between tenants with their own property who leased extra land and *coloni* who exclusively worked the property of an individual landlord.<sup>12</sup> The landlord was only responsible for the head tax in the latter instance, when the worker had no land of his own; the extent of unregistered tenancy is thereby rendered invisible in these stones. The inscriptions likewise measured the land in terms of its fiscal burden (assessed in units of arable, vines, olives, and pasture). We thus see the rural landscape through a particular prism, the fiscal assessment of specific landowners for their registered labourers and taxable land.

The inscriptions are not uniform in their format or method of measurement. It has been argued that there are two subsets in the group, 'primary' and 'secondary' registers.<sup>13</sup> So-called primary registers recorded quantities of land and persons in raw physical units.<sup>14</sup> Secondary registers, by contrast, reflected the conversion of raw physical totals into fiscal units, *iuga* and *capita*; the schedule used to convert physical into fiscal units is unknown and represents a source of uncertainty.<sup>15</sup> The differences of format are said to reflect the fiscal process at different stages of motion, first the plain measurement and then its calculation into tax liability.<sup>16</sup> But this division into primary and secondary registers is too neat.<sup>17</sup> No two cities memorialized the fiscal liabilities in exactly the same form or at exactly the same instant in the cycle. This diversity within an envelope of similarity points to a combination of imperial stimulus and local control over the fiscal process.

The inscriptions have eluded a precise dating. Jones claimed that they 'were probably engraved in the late third or early fourth century A.D., when Diocletian and his colleagues and successors are known to have been active in carrying out censuses'.<sup>18</sup> On this logic,

<sup>9</sup> The phrase is Goffart's, op. cit. (n. 2), 121. The province of Phrygia and Caria was separated from Asia already by the 250s A.D.: C. Roueché, 'Rome, Asia, and Aphrodisias in the third century', *JRS* 71 (1981), 103–20. It is interesting that possibly in the mid-fourth century, and certainly in the early fifth, the positions of proconsul and vicar were combined: D. Feissel, 'Vicaires et proconsuls d'Asie du IV<sup>e</sup> au VI<sup>e</sup> siècle: remarques sur l'administration du diocèse asianique au bas-empire', *Antiquité tardive* 6 (1998), 91–104. The inscriptions could originate from a moment when the offices were combined, or they could tell us that combined jurisdiction reflected an underlying administrative coherence; see *CT* 7.6.3 (A.D. 377), cited below, which also insinuates joint financial administration.

<sup>10</sup> J.-M. Carrié, 'Dioclétien et la fiscalité', *Antiquité Tardive* 2 (1994), 33–64.

<sup>11</sup> See Section IV, for the status of the labourers. J.-M. Carrié, "'Colonato del Basso-Impero': la resistenza del mito', in E. Lo Cascio (ed.), *Terre, proprietari e contadini dell'Impero romano* (1997), 75–150; B. Sirks, 'Reconsidering the Roman colonate', *ZRG* 110 (1993), 331–62.

<sup>12</sup> *CT* 11.1.14; Carrié, op. cit. (n. 11), 100: 'un testo fondamentale'; C. Grey, 'Contextualizing *colonatus*: the *origo* of the Late Roman Empire', *JRS* 97 (2007), 155–75, at 169. See O. Seeck, *Regesten der Kaiser und Päpste für die Jahre 311 bis 476 n. Chr.* (1919), 27, for the reasons it must be A.D. 371. I will argue below that the inscriptions and this law are connected to precisely the same census.

<sup>13</sup> Karayannopoulos, op. cit. (n. 2), 46–7; Déléage, op. cit. (n. 1), 169, 181–2.

<sup>14</sup> The primary registers are Thera and Lesbos, along with Hypaipa, Miletos, and Mylasa.

<sup>15</sup> The secondary registers are from Astypalaia, Chios, Cos, Magnesia, Samos, and Tralles. A. H. M. Jones, 'Capitatio and iugatio', *JRS* 47 (1957), 88–94, is a lucid discussion of fiscal assessment. The size of the *iugum* is considered in Section III.

<sup>16</sup> Erxleben, op. cit. (n. 1), 315.

<sup>17</sup> Hypaipa uniquely records household declarations. Magnesia alone lists farms alphabetically by district. The Thera inscription may include both primary and secondary elements. A block from Lesbos provides the only indication that land might be graded into first and second class, as suggested by the complex schedule outlined in the *Syro-Roman Lawbook*, 106c: Ed. W. Selb, *Das syrisch-römische Rechtsbuch*, 3 vols (2002). Astypalaia includes two levels of arithmetic within the fiscal units.

<sup>18</sup> Jones, op. cit. (n. 2), 49.

most have favoured a Tetrarchic date.<sup>19</sup> Recently, Thonemann has made a strong case that the inscriptions should not date before about A.D. 310, allowing time for the census process to be completed. He also claims that the stones must date before the 320s, arguing that one of the properties at Magnesia may have been in the possession of the goddess Artemis. This reading of the stone is not certain, and, moreover, there were temple properties in the eastern Mediterranean into the late fourth century.<sup>20</sup> Instead, the later years of the reign of Theodosius mark the *terminus ante quem* for the inscriptions: the pagan religious officials recorded in the registers are impossible to imagine after the 380s.<sup>21</sup> The assignment to the Tetrarchic period is so flimsy that it is worth reconsidering the entire period between c. A.D. 310 and 390 as a possible context. Within this range, there is nothing which conclusively demands a particular date, but there are reasons to prefer a later fourth-century origin for the inscriptions.

The inscriptions can be analysed from the perspective of four dating criteria: scripts, onomastics, language, and prosopography. Unfortunately, many of the published editions of the census inscriptions are inadequate. The inscriptions from Thera, however, have received careful re-edition. The editor notes the appearance of cursive delta, a letter form which is first attested in the Cyclades around the turn of the fourth-to-fifth centuries, in the catacombs of nearby Melos.<sup>22</sup> He prefers to date the inscriptions from Thera sometime in the course of the fourth century. Many observers have been struck by the inconsistency of letter forms and irregularities of spacing throughout the inscriptions.<sup>23</sup> Keil and Premerstein described the 'irregular and often indistinct letters of the late imperial period' in the Hypaipa inscriptions, contrasting sharply with another local inscription that can be narrowly dated to A.D. 301.<sup>24</sup> Scripts with variable letter forms and poor lineation could be consistent with an earlier or later fourth-century date, though in a set of public inscriptions from Roman Asia these characteristics fit more comfortably with a later dating.<sup>25</sup> The

<sup>19</sup> Déléage, op. cit. (n. 1), 163, implying a Diocletianic date; Karayannopoulos, op. cit. (n. 2), 45–6, for A.D. 289 or 298; T. R. R. Broughton, 'Roman Asia Minor', in T. Frank (ed.), *ESAR* 4 (1938), 914–15. Erxleben, op. cit. (n. 1), 314, argued for the years A.D. 307–313 on the basis of the Hypaipa inscriptions, which he argued show the registration of the urban plebs; these seem to be village household declarations. Cerati, op. cit. (n. 2), 255, offered the first dissent, arguing for a date in the late fifth or sixth century. Kiourtzian, op. cit. (n. 1), favours a date in the course of the fourth century.

<sup>20</sup> Thonemann, op. cit. (n. 1), 438–9. Line a3 records a property described as [χω(ρίον) Ἄρ]τέμιδος πρὸς συνορ(οίς) μονοπύργου Ἡρακλίτου. Many toponyms throughout the census inscriptions are derived from the names of the pagan gods; the 'chorion of Artemis' names the place, not its owner. It is unusual (but cf. d16–18) that this entry did not list an individual declarant (though perhaps there was not room on the line after the verbose description of the farm's location), but this does not make the goddess the owner. Above all, temples owned land late into the fourth century. See R. Delmaire, *Largesses sacrées et res privata: l'aerarium impérial et son administration du IVe au VIe siècle* (1989), 641–5.

<sup>21</sup> e.g. Magnesia, line d13. The priests at Tralles and Magnesia do not imply an early fourth-century date; cf. the pagan priests among the civic dignitaries in the municipal album from Timgad, dated to the 360s A.D. (Ed. A. Chastagnol, *L'album municipal de Timgad* (1978)). On the official suppression of paganism under Theodosius, see J. Curran, *Pagan City and Christian Capital: Rome in the Fourth Century* (2000), 209–17.

<sup>22</sup> Kiourtzian, op. cit. (n. 1), 215. The letter form is late also at Aphrodisias, C. Roueché, *Aphrodisias in Late Antiquity* (1989), 332, with cautions about using late letter forms as a dating tool.

<sup>23</sup> The Astypalaia inscriptions are said to have been written in letters 'of a late age', without reference to specific letter forms: *IG* XII.3, no. 180. Mylasa: *IGSK* 34.1, no. 271: 'mauvaise gravure, lignes irrégulières ... aspect cursif.' Lesbos: Parker and Williams, op. cit. (n. 1), 268: 'crudely cut'.

<sup>24</sup> Keil and Premerstein, op. cit. (n. 1), 67–8: 'unregelmässige und vielfach undeutliche Buchstaben der späten Kaiserzeit.' The fragments of A.D. 301 have been shown to concern a trust belonging to an association of wool-sellers: Th. Drew Bear, 'An act of foundation at Hypaipa', *Chiron* 10 (1980), 509–36. See also G. Fagan, *Bathing in Public in the Roman World* (1999), 344.

<sup>25</sup> cf. Roueché, op. cit. (n. 22), xxii. On the other hand, the census inscriptions are unique expressions of public epigraphy, leaving us without direct *comparanda*. Thonemann, op. cit. (n. 1), 444, notes that the inscriptions may reflect documentary practices.

inscriptions also use abbreviation symbols that are not attested epigraphically before the fourth century and are unusual before A.D. 350.<sup>26</sup>

The onomastic evidence is inconclusive but may also suggest a later date. In addition to a scatter of individual names, there are two large sets of names: a group of 152 slaves from Thera and about 65 landowners from Magnesia. Most of the names are common Greek names, albeit with a late antique flavour.<sup>27</sup> The admixture of Jewish and Christian names is distinct. Among the slaves, Theodoulos, Eustathia, Theodote, and Sambatia are attested. A landowner on Astypalaia was also called Theodoulos, a name borne exclusively by Christians and Jews.<sup>28</sup> The relationship between onomastic change and religious conversion in Late Antiquity is controversial and far from clear. Bagnall has uncovered a surprisingly quick pace of onomastic change in Egypt, but it would appear that the rate of transformation in naming habits was slower in the core areas of the Greek Mediterranean.<sup>29</sup> It would not be unreasonable to question whether flagrantly Christian names should be so prominent in a public record of slaves during a period of persecution.<sup>30</sup>

The language of the inscriptions is a highly abbreviated dialect of Late Roman bureaucratized. The technical terminology of ζυγά and κεφαλαί indicates a period contemporary with or later than Diocletian. As Cerati noted, the presence of a neologism like ζυγοκέφαλον could argue that the terms of Diocletianic policy had evolved.<sup>31</sup> The term, used at Astypalaia, does not appear in other documents until a praetorian decree of A.D. 480 and then an imperial constitution issued in A.D. 498.<sup>32</sup> Cerati's imputation was that these inscriptions are later, perhaps much later, than the Diocletianic reform. A parallel can be drawn with the use of the word πάροικοι in these inscriptions, a term which entered official parlance rather late.<sup>33</sup> Its appearance in the census inscriptions also predates any other official Roman usage, but the relative paucity of official documents in Greek from the fourth century makes it dangerous to speculate on the basis of language.

Prosopography holds the most hope for dating. The sixty-five landowners in the Magnesia inscription include six decurions, five or six members of the senatorial order,

<sup>26</sup> Namely, small superscript Greek letters as abbreviations. Thonemann, op. cit. (n. 1), 443–4; A. Chaniotis, 'The Jews of Aphrodisias: new evidence and old problems', *SCI* 21 (2002), 209–42, at 215.

<sup>27</sup> Geroussi-Bendermacher, op. cit. (n. 1), 345–9, has a good analysis of the names on Thera. Only some villagers at Hypaipa carried the name Aurelius, which is perhaps unsurprising for the sort of modest households attested here. Over the fourth century M. Aurelii disappear: cf. J. Reynolds and R. Tannenbaum, *Jews and God-fearers at Aphrodisias* (1987), 20.

<sup>28</sup> *JG* XII.3, no. 182. Geroussi-Bendermacher, op. cit. (n. 1), 347.

<sup>29</sup> R. Bagnall, 'Religious conversion and onomastic change in Early Byzantine Egypt', *BASP* 19 (1982), 105–24; E. Wipszycka, 'La valeur de l'onomastique pour l'histoire de la christianisation de l'Égypte. A propos d'une étude de R. S. Bagnall', *ZPE* 62 (1986), 173–81; R. Bagnall, 'Conversion and onomastics: a reply', *ZPE* 69 (1987), 243–50. The bank of names preserved from Late Roman Aphrodisias (see the name index of Roueché, op. cit. (n. 22)), would also suggest a slower pace of change throughout the fourth century.

<sup>30</sup> Compare, for instance, the name index from the second half of the third century in Phrygia available in E. Gibson, *The 'Christians for Christians' Inscriptions of Phrygia* (1978), which shows a thoroughly normal set of Greek names among a group of *known Christians* in the immediate pre-Tetrarchic period. It is also worth noting the extreme frequency in the census inscriptions of names ending in -10ς, a form not unusual from the late second century, but very popular from the fourth century. Geroussi-Bendermacher, op. cit. (n. 1), 349; Kiourtzian, op. cit. (n. 1), 215; B. Salway, 'What's in a name? A survey of Roman onomastic practice from c. 700 B.C. to A.D. 700', *JRS* 84 (1994), 124–45, at 136. The names at Magnesia are more traditional, which might be expected among the conservative, landowning classes of a provincial town. Still, names ending in -10ς are well represented.

<sup>31</sup> If the abbreviation κζ = κ(εφαλό)ζ(υγα)? at Thera is rightly expanded, the use of two separate portmanteau terms would suggest that they were the product of evolution, not an imperial formula dictated from the centre. Kiourtzian, op. cit. (n. 1), 142a, lines 4, 5, 11. See below, n. 67.

<sup>32</sup> D. Feissel, 'L'ordonnance du préfet Dionysios inscrite à Mylasa en Carie (1<sup>er</sup> Août 480)', *TM* 12 (1994), 263–97; *CJ* 10.27.2 (A.D. 498); Banaji, op. cit. (n. 4), 57–9. This point involves extraordinarily thorny problems about the development of Late Roman fiscality, but *iuga* and *capita* do not appear together in Latin laws until the mid-fourth century. See Jones, op. cit. (n. 15), 88.

<sup>33</sup> Déleage, op. cit. (n. 1), 175; Kiourtzian, op. cit. (n. 1), 225. The earliest official use is *CJ* 1.34.1 from the reign of Anastasius. On the status of *paroikoi* in the inscriptions, see Section IV.

two *perfectissimi*, and an Asiarch.<sup>34</sup> None of the individuals of senatorial rank can be identified, yet the prominence of senators is itself the crucial datum.<sup>35</sup> Around A.D. 300, the Senate claimed only *c.* 600 members, the bulk of them Westerners. Over the fourth century, the number of senators expanded into the thousands; the late 350s–360s saw feverish growth.<sup>36</sup> The Eastern provinces were the main recruiting grounds for the new Senate at Constantinople. The number of senators in the small but random sample provided by the inscriptions is truly striking, especially since Duncan-Jones has shown that we have at most 8 per cent of the Magnesia register. This leads us to project as many as 60–75 senators in the complete list.<sup>37</sup> We are forced to believe in one of two scenarios. Either a high percentage of all Eastern senators under Diocletian happened to own land at Magnesia, or the inscription postdates the expansion of the Eastern Senate and the devaluation of the senatorial title. Surely, the inscriptions are an unrecognized artefact of a crucial fourth-century transformation: the reconfiguration of the Eastern élite.<sup>38</sup>

If the census inscriptions date to sometime after the 350s A.D., it requires us to re-evaluate their original purpose.<sup>39</sup> Though it has gone unremarked, one of the census inscriptions preserves the revealing detail that the impetus behind the act of inscribing was an imperial order to do so.<sup>40</sup> This is in itself unusual: references to census ‘books’ and ‘pages’ in Late Antiquity are common, whereas there is no clear parallel to the practice of inscribing tax liabilities on stone.<sup>41</sup> The very existence of the census inscriptions begs for

<sup>34</sup> The senators at Magnesia are λαμπρότατοι, i.e. *clarissimi*: see Jones, *op. cit.* (n. 8), 528–9. Jones convincingly argued that the φιλοσέβαστοι should be decurions (though the word does not have this sense in the High Empire, in near-contemporary inscriptions the council of Magnesia is called ἡ φιλοσέβαστος βουλή); otherwise the curial class is missing entirely. The size of their properties matches other curial-scale holdings.

<sup>35</sup> The members of the senatorial order are Priscillianus, Capitolinus, Hermonactiane, Eutyches, Aristocleia. A senator, Attalus, appeared in a patronymic on Thera. These should be Easterners, since the landholdings of even the wealthiest members of the Western Senate in the fourth century were limited to the Western provinces: see especially D. Vera, ‘Simmaco e le sue proprietà: Struttura e funzionamento di un patrimonio aristocratico del quarto secolo d.C.’, in *Atti del Colloquio Genévois sur Symmaque* (1986), 231–70, at 243–5.

<sup>36</sup> For the creation of the Eastern Senate, see G. Dagron, *Naissance d’une capitale: Constantinople et ses institutions de 330 à 451* (1974), 119–210; A. Chastagnol, ‘Remarques sur les sénateurs orientaux dans le IV<sup>e</sup> siècle’, *AAntHung* 24 (1976), 341–56. See especially P. Heather, ‘Senators and Senates’, in A. Cameron and P. Garnsey (eds), *CAH<sup>2</sup>*, vol. 13 (1998), 184–210.

<sup>37</sup> Duncan-Jones, *op. cit.* (n. 2), 137–8. The stone for farms starting with the letter beta has thirty-seven farms. This is the nearest-complete stone, although another fragment shows that we are missing some ‘betas’. Using the *CIG* as a database of place-names, Duncan-Jones estimated that beta should account for about 3.5 per cent of all place-names. Thus we have, at most, 8 per cent of the original, possibly less. There were also six to eight representatives of the curial order listed. The size of town councils varied, but if the number visible in the extant fragments was 8 per cent of the total, it would imply the right order of magnitude: for which see B. Salway, ‘Prefects, *patroni*, and decurions’, in A. Cooley (ed.), *The Epigraphic Landscape of Roman Italy* (2000), 115–71, at 127. Indeed, the small number of attested decurions strongly reinforces the inference that the original number of senators was also originally much larger.

<sup>38</sup> The number of Greek senators grew throughout the second and especially the third centuries, as a coterie of old municipal élites from cities like Ephesus entered the order: see H. Halfmann, ‘Die Senatoren aus den Kleinasiatischen Provinzen des römischen Reiches vom 1. bis 3. Jahrhundert’, in *Epigraphia e ordine senatorio* (1982) 2, 603–50; H. Halfmann, *Die Senatoren aus dem östlichen Teil des Imperium Romanum bis zum Ende des 2. Jh. n. Chr.* (1979); B. Remy, *Les Carrières sénatoriales dans les provinces romaines d’Anatolie au haut empire (31 avant J.-C.–284 après J.-C.)* (1989). Even assuming that fully half of all 600 senators were Eastern by A.D. 300 (Themistius claimed that there were still only 300 Eastern senators as late as A.D. 357), and that the inscription originally recorded sixty senators, then one out of every five Eastern senators held land at Magnesia, a ratio which seems implausibly high.

<sup>39</sup> On the importance of the material function and ‘overall physical appearance’ of inscriptions: A. Cooley, ‘Introduction’, *The Epigraphic Landscape of Roman Italy* (2000), 1. Thonemann, *op. cit.* (n. 1), 439, argues that the census inscriptions were permanent memorials of the Diocletianic census. It would weaken the case if Diocletian intended a regular census cycle (see the references below, n. 48), but Thonemann’s account is the first to treat the problem of the function of the stones seriously.

<sup>40</sup> Mylase: *IGSK* 34.1, no. 275: ἀντὶ Καίσαρος / διαταγμάτων / λίθου Προκοπῆσιου.

<sup>41</sup> Karayannopoulos, *op. cit.* (n. 2), 47, with references to *libri censuales, censuales paginae, diagrapha, polyptycha, κώδιξ*, etc. The Volcei inscription (*CIL* X.407 = *IIt.* 3.1, no. 17) is a possible parallel, but see the apt cautions of Goffart, *op. cit.* (n. 2), 113–14: we do not know what the Volcei register is.

explanation, and indeed there are administrative patterns in the later fourth century, specifically in the reign of Valentinian and Valens, which may offer a solution.<sup>42</sup> Their tenure was marked by aggressive efforts to establish central control over the fiscal process, in part by compiling lists, breviaries, and registers of public obligations.<sup>43</sup> Notably, Themistius and Ammianus both observed that Valens managed the Empire as though it were a private household, with the ability to see its budget, income and expenses, province by province.<sup>44</sup> This metaphor points towards the fiscal reforms which may have created a political motive and an administrative context for the creation and display of monumental tax records.

Valentinian and Valens implemented sweeping institutional reforms aimed at centralizing control over the fiscal process. Imperial taxation was a delicate balance of imperial standards and local action.<sup>45</sup> While Julian raised curial autonomy to a principle of his rule, Valentinian and Valens dramatically reversed this policy in favour of imperial oversight. The emperors made an abortive effort to substitute retired imperial officials for curial agents in the process of tax collection.<sup>46</sup> The tension inherent in this policy is visible, for example, in an Italian inscription which shows that the emperors had to order their governors to audit the actual tax charges against the archived liabilities.<sup>47</sup> Their centralizing policy made the intersection of the tax archives and the distribution of annual charges a flashpoint of dispute. Cyclical imperial censuses were rarely conducted in the fourth century, so the control of the tax registers gave the town councils a real measure of informal power.<sup>48</sup> Valentinian and Valens intervened at this sensitive juncture in the tax process, a move which provides a possible political motive behind the creation of epigraphic archives.<sup>49</sup>

If this centralizing policy provides the political background, it may be possible to connect the stones with a specific administrative action. Converging evidence points to a census in Asia Minor in the year A.D. 371. In an inscribed letter to the proconsul of Asia, Valens described a series of imperial acts which occurred on the basis of progressively better fiscal data from Asia. Initially Valens had acted ‘on the basis of an assessment’, but

<sup>42</sup> A good general account of their rule: N. Lenski, *Failure of Empire: Valens and the Roman State in the Fourth Century A.D.* (2002), 264–307. Jones, op. cit. (n. 8), 138–54. A. Giardina and F. Grelle, ‘La tavola di Trinitapoli. Una nuova costituzione di Valentiniano I’, *MEFRA* 95 (1983), 249–303.

<sup>43</sup> Lenski, op. cit. (n. 42), 272–4.

<sup>44</sup> Themistius, *Or.* 8.114 (Ed. H. Schenkl and G. Downey (1965), 174): προορᾶν ὡς περ οἰκίας μίς τῆς τοσαύτης ἀρχῆς, τί μὲν πρόσεισιν ἐκάστου ἔτους, τί δὲ ἀναλοῦται. See P. Heather and J. Matthews, *The Goths in the Fourth Century* (1991), 13–26. Cf. Ammianus Marcellinus, *Res gestae* 31.14.2: ‘ut domum propriam’.

<sup>45</sup> Curial role, see A. H. M. Jones, *The Greek City from Alexander to Justinian* (1940), 144; Jones, op. cit. (n. 8), 456–7; Goffart, op. cit. (n. 2), 7–26 (but cf. the review of R. Duncan-Jones, *JRS* 67 (1977), 202–4, for a balanced opinion of imperial oversight); J. H. W. G. Liebeschuetz, *Antioch: City and Imperial Administration in the Later Roman Empire* (1972), 161–7. For regional variety: Déleage, op. cit. (n. 1), 34–7, 224–5, 240–5; R. Bagnall, *Egypt in Late Antiquity* (1993), 157–9. The imperial centre provided standards of tax assessment and channels of appeal, while town councils retained material power through control of the process: the maintenance of census books, the distribution of annual charges, and the act of collection itself. When Symmachus needed to know who *actually* possessed a disputed property, he went to the town council — not the governor — and asked who had been paying taxes on it. Symmachus, *Rel.* 28 (Ed. O. Seeck, *MGH AA* 6.1 (1883), 302–3). For the role of town councils in distributing charges, see, e.g., *CT* 8.15.5 (A.D. 366).

<sup>46</sup> *CT* 12.6.5 (A.D. 365); *CT* 12.6.7 (A.D. 364). The reform was perhaps not carried out in Africa and Egypt. Cf. *CT* 12.6.9 (A.D. 365); *CT* 12.1.97 (A.D. 383); Déleage, op. cit. (n. 1), 34–7.

<sup>47</sup> Analysed in Giardina and Grelle, op. cit. (n. 42), especially 263–5. Cf. also *CT* 11.4.1 (A.D. 372).

<sup>48</sup> For the absence of a regular census: Jones, op. cit. (n. 8), 454. The absence of evidence is striking, for when a census did happen, it is audible (e.g. Lactantius, *De mort. pers.* 23.1–2 (Ed. J. Creed (1984), 36); cf. the Cappadocian fathers below). Seeck thought there were regular five-year censuses conducted throughout the fourth century, but the evidence he collected is unconvincing after the 320s A.D.: O. Seeck, ‘Zur Entstehung des Indictioncyclus’, *Deutsche Zeitschrift für Geschichtswissenschaft* 12 (1894), 279–96; noted by T. D. Barnes, *The New Empire of Diocletian and Constantine* (1982), 226–37.

<sup>49</sup> A series of laws which mandated the careful recording of annual receipts against tax assessments emanated from the East over the next century. See Feissel, op. cit. (n. 32), 288.

in the present time of the inscription, around A.D. 371, he claimed to have ‘a most complete account’ of taxable *iuga* of the civic class.<sup>50</sup> The letter implies a vigorous evaluation of fiscal liabilities in Asia.<sup>51</sup> The census inscriptions from Caria, however, would require an act broader than the proconsulate of Asia. Indeed, the legal and literary evidence points to a full census throughout Asiana and Pontica in A.D. 371.<sup>52</sup> The legal evidence consists of a dossier given to the praetorian prefect, Modestus. He was equipped with broad authority to renovate tax assessments, audit public liabilities, and see that ‘the census is stabilized and arguments are ended’.<sup>53</sup> He received landmark laws sorting decurions from senators and determining which *coloni* should be registered with their landlord.<sup>54</sup> The itinerary and legal brief of Modestus in A.D. 371 show that a major reallocation of tax liability was carried out under his supervision.<sup>55</sup> Literary evidence from neighbouring Pontica vividly testifies to this census.<sup>56</sup>

In sum, while the inscriptions must date between *c.* A.D. 310 and 390, a strong case can be made for placing them several decades later than the traditional Tetrarchic date. The number of senators in the Magnesia inscription is a compelling argument in favour of a date after the expansion of the Eastern Senate in the 350s A.D. If the suggestion of the period around A.D. 371 is right, the inscriptions should be related to the centralization of tax collection (which made the archival records a site of contention) and the full revamping of the census in Asia. This date provides a motive and an administrative context. Ultimately, though, this is a circumstantial case, and an earlier date remains a possibility. If the conjecture of Valens’ reign is correct, however, the stones become important documents not only in the history of fiscal assessment, but in the politics of taxation at the point of contact between imperial and local power.

### III THE INSCRIPTIONS AS ECONOMIC DATA: LAND OWNERSHIP

Regardless of their exact date, the inscriptions preserve valuable information on landed wealth and the deployment of labour in the fourth-century countryside. The stones allow quantitative insights into the composition and scale of individual properties, the

<sup>50</sup> A. Chastagnol, ‘La législation sur les biens des villes au IV<sup>e</sup> siècle à la lumière d’une inscription d’Ephèse’, in *AARC* (1986), 77–104. His text is used. Lines 2–3: ‘[Quod ex red]itibus fundorum iuris re]f]i publicae, quo]s intra Asiam diversis quibusque civitatibus ad instaurand[am] mo]nium faci[em] <c. 10 spaces> pr]o certis | [partibu]s habita aestimatione concensimus.’ Lines 12–13: ‘Ha(n)c sani (*sic*) quia ratione plenissima, quod intra Asiam rei publica iuga esse videantur.’

<sup>51</sup> Valens asked for even more complete registers. Lines 19–20: ‘sane quia rerum omnium integram cupimus habere notitiam et ex industria nobis tuam expertam diligen[ti]a[m] | confit]emur, plena te volumus (*sic*) ratione disquirere per omnem Asiam provinciam fundos iugationemque memoratam.’

<sup>52</sup> The geography of the stones would argue that Asia and Asiana were administered similarly (as does their combination under a joint vicar-proconsul, see Feissel, *op. cit.* (n. 9)). Moreover, in a law of A.D. 377, levies were applied at different schedules around the Empire. The law bundled the dioceses of Asiana and Pontica together as though they also cohered in terms of their mode of fiscal assessment (and it did not need to mention the proconsulate separately): *CT* 7.6.3.

<sup>53</sup> *CT* 13.10.7 (A.D. 371); *CT* 13.5.14 (A.D. 371); *CT* 13.10.7 (A.D. 371): ‘exhibitis partibus secundum fidem rerum coram cognoscant ac stabilitatem census finita altercatione component.’

<sup>54</sup> *CT* 11.1.14 (A.D. 371); *CT* 12.1.74 (A.D. 371).

<sup>55</sup> *PLRE* I Modestus 2, 606–7. The laws in the Theodosian Code often descend from specific administrative contexts and were not, originally, ‘general’: J. Matthews, *Laying Down the Law: A Study of the Theodosian Code* (2000), 66–71. The itinerary of Modestus might thus argue that the census was limited to Asia, Asiana, and Pontica. Modestus was made consul in A.D. 372.

<sup>56</sup> T. A. Kopecek, ‘The Cappadocian Fathers and civic patriotism’, *Church History* 43 (1974), 293–303, collects some of the evidence, but does not acknowledge the role of the census behind the campaign. See Basil, *Epistulae* (Ed. Y. Courtonne (3 vols; 1957–66)), *Letters* 36, 37, 83, 88, 104, 284, 299, 309, 310, 312, 313, 315. In A.D. 371, as part of the reorganization, the province of Cappadocia was divided in two — a well-known event that has not been situated within the momentous reforms of A.D. 371. Basil struggled against this division (*Letters* 74, 75, 76). See W.-D. Hauschild, *Basilii von Caesarea: Briefe* I (1990), 138–41, 208–9; Gregory of Nazianzus, *Or.* 19 (PG 35, cols 1044–64).



distribution of landed wealth, and the social profile of land ownership. Four sets of inscriptions are particularly informative: Thera, Lesbos, Tralles, and Magnesia. However, the data are recorded in different units. The inscriptions from Thera and Lesbos are primary registers, so that land and labour are tabulated in raw totals. The data from Magnesia and Tralles, by contrast, are more complex, for in these inscriptions the raw numbers have been converted to fiscal units. The schedule used to convert physical *iugera* into *iuga* is unknown, and a full understanding of the data requires us to consider the possible rates of conversion. The Magnesia inscription poses special problems, but it remains, despite the uncertainties, among the most revealing documents for the structure of wealth in Late Antiquity.

The inscriptions from Thera and Lesbos furnish direct evidence for the composition and scale of several properties. The sample is small but straightforward and establishes a basis for interpreting the more complex documents. On both Thera and Lesbos, the registers were organized by individual proprietor. An owner's total property, typically fragmented into numerous smaller farms, was added up in terms of *iugera* of arable land, *iugera* under vines, and the number of olive trees.<sup>57</sup> An individual owner's farms were classified geographically by district, village, or rural space. In the inscriptions, the properties were named and located primarily in terms of χωρία, with some reference to κήποι, τόποι, and ἄγροί. The χωρίον was the dominant geographic unit everywhere.<sup>58</sup> The inscriptions present a fiscal geography, not an attempt to describe the countryside in traditional terms such as κῶμαι. As an overriding bureaucratic category, the term χωρίον was flexible enough to encompass villages in which farms were located, as well as independent nucleated settlements comprised of single estates.<sup>59</sup> The inscriptions give the overall impression of highly fragmented landownership, with occasional glimpses of villages, on the one hand, and dispersed, estate-based settlements on the other.<sup>60</sup>

The inscriptions from Thera and Lesbos demonstrate that properties in this region of the Empire could reach considerable proportions. From Lesbos, four stones survive. Unfortunately, the names and headings are lost, so it is unclear where each registration begins and ends. We do not know who owned this land, nor the relationship between the individual stones. On the assumption that each stone represented a separate estate, there is information about four different properties:

LESBOS	ARABLE*	VINE*	OLIVE (# TREES)	# PLOTS
XII.2.76	1514	109	5511	16
XII.2.77	267	20	1281	18
XII.2.78	52	15	248	5
XII.2.79	594	19	2000	5

\*in *iugera*

<sup>57</sup> On Lesbos alone, land given over to pasture was included as a separate category.

<sup>58</sup> Except the inscriptions of Tralles: see Thonemann, *op. cit.* (n. 1), 454.

<sup>59</sup> Thonemann, *op. cit.* (n. 1), 454–7, has an extremely useful discussion of the terminology. See Kiourtzian, *op. cit.* (n. 2), 219–21. The place-names from Lesbos are analysed in N. Spencer, 'ΤΟ ΠΥΡΡΑΙΩΝ ΟΡΟΣ ΤΟ ΠΙΤΥΩΔΕΣ: an archaeological and epigraphical approach to a topographical problem', *ZPE* 12 (1996), 253–62. The structural difference between the Eastern and Western countryside is explained in Wickham, *op. cit.* (n. 3), 442; Chavarría and Lewit, *op. cit.* (n. 4), 16–17.

<sup>60</sup> The largest contiguous properties are attested at Magnesia (a 75-*iuga* estate) and on Lesbos, where farms of 430, 305, and 294 arable *iugera* are listed, probably all of the same owner: *IG* XII.2, no. 76. Archaeological and literary evidence for rural villas and the intrusion of Western settlement patterns into parts of Greece: see J. J. Rossiter, 'Roman villas of the Greek East and the villa in Gregory of Nyssa *Ep.* 20', *JRA* 2 (1989), 101–10; Wickham, *op. cit.* (n. 3), 462–6; Sarris, *op. cit.* (n. 4), 121.

The inscriptions from Thera are similar in format and yield comparable results. It is possible to reconstruct the total dimensions of three distinct properties.

Thera	Arable* Vine*	Olive Trees	# Plots		
142A (Paregorius)	504	79	554		10
142B (Attalou)	614	162	1420		16
142C	528	120	586		17

\*in *iugera*

The fragmentation of landholding is notable and has been emphasized by all commentators.<sup>61</sup> Each property was built from smaller plots. It is possible that land from different districts was physically adjacent, and it is equally possible that land within a district was further fragmented, so that the inscriptions may over- or understate the actual degree of fragmentation. Nevertheless, the pattern is broadly indubitable, and it confirms that the Egyptian evidence for fragmentation is not exceptional. The inscriptions from Thera and Lesbos also provide a valuable measure of élite land-allocation strategy. The estates on Thera specialized in wine production, while olives were an agricultural priority on Lesbos.<sup>62</sup> Nevertheless, the degree of specialization was limited, and even on these large properties, arable farming was the dominant agricultural operation. This would suggest that élite-driven specialization in staple crops, at least in this region, was a phenomenon that occurred along the margins of a landscape dominated by grain cultivation.

The appearance of a senator in a patronymic on Thera (142B) is the lone clue to the social profile of these landholders, but comparative data allow us to contextualize the scale of these properties. In every respect, the Egyptian land registers from mid-fourth-century Hermopolis are the essential *comparanda* for the census inscriptions. These papyri record the land-holdings of hundreds of urban-based owners, and they thus allow us to say how the proprietors from Thera and Lesbos compare to their Egyptian counterparts. With only the exception of the incomplete third property on Lesbos (no. 78), the Aegean landowners would have ranked among the very wealthiest of the proprietors at Hermopolis, where holdings of 1,000 *arourai* (= 1,095 *iugera*) were exceedingly rare and holdings of 200 *arourai* or more (= 219 *iugera*) belonged only to the top 3.6 per cent of landowners.<sup>63</sup> Especially if the proprietors attested in the inscriptions held land elsewhere, they deserve to be classified as large-scale landowners. The small sample preserved from these two islands is thus, it appears, a snapshot of the highest tier of landholding.

This knowledge is valuable as we turn to the secondary registers from Astypalaia, Tralles, and Magnesia. These documents recorded tax liability in terms of fiscal units, *iuga*. The schedule used to convert raw *iugera* into *iuga* is unknown. Jones favoured a large *iugum*, around 100 *iugera* of arable land, based on an apparent 'conversion' from physical to fiscal units preserved at Thera; Duncan-Jones later adduced several reasons why the *iugum* must be smaller, closer to 12 *iugera* of arable.<sup>64</sup> Thonemann has now provided arguments for a conversion rate similar to the one advocated by Jones. Thonemann's case must be broken down into two separate claims, one about the method of accounting,

<sup>61</sup> Recently emphasized by Thonemann, *op. cit.* (n. 1), 475. These figures generally follow Paton's tabulations for Lesbos with Erxleben's additions to no. 77 and Thonemann's emendations for Thera.

<sup>62</sup> Thonemann, *op. cit.* (n. 1), 467: on Thera land was allocated to arable/vine/olive in the range of 80/17/3 per cent. On Lesbos, the ratio was *c.* 88/6/6 per cent.

<sup>63</sup> See, for instance, Table 4B of Bowman, *op. cit.* (n. 6), 159. Other evidence from Egypt broadly confirms the Hermopolite data: see the properties analysed by D. Kehoe, *Management and Investment on Estates in Roman Egypt during the Early Empire* (1992), especially 75; J. Rowlandson, *Landowners and Tenants in Roman Egypt: The Social Relations of Agriculture in the Oxyrhynchite Nome* (1996), 123.

<sup>64</sup> Jones, *op. cit.* (n. 2), 50; Duncan-Jones, *op. cit.* (n. 2), 199–210.

the other about the specific conversion schedule in use throughout Asia. In a real breakthrough, he has shown that the inscriptions deploy a relatively 'restricted range of fractions ... based on products of primes no greater than five'.<sup>65</sup> With this insight, he argues that the fractions attested in the inscriptions should be related to the conversion rates.<sup>66</sup> He thus works out a 'satisfyingly straightforward series of conversion rates': 1 *iugum* = 100 *iugera* arable = 15 *iugera* of vine = 300 olive trees. The interpretation of the accounting method is elegant and convincing, but the specific conversion schedule, particularly the 'large' arable *iugum*, presents insurmountable difficulties.

In the first place, there is no reason why this specific schedule (100 arable/15 vine/300 trees) must be correct. It is based entirely on one of the inscriptions from Thera, which may preserve the calculation of raw into fiscal units.<sup>67</sup> In three places, the stone in question reads ἔχουσιν κ (κεφαλό)ζ(υγα). Not only is the term *kephalozyga* completely unattested, the disposition of the 'calculations' on the stone is hard to reconcile with the theory that they are calculations.<sup>68</sup> It seems highly plausible that these are not in fact conversions. Moreover, Duncan-Jones's case for a small *iugum* is not easily brushed aside. He cites the contemporary work of Epiphanius, whose book on measurements claimed that a *iugum* was equivalent to 12.5 *iugera* of arable land; this is a compelling source overlooked in most accounts.<sup>69</sup> Duncan-Jones also invokes the letter of Valens to the proconsul of Asia, which implies a rate of return on estates, in terms of *solidi* per *iugum*, that requires the lower estimate; if the *iugum* were 100 *iugera*, these estates were producing unbelievably low revenues.<sup>70</sup> Another reason to doubt this schedule (100 arable = 15 vine = 300 olive trees) is that the implied taxes on vines and olives are implausibly high: the 20 per cent of land allotted to grapes and olives would bear over two-thirds of the total tax burden.<sup>71</sup>

The smaller *iugum* also allows for a more persuasive reconstruction of landholding at Astypalaia, Tralles, and Magnesia. The registers from Tralles and Astypalaia preserve five complete properties.<sup>72</sup> Assuming for simplicity that the land was only in arable, and using

<sup>65</sup> Thonemann, op. cit. (n. 1), 466. It is worth noting that there are, however, a number of exceptions.

<sup>66</sup> For instance, in light of the common fraction 1/300, he proposes that 300 olive trees = 1 *iugum*.

<sup>67</sup> If Thonemann's reading is correct (op. cit. (n. 1), 464, lines 4–5), since he reads κζ rather than Kiourtzian's κζυ, it would allow for other interpretations, such as κεφαλαὶ ζώων — a category attested in the inscriptions.

<sup>68</sup> For the new edition, Kiourtzian, op. cit. (n. 1), no. 142a. The first 'calculation' is preserved at the end of the third farm on an estate comprised of four farms. The second 'calculation' is at the end of the fourth farm *on this same estate!* The third 'calculation' comes at the end of the first farm on another estate. Jones and Thonemann hold that the first calculation (preserved in line 3) is a total of the first *four* farms. Thonemann is perfectly candid about this problem, op. cit. (n. 1), 464, at n. 104.

<sup>69</sup> Duncan-Jones, op. cit. (n. 2), 201, although as he admits Cyprus lay in Oriens. It is worth noting, too, that in sixth-century Petra, a *iugum* was equal to 10 *iugera* of arable land: *P. Petra* 1.7–10. See also L. Koenen, 'Papyrology, Ptolemaic Egypt, and Byzantine Palestine', in B. Palme (ed.), *Akten des 23. Internationalen Papyrologenkongresses* (2007), 5–13, at 12–13.

<sup>70</sup> Duncan-Jones, op. cit. (n. 2), 206–7. The inscription implies that these estates were desirable (they are described as *opima*), at a yield of just under 2 *solidi* per *iugum*.

<sup>71</sup> Thonemann, op. cit. (n. 1), 467, argues that the 80 per cent of sown land bore only 30 per cent of the total *iugatio*. Compare the rates of relative taxation implied in the *Syro-Roman Lawbook*, op. cit. (n. 17), where olive trees were taxed at a rate of 11 trees = 1 *iugerum* arable (not 3 trees = 1 *iugerum*). In the West, taxes were apparently assessed by area regardless of land-use: Jones, op. cit. (n. 8), 453.

<sup>72</sup> I follow the superior editions of these texts provided by Thonemann, op. cit. (n. 1). Another property from Column I of the Tralles inscription, which seems to have totalled over 38 *iuga* and 86.5 *capita* (although it is impossible to tell if these are slaves, animals, or *paroikoi*) in the visible portions, is so fragmentary that it is omitted from discussion here but would have been one of the larger properties. Likewise, the fragmentary properties on Samos and Cos are omitted. The only property on Samos appears to have been an estate totalling 13 *iuga*. Thonemann, op. cit. (n. 1), 470–1, reports soon-to-be-published fragments from Cos pertaining to two estates, totalling 4.56 and 27.3 *iuga* respectively.

a conversion schedule of 1 *iugum* = 12 *iugera*, the properties compare with the estates on Thera and Lesbos.<sup>73</sup>

TRALLES	ARABLE <i>IUGERA</i>	ASTYPALAIA	ARABLE <i>IUGERA</i>
Tatianus	616	Heracleides	129
Kritias	251		
Latron	205		
Fulvius	39		

We should note that if the *iugum* were closer to 100 *iugera* of arable, the landowners of Tralles and Astypalaia far outclassed the proprietors of Thera and Lesbos. This is intrinsically unlikely, for the landowners of Thera and Lesbos included, in a rather small sample, a senator's relative and someone wealthy enough to own 152 slaves. Moreover, there is no obvious reason why the few attested landowners from Tralles and Astypalaia should be off the charts in comparison to the landowners of fourth-century Hermopolis, a large and wealthy town.<sup>74</sup>

The inscription from Magnesia is also a secondary register, and it is especially valuable for a study of wealth in the Late Empire, for it preserves information on over ninety farms. The farms are grouped alphabetically, by the name of their location; only parts of A, B, E, and another letter survive, so this is a random segment of a much larger list. At first glance, the inscription gives the impression of a broad base of urban landowners: over sixty-five different owners are attested. Twelve of the landowners are attested more than once, and fourteen out-of-towners, mostly from neighbouring cities such as Ephesus, are registered. We thus see a regional aristocracy whose wealthier families held land up and down the fertile Meander valley, but the majority of local landowners were not of any special civic rank.

MAGNESIA	<i>IUGA</i>	# OF PROPERTIES THIS SIZE
	75	1
	26	2
	25	1
	20-1	2
	12-15	2
	8-11	6
	4-7	6
	2-3	15
	1-1.5	14
	<1	16

The size of the *iugum* deeply influences how we understand the data from Magnesia. If the large *iugum* (c. 100 *iugera* arable) were correct, it would make the top landowners at

<sup>73</sup> This conversion rate represents only an order of magnitude. I think 1 *iugum* = c. 10 *iugera* is equally possible. The number of *iugera* would be smaller if we accounted for grapes and olives, larger if pasture/fallow. But the inscriptions of Thera and Lesbos show how little land was actually allotted to vines and trees, and it is unlikely that an inordinately large percentage of the tax burden (much less over half of it) fell on grapes and olives, so that the simplifying assumption of arable *iugera* should not radically distort the scale of the properties recorded in *iuga*.

<sup>74</sup> Given the (apparent) size of the estates on Cos and Samos (13, 4.56, and 27.3 *iuga*), the small *iugum* would make all of the attested owners from Tralles, Astypalaia, Cos, and Samos large landowners, whereas the large *iugum* would make them all *exceptionally* large landowners. Cf. Bowman, *op. cit.* (n. 6), Table IV.

Magnesia exceedingly prosperous, far richer than their counterparts in Egypt or the Aegean. The largest property, at 75 *iuga*, would constitute, as a single plot, one of the largest holdings known from the eastern Mediterranean. With a small *iugum*, this property would still rank among the very largest properties in the Hermopolite land register. The bottom end of the scale is also revealing. There were numerous small proprietors at Magnesia, in the range of 1–2 *iuga*. These owners either closely resemble the small urban proprietors at Hermopolis or far outclass them. The median holding in the Egyptian data was around 10 *arourai* (11 *iugera*).<sup>75</sup> The median holding at Magnesia was 2 *iuga*; this was, depending on the schedule we use, on the order of 20 or 200 *iugera*. Surely, the median landholder at Magnesia was not the sort of rich proprietor with 200 *iugera*. At the top and bottom of the scale, the order of magnitude implied for individual holdings strongly argues for the small *iugum*. The Magnesia register can also be used to analyse the stratification of wealth in this region.

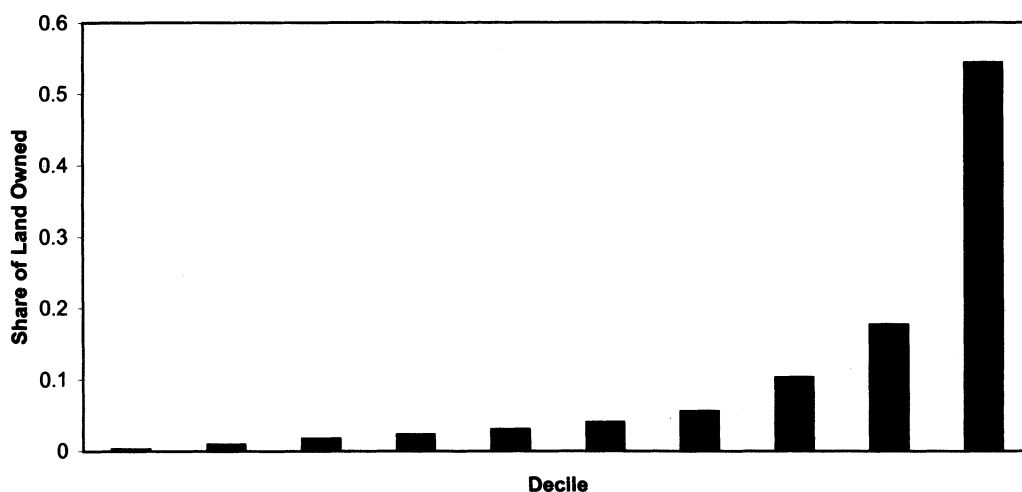


FIG. 1. Land ownership by decile.

Duncan-Jones has gathered a number of data-sets on the distribution of landed wealth across Roman history.<sup>76</sup> The two most stratified samples come from Hermopolis and Magnesia.<sup>77</sup> But in the case of Hermopolis, Bagnall has noted a crucial caveat. The Egyptian land register recorded only *urban* landowners, exclusive of peasants and villagers. If the property of Egyptian villagers were included, the measure of inequality would not appear nearly so drastic.<sup>78</sup> This raises a fundamental question about the Magnesia register: does it include the holdings of peasants and villagers, or is this only a list of *urban* proprietors?

The answer to this question carries significant consequences for our understanding of the data. If the register originally recorded all taxable land in the territory of Magnesia, then this inscription reflects the most stratified society known from the Roman world. The

<sup>75</sup> See Bowman, *op. cit.* (n. 6), 158–9. At a median of 200 *iugera*, these could hardly be family farms. A law of A.D. 342 even suggests that in some cities a property of 25 *iugera* was sufficient to qualify for curial service: *CT* 12.1.33.

<sup>76</sup> Duncan-Jones, *op. cit.* (n. 2), 121–42.

<sup>77</sup> I calculate a Gini coefficient of .677 at Magnesia. At Hermopolis, the raw figure is .815 — extremely high: Bowman, *op. cit.* (n. 6), 150. This number should be adjusted downward (see below). R. Bagnall, ‘Landholding in Late Roman Egypt: the distribution of wealth’, *JRS* 82 (1992), 128–49, at 131, fig. 2.

<sup>78</sup> Bagnall, *op. cit.* (n. 77), 133–5, especially 138; a corrected Gini of .560, including villagers. The largest owners, such as the senators, held property on a larger geographic scale, with estates in other cities and provinces. So the graph is distorted in two directions: it understates the largest owners’ holdings, but overstates inequality of distribution in this delimited space by excluding rural proprietors.

large conversion rate for the *iugum* (100 *iugera*) would require such a reading of the inscription, lest the implied size of Magnesia territory exceed plausible bounds. The alternative scenario seems more coherent: a small *iugum*, a register that included only urban proprietors, and severe but credible inequalities of wealth. This case is supported by formal comparison with other documents, such as the Hermopolite registers, which only recorded the tax liabilities of town residents.<sup>79</sup> In Egypt, villages were assigned the task of collecting taxes on their inhabitants and rendering the sums to the towns; a sixth-century inscription from the province of Caria shows that villages in Asia Minor could also be liable for collecting taxes and paying them through the city.<sup>80</sup> On administrative grounds, then, it is unlikely that the Magnesia register listed all proprietors in the city's territory.<sup>81</sup>

The assumptions of a small *iugum* and an urban-only register also allow us to project plausible orders of magnitude for the population and overall civic territory of Magnesia. We have *c.* 8 per cent of the original list. The extant portion includes sixty-five unique landowners: fourteen out-of-towners and fifty-one Magnesians. This would lead us to project around 600 Magnesian proprietors in the entire territory of the city. The urban population of Roman Magnesia has been estimated at 12,500 souls.<sup>82</sup> This estimate is quite possibly too large, unless the urbanization rate was exceptionally high; it is easier to believe in a city population in the range of 5–10,000, with a rural population at several times this number.<sup>83</sup> Six hundred is surely too small as a number of total proprietors in the territory — especially if the higher estimates of the population are correct — but it seems plausible as a number of urban owners, in particular if many were small-holders around the district of the city itself.<sup>84</sup>

Similar order-of-magnitude calculations can be carried out for the total civic territory of Magnesia, which has been estimated at 471 km<sup>2</sup> of cultivable land.<sup>85</sup> If we have *c.* 8 per cent of the register, the 366.8 recorded *iuga* on the surviving portion would imply an original total of 4,585 registered *iuga*. If 1 *iugum* = 100 *iugera* arable, then the total registered property would far exceed the size of Magnesian civic territory.<sup>86</sup> If, however, the *iugum* were around 12 *iugera*, it implies that urban landowners held 55,020 *iugera* in total. This would constitute roughly 29 per cent of all taxable land in the territory of Magnesia. There are several possible sources of error in this calculation, not to mention that we have no way of knowing how much land was imperially owned. But it is noteworthy that a ratio of urban/rural ownership at Magnesia of 29/71 is almost precisely equivalent to the ratio calculated in the Hermopolite nome, 30/70.<sup>87</sup> In sum, by assuming a small *iugum* and an urban-only register, the Magnesia inscription yields an image of wealth in which both the scale of individual properties and the overall distribution of land can be closely compared with contemporary data from the other census inscriptions and the Egyptian papyri.

<sup>79</sup> Jones, *op. cit.* (n. 2), 54–5, argued on this logic that the Magnesian list recorded only urban owners.

<sup>80</sup> For Egypt: Jones, *op. cit.* (n. 8), 454. For the Carian example, see D. Feissel, 'Un rescrit de Justinien découvert à Didymes', *Chiron* 34 (2004), 285–365.

<sup>81</sup> There is another internal argument: virtually none of the smaller holdings have registered *capita*. The consequences of this distribution of labour are discussed in the next section, but the immediate conclusion must be that these do not represent village or peasant households, which would have been liable for the head taxes of their family members.

<sup>82</sup> R. Marchese, *The Lower Maeander Flood Plain: A Regional Settlement Study* (1986), 317.

<sup>83</sup> Marchese, *op. cit.* (n. 82), 317, employs a rank-size approach which implies very high rates of urbanization (over 30 per cent). Cf. the population densities and urbanization rates in B. Frier, 'Demography', *CAH*<sup>2</sup> (2000), 787–816.

<sup>84</sup> The Hermopolite data, crucially, exclude the *pagus* nearest the city, but see Bowman, *op. cit.* (n. 6), Table VI, and the exponentially greater number of owners in the 5th, 6th, and 8th *pagi*, the next closest areas.

<sup>85</sup> Marchese, *op. cit.* (n. 82), 317.

<sup>86</sup> If the tax liability were only in arable, it would imply 458,500 *iugera*, a number which could be reduced by folding some of the liability into vine-land and olive trees (indeed, it is only by putting over half the tax burden on vines and olives, and by assuming that the register accounted for all land in the territory, that the scale becomes manageable in the large-*iugum* scenario).

<sup>87</sup> See Bagnall, *op. cit.* (n. 77), 137.

Finally, the Magnesia inscription provides a social profile of the landowners.

CURIAL AND SENATORIAL LANDHOLDERS AT MAGNESIA

CURIAL	IUGA	CAPITA	SENATORIAL	IUGA	CAPITA
Paul	8.78	5.25	Priscillianus	2.65	12.28
Tuchichos	1.05		Aristocleia	x	
Mandrogenes	2.1	7.2	Farm c3	75.15	52.88
Pollio	21.15		Capitolinus	.74	
Phanius	4.07	5.02	Hermonactiane	3.17	
Heracleides	9.5	10.36	Eutyches	1.15	
Farm i1	.37				
Farm i3	2.15	1.58			
TOTAL	49.17	29.41	TOTAL	82.86	65.16

The rise of a new aristocracy based on imperial service is a classic theme of Late Antiquity. This class gradually displaced an older, locally-rooted municipal gentry in the East. To some extent, this process was a re-labelling of pre-existing élites, as the entrenched nobility was able to maintain its status under new circumstances. But the imperial centre reconfigured the matrix of loyalties, privileges, and resources through which the upper-class maintained its status. The census inscriptions provide a static image of this process in a sub-region of the Empire for which there is little concrete evidence. The Magnesia inscription shows that the imperial, senatorial stratum was intruding on the municipal aristocracy, though the latter retained significant reserves of economic clout.<sup>88</sup> The inscription cannot tell us if the senatorial landowners were new men with new money or former decurions promoted to imperial status. Either way, the inscription casts vivid light on the plight of the town councils which is so audible in the sources of the period.

IV LABOUR IN THE CENSUS INSCRIPTIONS: DENSITY AND STATUS

The census inscriptions also allow quantitative insights into the deployment of labour in the Late Roman countryside. The study of labour in Roman antiquity is beset by intractable problems in the empirical record: what evidence survives is typically vague, unrepresentative, or ideologically coloured.<sup>89</sup> The random, documentary data of the census inscriptions can be a corrective, and they deserve wider notice than they have received. Nevertheless, caution is in order. Jones drew two conclusions about labour from the inscriptions. He argued for a low density of labour on the land and an overall ratio of free men to slaves around 5:1. These claims are not methodologically sound, and it will be a goal of this section to emphasize the limits of the data. Despite the considerable uncertainty, however, solid evidence about the use of labour on élite-owned land can be rescued from the stones.

The density of labour on the land is surely a less urgent theme now than in 1953. The bleak image of a landscape scarred by *agri deserti* is simply no longer tenable in light of

<sup>88</sup> As Thonemann, *op. cit.* (n. 1), 473, points out, the only obvious 'absentee' landlord is at line a4, a farm owned by Quadratus but declared by (an apparent slave manager) Syneros.

<sup>89</sup> See, e.g., U. Roth, 'Food rations in Cato's *De agri cultura* and female slave labour', *Ostraka* 11 (2002), 195–213; W. Scheidel, 'The most silent women of Greece and Rome: rural labour and women's life in the ancient world', *G&R* 42 (1995), 202–17 and 43 (1996), 1–10; W. Jongman, 'Slavery and the growth of Rome. The transformation of Italy in the second and first centuries BCE', in C. Edwards and G. Woolf (eds), *Rome the Cosmopolis* (2003), 100–22.

the ever-accumulating archaeological evidence which shows a dense and vibrant pattern of settlement in the Late Roman East.<sup>90</sup> More profoundly, the effort to extract measurements of labour density from these documents is flawed. The census inscriptions record only *registered* labour — workers for whose capitation tax the landowner was liable. Jones recognized that free, contract-based land-leasing would not be detectible, but he nevertheless proceeded to diagnose a critical shortage of farm labour. His account shows the subtle influence of the colonate, for he seems to assume that if labour was not registered, it probably did not exist. Yet revisionist work on the colonate has demonstrated that land-leasing remained a prominent element of the rural economy into the Late Empire; the possibility of non-registered labour is entirely realistic and indeed finds support in the inscriptions (see below). Moreover, Jones's case for a shortage of labour was inseparable from his belief that the *iugum* was on the order of 100 *iugera*. The downward revision of the *iugum* drastically alters the impression of labour density on the land.<sup>91</sup>

If we begin the investigation explicitly as a search for patterns of *registered* labour, interesting results emerge. The secondary registers from Astypalaia, Tralles, and Magnesia all offer data about the ratios of registered *capita* to registered *iuga*. But as with the *iugum*, the conversion schedule used to convert individual humans into units of tax liability, *capita*, is uncertain. We seem to be fortuitously well-informed by a contemporary law about the conversion schedule. A constitution of A.D. 386 adjusted the number of men and women in a *caput* throughout several provinces of the Pontic diocese; it claimed that previously one man or two women had equalled one unit of head-tax liability, the *caput*.<sup>92</sup> It is clear that things were not quite so simple, but as a best estimate, the schedule of 1 man = 2 women = 1 *caput* seems plausible.<sup>93</sup> This yields, for instance, the density of labour on a mid-sized estate on Astypalaia:<sup>94</sup>

ASTYPALAIA	LAND	LABOUR
Fiscal	10.8 <i>iuga</i>	13.13 <i>capita</i>
Physical	130 <i>iugera</i>	13–26 workers

For the density measurements to be meaningful, we would have to know the average number of workers needed per *iugerum*. Our knowledge of manning-ratios in Roman farming comes from the agricultural writers and land grants. These yield a range of average labour densities, somewhere between 5 and 25 *iugera* of arable per working male, but these figures must have varied significantly by region, scale of estate, nature of cultivation, mobilization of female labour, etc.<sup>95</sup> At the least, they can provide a rough idea of labour requirements. With one worker (presumably including women) for every 5–10 *iugera*, the density of

<sup>90</sup> A. Dunn, 'Continuity and change in the Macedonian countryside, from Gallienus to Justinian', in W. Bowden, L. Lavan and C. Machado (eds), *Recent Research on the Late Antique Countryside* (2004), 535–86; S. Kingsley and M. Decker (eds), *Economy and Exchange in the East Mediterranean during Late Antiquity* (2001); Jameson, op. cit. (n. 3); S. Alcock, *Graecia Capta: The Landscapes of Roman Greece* (1993). Not to mention that *agri deserti* should be interpreted in fiscal, not demographic, terms: C. R. Whittaker, 'Agri deserti', in M. I. Finley (ed.), *Studies in Roman Property* (1976), 137–65. Most recently, C. Grey, 'Revisiting the "problem" of *agri deserti* in the Late Roman Empire', *JRA* 20 (2007), 362–76.

<sup>91</sup> As noted already by Duncan-Jones, op. cit. (n. 2), 207.

<sup>92</sup> *CT* 13.11.2 (A.D. 386), issued to the Prefect of the East. Equivalent fiscal schedules were apparently in use for Asiana and Pontica: *CT* 7.6.3 (A.D. 377). See in general Jones, op. cit. (n. 2), 50.

<sup>93</sup> The Astypalaia inscription included a column of 'human capita'. But the figures recorded in this category include bizarre fractions like 1/10, 1/200, 1/300, and 1/750. See Thonemann, op. cit. (n. 1), 477–8.

<sup>94</sup> I multiply the *capita* by 1–2, to reflect an all-adult male or all-adult female population. The truth should be somewhere in between, unless large numbers of children were included as small fractions.

<sup>95</sup> M. Spurr, *Arable Cultivation in Roman Italy, c. 200 B.C.–c. A.D. 100* (1986), 133–46; R. Duncan-Jones, *The Roman Economy: Quantitative Studies* (1974), 327; Jones, op. cit. (n. 2), 56.



registered labour on Astypalaia falls within the range of sufficiency. On this estate there is little need to adduce the possibility of extensive leasing that did not include the landowner's responsibility for head taxes.

Similar data can be extracted from Tralles, although in this case there are more variables. The advantage of the Tralles inscription, like that at Astypalaia, is that we are able to see the tax liability for an owner's entire property — in this case, four owners. But unlike at Astypalaia, the labelling of human *capita* is not limpud. Some lines total the *capita* of 'animals and slaves', others the *capita* of 'animals', and others plain *capita*. Assuming, as did Jones, that the first represents slaves, the second represents animals, and the last represents *paroikoi*, we would see the following results.<sup>96</sup>

TRALLES	SLAVES	PAROIKOI	LAND
Fulvius	0	4-8	39 <i>iugera</i>
Tatianus	8-16	56-112	616 <i>iugera</i>
Kritias	2-4	9-18	251 <i>iugera</i>
Latron	4-8	0	205 <i>iugera</i>

The data from Tralles yield interesting, if uncertain, results. With the exception of Latron's property, each landowner was supplied with enough labour to be at or near sufficiency, without the need for unregistered labour. Latron, perhaps, rented some of his land, and it is easy to imagine that his slaves may have been not only workers, but effectively agents or managers.<sup>97</sup> Tatianus can claim to have the estate with the most non-slave labourers in any of the Greek census inscriptions, but it is noteworthy that even he could claim around a dozen slaves, perhaps as part of a permanent core workforce — a phenomenon attested elsewhere in Late Antiquity.<sup>98</sup>

The Magnesia inscription once again represents a challenging, yet significant source of information. This document recorded labour only in fiscal units (*capita*), without specifying the status of the workers, nor whether animals were included. It reveals measures of labour density which at first glance seem to reflect a structural shortage of labour. At the same time, this document reveals a pattern which offers important clues to the dynamics of registering labour in the Late Empire. At Magnesia the tax dues were organized geographically, so we do not know the whole tax liability for any individual owner. The inscriptions make it clear that registered labour was not spread evenly across the land.<sup>99</sup> As we might expect with scattered holdings, it was normal to concentrate labourers on certain plots which functioned as domiciles for the workers. Jones calculated around 263 *iuga* and 212 *capita* for the parts of the inscription in which both categories are visible.<sup>100</sup> This indicates a lower density of *registered* labour than elsewhere. Possibly this is a fluke (if we lack registered sites where the workforce was domiciled), or possibly there was a shortage of rural labour at Magnesia. But perhaps some landowners at Magnesia leased land to villagers and peasants without assuming responsibility for their capitation taxes.

<sup>96</sup> Some entries recorded ζώων κεφαλαί, others δούλων καὶ ζώων κεφαλαί, others simply κεφαλαί. The argument of Thonemann, *op. cit.* (n. 1), 458, that the *capita* registered as 'slaves and livestock' were possibly mobile work-gangs, while the plain *capita* were assigned to a plot (but not indicating legal status) is possible and throws into doubt the arguments of Jones for the ratio of free to slave labour.

<sup>97</sup> Also suggested by W. Scheidel, 'The Roman slave supply' (forthcoming). For this sort of relationship, see *P. Oxy.* 2474 (third century, possibly late).

<sup>98</sup> e.g. *P. Lips.* 97 (A.D. 338); *CT* 9.42.7 (A.D. 369); Basil of Caesarea, *Homilia in divites* 2.2 (Ed. Y. Courtonne (1935), 46-7).

<sup>99</sup> On Lesbos, the slaves were concentrated on no. 76, line d6 and no. 78, line c2. At Tralles, one location (line 22) had 15.56 *capita* on .95 *iuga*. And at Magnesia, farms a6, a12, b7, b8, b12, b18, c3, e11, and g2 held concentrations of labourers.

<sup>100</sup> Jones, *op. cit.* (n. 2), 54. The new readings of Thonemann, *op. cit.* (n. 1), give a slightly higher number of *capita*.

Significantly, the Magnesia inscription is the only example in the entire dossier where numerous petty landholders are recorded. The inscriptions from Lesbos, Tralles, Astypalaia and Thera are heavily biased towards large curial-scale properties. Perhaps small and middling landowners were the most likely to lease their small plots in the countryside to villagers and peasants. If such villagers or peasants owned their own land, then the urban landlord was not responsible for the capitation taxes, and the labour would not be registered under the landlord's liability.<sup>101</sup> In support of this reconstruction, liability for capitation taxes at Magnesia was strongly concentrated on three types of land: the largest properties, the farms of citizens with high status, and the farms of landowners from other towns, who were presumably large landowners.<sup>102</sup> This would argue that free, contract tenancy and the fiscal registration of dependent workers co-existed, but on two planes. There was both a sector of middling landlords leasing extra fields to rural smallholders and a level of larger landowners with their own (fiscally 'dependent' — that is, registered) labour force.

The inscriptions that allow comparison between registered workers and registered land do not seem to show an acute shortage of labour.<sup>103</sup> What the census inscriptions reveal is a countryside given over to intensive polycultural exploitation on elite-owned land, with a labour force constituted of a mix of tenants, slaves, and free dependents. Of course, the registration of free dependents (*paroikoi*) — in relationships that included the landlord's responsibility for capitation taxes — does appear as a widespread practice in this region. Most of the properties recorded are curial-scale fortunes, and only at Magnesia do we get a fuller picture that helps us understand how smaller owners could continue to use contract-leasing even as large owners became increasingly responsible for the capitation taxes of their workers. This divergence helps us to understand how large landowners may have been able to exploit public laws restricting fiscal movement for their own benefit.<sup>104</sup>

In Jones's analysis, the shortage of labour was one part of a story whose main drama was the rise of the colonate. The colonate not only led him to underestimate the possibility of non-registered labour, it seems to have encouraged him to downplay the striking evidence for slavery in these documents.<sup>105</sup> The discovery of the new fragment from Thera, attesting over 150 slaves on a single estate, demands that we pay more attention to the positive role of slavery in this sample. Moreover, the Roman colonate has come under

<sup>101</sup> CT 11.1.14 (A.D. 371).

<sup>102</sup> This pattern is difficult to quantify precisely, but the distribution is overwhelming. Among the twenty-one largest registrations of *capita* (which account for nearly all the total *capita*), only three owners were apparently not senatorial, curial, from other cities, or owners of multiple estates.

<sup>103</sup> The only other place where Jones found a shortage of labour was no. 79 from Lesbos. In this inscription, four of the properties included a personal name underneath the heading for each district. This is the only stone with this format, and other districts on this stone do not list names, making it probable that all of these properties belonged to one owner. The named individuals were probably his *actores*, *conductores*, or tenants. This stone alone records land of different classes, a clue that the taxes on these particular farms needed to be carefully specified. The names probably signal a tax assignment separate from legal ownership — cf. Bowman, *op. cit.* (n. 6), 142 — not the total labour on the farm.

<sup>104</sup> See especially J. Banaji, 'Lavoratori liberi e residenza coatta: il colonato romano in prospettiva storica', in Lo Cascio, *op. cit.* (n. 11), 253–80; D. Eibach, *Untersuchungen zum spätantiken Kolonat in der kaiserlichen Gesetzgebung: unter besonderer Berücksichtigung der Terminologie* (1980).

<sup>105</sup> Jones, *op. cit.* (n. 2), 57, claimed that, excluding the gangs on Lesbos, slaves were 12–13 per cent of the rural population. Slavery at 12–13 per cent of the rural population would be a remarkable figure — and this excluded the two samples available to him where slavery was most prominent. Careful study of the Roman slave system has downsize the plausible extent of slavery, so the discovery of prominent agricultural slavery in this region of the Empire (outside the traditional heartland) is immediately striking. See W. Scheidel, 'Quantifying the sources of slaves in the Early Roman Empire', *JRS* 87 (1997), 156–69; W. Scheidel, 'The slave population of Roman Italy: speculation and constraints', *Topoi* 9 (1999), 129–44; Scheidel, *op. cit.* (n. 3); Jongman, *op. cit.* (n. 89), 100–22.

withering critique as a paradigm for Late Roman labour relations.<sup>106</sup> In a seminal article, Carrié showed that the legislation on *coloni* was fiscal in nature and could not anchor a narrative of transition ‘from’ slavery ‘to’ tied tenancy as the dominant labour system.<sup>107</sup> His work allowed scholars to recognize the deep continuities in land-leasing, and it led ultimately to the striking recognition that *coloni* were not only tenants, but often paid estate workers.<sup>108</sup> If not everyone has agreed with the more radical versions of the revisionist view, a generation of critical scholarship on the colonate has at least prepared us for the diversity of the labour system attested in the inscriptions.

The census inscriptions record liability for capitation taxes on two classes of rural labourers: slaves and *paroikoi*. Throughout I have translated *paroikoi* with the studiously vague word ‘dependent’, in order to avoid prejudging how these labourers were organized, for instance as tenants or estate employees. In a strict sense, the inscriptions tell us only that they were of free legal status and that the landowner was responsible for their capitation taxes.<sup>109</sup> If the inscriptions date to the census of A.D. 371, then it is possible to say with certainty that these were labourers who owned no land of their own and who were thus inscribed on the fiscal register under the landowner’s estate. The inscriptions only record registered labour — a fact which immediately disqualifies the effort of Jones to extract the proportion of slaves and tenants in the rural population from these documents. Moreover, it is imperative to remember that our documents are biased towards the upper tiers of landed wealth. They are thus not representative of the countryside as a whole. Nevertheless, it is possible to obtain a controlled impression of the organization and status of labour on élite-owned land, and these findings force us to reconsider established beliefs about the role of slave labour in this period and region.

Three of the census inscriptions preserve data about the legal status of the labourers: Tralles, Lesbos, and Thera.<sup>110</sup> From Tralles we have a small and extremely problematic sample, preserved in terms of fiscal units. Jones argued that the ratio of free tenants to slaves could be extracted from this document. The ratio is 5:1, so that slaves would be around 17 per cent of the registered labour force. Unfortunately the numbers may be compromised by the inclusion of animals, and, as Thonemann has argued, it is not clear that the category of plain *capita* necessarily represents free *paroikoi*. The glimpses of the countryside at Tralles are only useful qualitatively. The large farm owned by the decurion Tatianus was well-equipped with workers who were likely free, but employed on the order of eight to sixteen slaves. Fulvius, a priest, held a small farm which was worked by a few, apparently free labourers. Kritias had perhaps two to four slaves to complement a larger staff of free workers. Latron had four to eight slaves but no free workers. This small sample, with all of its uncertainties, at least points to a diverse labour system, in terms of its ownership patterns and the status of its workers.

<sup>106</sup> Selectively: Eibach, op. cit. (n. 104); J.-M. Carrié, ‘Le “colonat du Bas-empire”: un mythe historiographique?’, *Opus* 1 (1982), 351–70; D. Vera, ‘Forme e funzioni della rendita fondiaria nella tarda antichità’, in A. Giardina (ed.), *Società romana e impero tardoantico* (1986), vol. 1, 367–477; D. Vera, ‘Padroni, contadini, contratti: *realia* del colonato tardoantico’, in Lo Cascio, op. cit. (n. 11), 185–224; W. Scheidel, ‘Slaves of the soil’, *JRA* 13 (2000), 727–32; D. Kehoe, *Law and Rural Economy in the Roman Empire* (2007), especially 163–91; Grey, op. cit. (n. 12); B. Sirks, ‘The colonate in Justinian’s reign’, *JRS* 98 (2008), 120–43.

<sup>107</sup> Carrié, op. cit. (n. 106).

<sup>108</sup> For continuities in land leasing, see the work of Vera, op. cit. (n. 106). For the recognition that not all *coloni* were tenants, see Banaji, op. cit. (n. 4), 209–11; Sarris, op. cit. (n. 4), 128–9; *CJ* 11.48.19 (Anastasius).

<sup>109</sup> See Sarris, op. cit. (n. 4), 151; Kiourtzian, op. cit. (n. 1), 225. For a fourth-century definition, Basil, *Homiliae super Psalmos* 14.1 (*PG* 29, col. 252): Ὡσπερ οἱ πάροικοι, ἀλλοτριᾶν ἐκμισθούμενοι γῆν, πρὸς τὸ βούλημα τοῦ ἐκδεδωκότος γεωργοῦσι τὴν χώραν.

<sup>110</sup> There are other important clues that slavery was regionally significant. A proprietor at Magnesia, whose properties were named Barbaria and Barbariane, held little land but enormous *capita* liability. Thonemann, op. cit. (n. 1), 474, has made the suggestion that these were slaves used to quarry emery, an important local resource. In Chios two census blocks survive. The second block listed the owner’s liability in at least ten different villages. Under each village the liabilities were listed in *iuga* and *παρ(οίκων) κεφαλαί*, but also in *δοῦλ(ων) κεφαλαί* and *ζῶ(ων) κεφαλαί*. Unfortunately, on the stones from Chios, this template is not filled in with numbers. See also n. 112, below.

With the evidence from Lesbos and Thera, recorded in raw head counts, we are on firmer ground. The fragmentary state of the evidence thwarts neat ratios of free to slave labour, but the stones demonstrate unequivocally that slavery played a structural role on elite-owned land in this region. All four of the stones from Lesbos are incomplete, so we lack the total liability for any landowner. This is why Jones removed the evidence from Lesbos in calculating the overall ratio of slaves to free workers. Though it is impossible to say what proportion of the labour force was composed of slaves, it is important to acknowledge the concrete testimony for rural slavery on Lesbos. Two of the four stones conserve information about the labour force. The first stone records land in sixteen plots but mentions labour on only one.<sup>111</sup> The farm in that locale was sizeable: 91 *iugera* of arable land, 20 *iugera* of vineyard, 352 olive trees, land for pasture, twenty oxen, fifty sheep, and twenty-two slaves. In the other districts listed on this stone, the owner had no tax liabilities for labourers, slave or free. It is likely that some of his land was worked by the slaves, some let out to tenants responsible for their own personal taxes, or some worked by labourers recorded on the lost part of the stone. The only certainty about this landowner's labour force is that it included a gang of twenty-two slaves.<sup>112</sup>

Another stone from Lesbos mentions properties in five different plots. In one of these places, the owner was liable for taxes on twenty-one slaves.<sup>113</sup> Yet the farm in this district included only 5 *iugera* of arable land, some vines, and 132 olive trees. It was a small plot which may have done little more than house the slaves, who presumably worked on the other farms. If we cannot extract ratios of free to slave labour on Lesbos, we should try to estimate, as a way of assessing whether the slaves were integral or marginal to agricultural exploitation in this sample, what proportion of the registered land the slaves *could* have worked. Using the manning-ratios of Duncan-Jones on the farms recorded in IG XII.2, no. 76:

LABOUR REQUIREMENTS, PROPERTY 1, LESBOS

RAW AMOUNT	MANNING-RATIO	REQUIRED LABOURERS
1514 <i>iugera</i> arable	25 <i>iugera</i> per man	60.6
109 <i>iugera</i> vine	8 <i>iugera</i> per man	13.6
110 <i>iugera</i> olives	25 <i>iugera</i> per man	4.4
		78.6 labourers

There are a number of complications with this exercise. It is possible that fallow arable was counted in the register of taxable property.<sup>114</sup> Moreover, the manning-ratios rely on treatises discussing imaginary monocultural farms.<sup>115</sup> Polyculture was the norm for Mediterranean farming, a strategy which reduced climatic and market risk but also made

<sup>111</sup> IG XII.2, no. 76, c-d.

<sup>112</sup> This stone presents another interesting problem. In four places, individual names, listed with animals, are recorded between villages. Jones thought these were owners of animals grazed on a third party's land. But it is more likely that they were servile or dependent shepherds. Their names, Elpidophoros, Cyzicius, Philodespotos, and Aristotle, are consistent with a group of slaves, though names are rarely probative. Aristotle had a patronymic, so possibly he was free or freed and the others slaves. Philodespotos is as convincing as name evidence gets. Cf. Bagnall, *op. cit.* (n. 45), 126. Parallel evidence for slave shepherds in Late Antiquity is not lacking, e.g. Augustine, *Contra Cresconium* 1.30.35 (Ed. M. Petschenig, CSEL 52.2 (1909), 355); Julian, *Orationes* 7.22 (Ed. Rochefort (1932–1964), vol. 2, 75). Archaeological evidence for estate-based pastoralism in North Africa: B. Hitchner, 'Image and reality: the changing face of pastoralism in the Tunisian High Steppe', in J. Carlsen (ed.), *Landuse in the Roman Empire* (1994), 27–43.

<sup>113</sup> IG XII.2, no. 78, c.

<sup>114</sup> On the taxation of fallow land, Bagnall, *op. cit.* (n. 45), 116. The register from Lesbos, however, uniquely recorded pasture. On the relationship between fallowing and pasture, see Grey, *op. cit.* (n. 90), 369–70. Cf. *CT* 9.42.7 (A.D. 369), a complete fiscal valuation of a confiscated estate included what was currently and had been previously cultivated.

<sup>115</sup> Duncan-Jones, *op. cit.* (n. 95), 327, is the best discussion.

efficient use of the calendar.<sup>116</sup> Finally, the manning-ratios assume working men, whereas the slave counts included women. But it is likely that slave women were worked hard, because slave status overrode cultural norms of gendered labour. This has been a major source of efficiency for slavery.<sup>117</sup> Factoring all these considerations, the twenty-two slaves of this landowner may have been able to handle, roughly, a quarter to a third of the necessary work on the visible registered land.

The calculations can be repeated for *IG XII.2.78*:

RAW AMOUNT	MANNING-RATIO	REQUIRED LABOURERS
52 <i>iugera</i> arable	25 <i>iugera</i> per man	2.08
15 <i>iugera</i> vine	8 <i>iugera</i> per man	1.88
5 <i>iugera</i> olives	25 <i>iugera</i> per man	0.2
		4.16 labourers

By any estimate, the twenty-one slaves on this property provided far too much labour for the part of the owner's holdings which are visible. Most likely the owner held other farms which were lost in the damage to the stone, and it is even possible that the same owner held all the farms on both stones. We can only say that slave labour, in a small but random sample, appears structurally integral to the exploitation of elite-owned land on Lesbos.

The inscriptions from Thera are the final set which offers information about the status of agricultural labourers. Unhappily, these inscriptions defy quantification in the same way as those from Lesbos: they are fragmentary, so we do not know the total liability of any landowner except the heirs of Paregorius, who had two slaves, three free dependents, and probably leased some of their land. Four other significant inscriptions survive, but aggregate ratios of free to slave labour are unattainable.

THERA	LAND	FREE	SLAVE
142b	614 <i>iugera</i> arable 162 <i>iugera</i> vine 1,420 olive trees	?	?
142c	528 <i>iugera</i> arable 120 <i>iugera</i> vine 586 olive trees	?	?
142d	?	16	?
New	?	?	152+

Although it is impossible to say what percentage of the total labour force on Thera was composed of slaves, the new inscription is, by any reckoning, remarkable. The attestation of over 152 slaves belonging to a single owner ranks as the most concrete, credible artefact

<sup>116</sup> Duncan-Jones, *op. cit.* (n. 95), 36–7. Even in the U.S. South, cash-crop farms like cotton plantations allowed less than half the year to cotton production. See G. Wright, *Slavery and American Economic Development* (2006), 86.

<sup>117</sup> Scheidel, *op. cit.* (n. 89), 213. On the efficiencies of using female slave labour in the New World, see J. T. Toman, 'The gang system and comparative advantage', *Explorations in Economic History* 42 (2005), 310–23. Cf. Stobaeus, quoting Hierocles (second century A.D.), *Anthologium* 4.28.21 (Ed. O. Hense and C. Wachsmuth (1894–1912), vol. 5, 699): ὥστε μὴ τῆς θαλασσίας κοινῶν εἶναι μόνον ταῖς θεραπαίνας, ἀλλὰ καὶ τῶν ἄλλων ἔργων τῶν ἐπανδροτέρων.

of large-scale rural slavery from the entire Roman Empire. This property must have been larger than the farms associated with gangs of slaves on Lesbos, the mixed estate of Tatianus at Tralles, or the large senatorial domain at Magnesia. The image of the countryside from Thera, where large landowners specialized in wine production and employed vast numbers of slaves, adds even more diversity to the labour system attested in the Greek census inscriptions.

Despite their limits, the census inscriptions testify, with a high degree of credibility, that slavery was structurally important to the élite land-use strategy of the fourth-century aristocracy in this region. The presentation of Jones, who was, to be fair, working without the benefit of the dramatic new fragment, has allowed some of the most valuable evidence for rural slavery in the Roman period to be marginalized. Finley, Whittaker, and others have long emphasized that the literary evidence for slavery in the Late Roman countryside is as abundant and credible as for any period of antiquity.<sup>118</sup> The evidence for slavery in the eastern Mediterranean has been particularly neglected. A variety of authors, including Basil of Caesarea, Libanius, and John Chrysostom, make plausible statements to the effect that agricultural slavery was important in the fourth century.<sup>119</sup> At the least, the inscriptions suggest that the observations of these authors had a basis in reality. As documentary evidence for agricultural slavery, there is little in Roman history that can match these inscriptions.

If one wanted to marginalize the evidence for slavery in the Greek census inscriptions, it might be possible to insist on the bias of the sample towards islands. It is pure accident that two of the inscriptions with good data about labour are from islands, but it is interesting. Islands could foster the microeconomic parameters of a slave estate.<sup>120</sup> From the slave manager's perspective, an island might have reduced the risk of flight. 19 km long, Thera was a natural cage for the slaves forced to work its land. Secondly, an island environment could aggravate the risks of the open labour market. With a limited catchment area, an island could have an inflexible supply of extra labour. Slavery thus insulated the landowner against the risk and transaction costs of finding labour.<sup>121</sup> Of course, these features are emphases, not exceptional traits, determined by island ecology. Mediterranean islands are not abnormal social habitats, and Lesbos, after all, is at 1,600 km<sup>2</sup> not a small island.<sup>122</sup> It would be unwarranted to press the case of island exceptionalism very far.

Such quibbles should not diminish the fact that the inscriptions enhance our knowledge of how slavery contributed to Roman agriculture. In the properties documented, slavery took a variety of forms: a few slaves on small farms, mid-sized gangs in single units, a permanent core of workers on a farm worked mostly by free labour, and truly vast slave-based estates. The prominence of slavery emphasizes that the Late Roman labour system cannot be described in terms of a struggle between slavery and tenancy as two competing modes of production.<sup>123</sup> This claim builds on Carrié's original insight that the colonate

<sup>118</sup> C. Whittaker, 'Circe's pigs: from slavery to serfdom in the later Roman world', in M. Finley (ed.), *Classical Slavery* (1987), 88–122; M. Finley, *Ancient Slavery and Modern Ideology*<sup>2</sup> (1998; orig. 1980), 191–217.

<sup>119</sup> John Chrysostom, *In Matthaeum* 63.4 (PG 58, col. 608); John Chrysostom, *In Matthaeum* 24.11 (PG 57, col. 319); John Chrysostom, *In acta apostolorum* 32.2 (PG 60, col. 237); Basil of Caesarea, *Homilia in divites* 2.2 (op. cit. (n. 98), 46–7); Basil, *Homilia in illud: Attende tibi ipsi* 5 (Ed. S. Rudberg (1962), 31); Basil, *Homilia in martyrem Julittam* 1 (PG 31, col 237); Libanius, *Or.* 62.46–8 (Ed. R. Foerster, *Opera* (1903–8), vol. 4, 370); Libanius, *Or.* 47.28 (Ed. Foerster, vol. 3, 417–18); Libanius, *Or.* 14.45 (Ed. Foerster, vol. 2, 103).

<sup>120</sup> cf. B. Shaw, "'A Wolf by the Ears': M. I. Finley's *Ancient Slavery and Modern Ideology* in historical context', foreword to M. Finley, *Ancient Slavery and Modern Ideology*<sup>2</sup> (1998), 3–74, at 18.

<sup>121</sup> For a vivid illustration of a desperate landowner hunting harvest labour (in the form of hired slaves) in fourth-century Egypt, see *P. Lips.* 111. Cf. Wright, op. cit. (n. 116), 117–19.

<sup>122</sup> P. Horden and N. Purcell, *The Corrupting Sea: A Study of Mediterranean History* (2000), 224–30, 390.

<sup>123</sup> On modes of production, see J. Banaji, 'Modes of production in a materialist conception of history', *Capital and Class* 2 (1977), 1–44. Cf. C. Wickham, 'The other transition: from the ancient world to feudalism', *PP* 103 (1984), 3–36; C. Wickham, 'Marx, Sherlock Holmes, and Late Roman commerce', *JRS* 78 (1988), 183–93, especially 187; Wickham, op. cit. (n. 3), 260.

was not a displacement of the slave system, and more directly it confirms the need to think of farm labour in terms of a 'logic of deployment', in which multiple forms of labour coexisted in the agrarian sector, even side-by-side on individual estates.<sup>124</sup> The Late Roman papyri demonstrate in extraordinary detail the vitality and diversity of estate management in Egypt, where a burgeoning curial class asserted control over production, particularly the production of staples for the market, by directly managing a mixed labour force.<sup>125</sup> The inscriptions offer a parallel image and insist that slavery was vital in the matrix of élite control over production in the Aegean region.

The inscriptions cannot tell us precisely how the labour of slaves and *paroikoi* was organized or managed. Significantly, however, there are signs of direct estate management. The patterns of habitation reflect central orchestration: the concentration of labour in individual villages at Magnesia, Tralles, and Lesbos argues that the workers were controlled centrally, not dispersed on the land as tenants.<sup>126</sup> The demographic analysis below argues that male slaves were manumitted in their adult years at structurally significant levels. This pattern implies that slaves were managed from above and that manumission was a tool of domination; equally, it militates against a reading in which slaves were left to organize production and private life on their own.<sup>127</sup> Literary sources of the period assumed that landowners were the impresarios of slave-based agriculture.<sup>128</sup> Contemporary papyri reflect intensive management, and the reinvigorated circulation of agricultural manuals, in Greek, with an emphasis on the production of staple crops, is another clue that landowners directly managed rural labour.<sup>129</sup> On the other hand, the abundance of female slaves and the weight of arable farming would argue that slavery in this region did not catalyse a shift towards a transformative mode of plantation labour. But revisionist work on Roman slavery has become more sensitive to the complexity of ancient land-use strategies, while the strict dichotomy between plantation slavery and hands-off land-leasing has been undermined.<sup>130</sup>

If the inscriptions reflect an effort by landowners to control production through direct estate management, on multiple scales and in varying degrees, it underscores the complexity of the vertical relationships implicated in the labour sector.<sup>131</sup> Slavery was an accessory to élite control over production, but it was only one form of socially-engineered

<sup>124</sup> Carrié, *op. cit.* (n. 11 and n. 106). See Banaji, *op. cit.* (n. 4), 200–2: 'once one construes patterns of labour use in terms of a logic of deployment it is unnecessary to have to suppose that the agricultural institutions of the empire rested predominately on one type of labour force or category of labour.'

<sup>125</sup> Above all, D. Rathbone, *Economic Rationalism and Rural Society in Third-Century A.D. Egypt: The Heroninos Archive and the Appianus Estate* (1991). *P. Lips.* 97 (A.D. 338) is a fourth-century example (though in Upper Egypt and no wine production) where slave and free workers were used on the same estate. Cf. *CT* 9.42.7 (A.D. 369) for a legal example. Banaji, *op. cit.* (n. 4), on patterns of land ownership.

<sup>126</sup> As Jones already noticed; this very fact likely prompted him to employ the loaded word 'gang'. Jones, *op. cit.* (n. 2), 57: 'these farms were evidently each a centre from which a group of farms was worked ... slaves were sometimes employed in large gangs.' On estate-based residency, see Rathbone, *op. cit.* (n. 125), 32.

<sup>127</sup> This is an important point, since it is sometimes claimed, in the face of considerable evidence for slavery in the Late Empire, that slaves were organized in a tenant mode of production: especially D. Vera, 'Dalla villa perfecta alla villa di Palladio: sulle trasformazioni del sistema agrario in Italia fra principato e dominato', *Athenaeum* 83 (1995), 189–211, 331–56. Cf. Wickham, *op. cit.* (n. 3), 262, who allows for more direct control over production in Late Antiquity but maintains that many slaves (especially in the West in the fifth and sixth centuries — a crucial distinction) were tenants.

<sup>128</sup> For example, Libanius, *Or.* 14.45 (Ed. R. Foerster, *Opera* (1903–8), vol. 2, 103), where a master's absence from Greece encouraged his slaves to be lazy and his estate to decline.

<sup>129</sup> J. Teall, 'The Byzantine agricultural tradition', *DOP* 25 (1971), 33–59, especially 42.

<sup>130</sup> Spurr, *op. cit.* (n. 95); W. Scheidel, 'Grain cultivation in the villa economy of Roman Italy', in J. Carlsen (ed.), *Landuse in the Roman Empire* (1994), 159–66; Roth, *op. cit.* (n. 89). A contrary view emphasizes the radical character of republican villa slavery, e.g., A. Carandini (ed.), *Settefinestre: una villa schiavistica nell'Etruria romana* (1986).

<sup>131</sup> Emphasized by J. Andreu and J. Maucourant, 'À propos de la "rationalité économique" dans l'antiquité gréco-romaine', *TÖO* 9 (1999), 48–102; Grey, *op. cit.* (n. 12).

intensification. It is impossible to say how the *paroikoi* were deployed and how much control landowners could assert over them. They represent a fiscal category, not a type of agricultural labour. Perhaps some were tenants, others estate employees. The prominence of slavery *ipso facto* implies that control over labour was remunerative and supports the suspicion that free workers were vulnerable to coercion, a situation exacerbated by the state's new fiscal regime.<sup>132</sup> Moreover, if the argument for significant levels of manumission is sound, some of the *paroikoi* were probably freedmen. The idea that patron-freedmen relations influenced forms of rural dependency has seemed attractive but difficult to prove.<sup>133</sup> The inscriptions could argue that elite-driven intensification, the construction of estates, a limited influx of slaves, and new forms of state-sanctioned fiscal patronage were symbiotic processes.

Finally, the snapshot of rural labour preserved in the census inscriptions is significant in its regional context. The idea of an Eastern core region captures the particular qualities of the area covered by the inscriptions. In contrast to the Western core, this was not a district dominated by an ancient senatorial class that may have controlled vast quantities of land through a *rentier*-style of ownership.<sup>134</sup> In contrast to the surrounding Eastern provinces, this was a region with a long-established municipal aristocracy situated in proximity to key exchange networks.<sup>135</sup> The parallels with Egypt are closest, while those with Syria and Palestine, where the degree of elite control over agriculture is debated, are seemingly more distant.<sup>136</sup> The prominence of slavery in the Eastern core, mirrored to a lesser extent in Egypt, shows that outcomes in the labour system were influenced by a variety of factors: tenurial structures, proximity to commodities markets, access to slave markets, the density of the local population, etc.<sup>137</sup> The fourth century represented a new phase in the construction of estates in the eastern Mediterranean.<sup>138</sup> If other forms of rural dependency gained over the fifth and sixth centuries, it appears that slavery was structurally vital in this seminal phase, along the unstable frontiers of elite control over agriculture, in the region documented by the inscriptions.

#### V A NEW FRAGMENT FROM THERA: SLAVERY AND DEMOGRAPHY

The new inscription from Thera is a unique document that invites still closer attention. There are only a handful of data-sets in the history of Roman slavery that allow any statistical manipulation, and this inscription should take its place as one of the few that provide genuine quantitative information on the slave system.<sup>139</sup> The literary evidence for rural slavery is notoriously exiguous, and documentary sources are practically non-existent, so the inscription from Thera has special value. The inscription offers a profile of

<sup>132</sup> Banaji, *op. cit.* (n. 104). Kehoe, *op. cit.* (n. 106), however, has shown how Roman institutions also constrained the ability of landowners to use social coercion, into the fourth century.

<sup>133</sup> L. Foxhall, 'The dependent tenant: land, leasing, and labour in Italy and Greece', *JRS* 80 (1990), 97–114, at 103; Shaw, *op. cit.* (n. 120), 37–8.

<sup>134</sup> Vera, *op. cit.* (n. 35); Vera, *op. cit.* (n. 127).

<sup>135</sup> For a prosopography of the elite of western Asia Minor, Halfmann, *op. cit.* (n. 38), 'Senatoren aus den Kleinasiatischen Provinzen'. See p. 616 for the proprietary networks of this elite, extending deep into the Aegean, including Thera. Trade networks: O. Karagiorgou, 'LR2: a container for the military *annona* on the Danubian border', in Kingsley and Decker, *op. cit.* (n. 90), 129–66.

<sup>136</sup> For the debate, see Wickham, *op. cit.* (n. 3), 445–6; M. Decker, 'Food for an empire: wine and oil production in North Syria', in Kingsley and Decker, *op. cit.* (n. 90), 69–86.

<sup>137</sup> For the use of *paidaria* in Late Roman Egypt, and the convincing arguments that these must be slaves, see Bagnall, *op. cit.* (n. 45), 126 and Sarris, *op. cit.* (n. 4), 86–7. P. Sarris, 'The origins of the manorial economy: new insights from Late Antiquity', *EHR* 119 (2004), 279–311, at 287. *P. Lips.* 97 (Hermonthis, A.D. 338) and *P. Oxy.* 58.3960 (A.D. 621) are important examples.

<sup>138</sup> Sarris, *op. cit.* (n. 4).

<sup>139</sup> We might mention, on this very short roster, the Egyptian census records, the manumission inscriptions of Delphi, and the senatorial family tomb inscriptions of the Early Empire.



a slave population belonging to a single owner, in a small space, at a given moment. The demographic data from Thera can speak to fundamental and contested questions, such as the presence or absence of females in the countryside.<sup>140</sup> Moreover, the demographic pattern exhibited in the population of slaves on Thera has implications for the nature of estate management and the dynamic relationships between slavery and other modes of dependency in the Late Roman countryside. The demographic investigation is thus closely related to the economic themes explored in the previous sections.

The new inscription records in detail the slaves for whom one owner, unnamed in the extant fragment, was fiscally liable. The inscription covers two stones. On the first stone, under the heading ‘And Slaves on the Farms’, follows a list of over 152 names and, beside each name, the age of the slave.<sup>141</sup> This information invites demographic analysis of the slave population on Thera, although the exercise is inevitably hazardous. First, there are the usual difficulties of using census returns as demographic data.<sup>142</sup> We are at the mercy of the thoroughness and accuracy of the census officials.<sup>143</sup> Secondly, the fact that this is a single micro-population is a double-edged sword. It is a unique opportunity to see a clearly delimited group of slaves, but the dynamics of small populations can be unduly influenced by minor factors that are invisible to us. Short-term variations in mortality or fertility could distort the data, not to mention that the sample sizes are too small to offer statistical confidence.<sup>144</sup> Moreover, this micro-variability is itself part of the ‘kaleidoscope of local demographic regimes’ which characterized the Roman Mediterranean.<sup>145</sup> What we have in the new fragment is not a representative sample of ‘The Demography’ of Roman slavery, but a snapshot of the demography of slaves in this particular place at this particular moment.

The variable of slavery poses its own set of problems. A slave population is both a biological and a social entity. The structure of a slave population was shaped by the normal parameters of demography — fertility, mortality, and migration — in addition to a fourth, manumission. Unfree legal status may have determined critical biological factors such as nutrition, marital opportunity, etc., in ways that could affect mortality and fertility.<sup>146</sup> Slave status could have had an even more profound effect upon the population through the other two parameters, migration and manumission. In the case of slavery, migration is involuntary — slaves could be imported, either literally or through alternative mechanisms like the enslavement of exposed children. Slaves could be exported — sold off or transferred. Likewise, manumission is a means of attrition, other than death, that may have structured the population as we see it in the inscription. The group of slaves on Thera was a proprietary group, not necessarily a stable population in equilibrium, free from interference. There is no way to know with certainty how this population was constructed. Given all the uncontrollable variables, we will be forced to juggle multiple interpretive scenarios.

Still, it is worth emphasizing just how important this find is. The number of slaves in this inscription is greater than the number recovered from three centuries of Egyptian

<sup>140</sup> See W. Scheidel, ‘Columellas *privates ius liberorum*: Literatur, Recht, Demographie. Einige Probleme’, *Latomus* 53 (1994), 513–27; Scheidel, *op. cit.* (n. 89); Roth, *op. cit.* (n. 89).

<sup>141</sup> Geroussi-Bendermacher, *op. cit.* (n. 1), 340: καὶ δούλους ἐπὶ τῆς χώρας. Paralleled on the estate of Paregorius, no. 142, line 16, which allows us to understand how this list fits into the template used on Thera.

<sup>142</sup> See R. Bagnall and B. Frier, *The Demography of Roman Egypt* (1994), 40–52, on the Egyptian data.

<sup>143</sup> The Egyptian data show that the Roman fiscal apparatus was capable of administering a sophisticated and reasonably accurate census. The extraordinary precision of the Greek census inscriptions — land and *capita* were counted down to tiny fractional amounts — may further bolster this impression. Moreover, some of the apparent problems in the data are comprehensible, and we may hope to gain some control over possible distortions. To anticipate, just where we might expect tax evasion and age rounding to cause problems, the data from Thera appear distorted.

<sup>144</sup> W. Scheidel, ‘Roman age structure: evidence and models’, *JRS* 91 (2001), 1–26, especially 5. See also R. Sallares, *The Ecology of the Ancient Greek World* (1991), 120–5.

<sup>145</sup> Scheidel, *op. cit.* (n. 144), 18.

<sup>146</sup> See W. Scheidel, ‘Progress and problems in Roman demography’, in W. Scheidel (ed.), *Debating Roman Demography* (2001), 1–81, at 24–9; Sallares, *op. cit.* (n. 144), 118–19.

census returns ( $n = 118$ ).<sup>147</sup> Practitioners of ancient demography are forced to use extremely small amounts of data to extrapolate patterns which may have applied to a population on the order of several millions of people. This inscription basically doubles the evidence at our disposal, even if it is a small data-set with its own quirks. This inscription may not unveil for us the true demography of Roman slavery, but it represents a documentary source for a social environment of ancient slavery that has proven inaccessible to empirical treatment. At least, it can join the handful of stray remarks in Columella, Appian, *et al.*, that have inordinately influenced the study of Roman slavery. Realistically, it might stand as our most objective source for the demography of a rural slave population in the Roman period.

The data can be sorted for information about the sex and age structures of the slave population.<sup>148</sup> An initial limitation is that the two stones are damaged. Of the 152 names, 87 lines retain legible data on the slave's age, and the age data are the most straightforward. Only 119 names can be assigned a sex, most of these with a high degree of certainty.<sup>149</sup> There are 76 lines with both sex and age data. The inscription provides invaluable data about the sex ratio of an actual rural slave population. In the 119 names that provide information, there were 63 females and 56 males. The sex balance is *prima facie* striking and supports the view that a predominantly masculine rural slavery is a mirage of the literary sources.<sup>150</sup> Of course, it is possible, even likely, that males are under-reported for a very comprehensible reason: tax evasion.<sup>151</sup> But allowing for some distortion does not alter the essential fact that female slaves existed in abundance on Thera.<sup>152</sup>

The inscription provides detailed information about the age structure of this slave population.<sup>153</sup> The number of children is immediately striking. Only one slave child under three was recorded, though ages under ten are well-represented. Infant mortality is not reflected in the table.<sup>154</sup> Before exploring the meaning of this age structure, we should

<sup>147</sup> Bagnall and Frier, *op. cit.* (n. 142), 342–3.

<sup>148</sup> See Appendix 1 for a list of the slaves' names, my reading of their sex and age data, and all the information on which these conclusions are based.

<sup>149</sup> All names are in the accusative. This makes it impossible to identify with absolute certainty the gender of names ending with -10V. Most of them will have been masculine names ending in -10C, which became extremely popular in the onomastic of Late Antiquity (see above, n. 30). But it is not possible to rule out that some were neuter-form feminine names, for which, see A. Wilhelm, 'Die sogenannte Hetäreninschrift aus Paros', in *Kleine Schriften* 2.3, published in *SAWW* 679 (2000), 441–72. Nevertheless, this should not introduce a significant source of error. See the *LGPN* 1 (the Aegean), statistics, where for instance Ἀφροδίσιος is attested eighty-three times as a masculine name, but never in a neuter-form feminine or even an ambiguous case.

<sup>150</sup> Bagnall and Frier, *op. cit.* (n. 142), 94, found a female-majority slave population. To find a female majority in an estate-based setting is more unexpected. The population structure on Thera contrasts with the masculine, army-barracks model of plantation slavery in republican Italy: e.g. A. Carandini, 'Villa romana e la piantagione schiavistica', in E. Gabba and A. Schiavone (eds), *Storia di Roma* (1989), vol. 4, 101–200, at 106. See below, n. 152.

<sup>151</sup> See below. Scheidel, *op. cit.* (n. 144), 14; Bagnall and Frier, *op. cit.* (n. 142), 97–8; R. Bagnall, 'Missing females in Roman Egypt', *SCI* 16 (1997), 121–38, at 124–5. For a modern comparison, M. Karasch, *Slave Life in Rio de Janeiro*, 1808–1850 (1987), 64.

<sup>152</sup> This can answer the obstacles suggested by W. Harris, 'Demography, geography, and the sources of Roman slaves', *JRS* 89 (1999), 62–75, at 69, that a skewed sex ratio afflicted the rural slave population — at least at this later date. E. Herrmann-Otto, 'Modes d'acquisition des esclaves dans l'Empire romain. Aspects juridiques et socio-économiques', in M. Garrido-Hory (ed.), *Routes et marchés d'esclaves, 26<sup>e</sup> colloque du GIREA* (2002), 113–26, has also been sceptical of reproductive success. In any case, if the slave population of the fourth century was still extensive, the system was in a largely self-reproducing stage. One could argue, then, either that the Thera data represent only this more mature phase of the slave system (thus reconcilable with contrasting demographic models, by positing change over time), or that the inscription provides better evidence than the earlier sources.

<sup>153</sup> The second digit in the age of one male in his 20s is illegible, so he has been distributed equally between the 20–24 and 25–29 bracket.

<sup>154</sup> cf. the similarities to the Florentine *catasto* of 1427–30, where the 'first two or three years of life were the most underreported': C. Klapisch-Zuber, *Women, Family, and Ritual in Renaissance Italy* (1987), 98. Contrast Bagnall and Frier, *op. cit.* (n. 142), 44.

AGE	MALE	FEMALE	SEX UNKNOWN	TOTAL
0 to 4	4	4	0	8
5 to 9	5	9	2	16
10 to 14	3	4	0	7
15 to 19	1	2	1	4
20 to 24	.5	5	1	6.5
25 to 29	3.5	1	2	6.5
30 to 34	1	5	0	6
35 to 39	1	2	0	3
40 to 44	3	4	4	11
45 to 49	1	1	1	3
50 to 54	2	4	0	6
55 to 59	1	4	0	5
60+	3	2	0	5
Total	29	47	11	87 slaves

consider likely sources of distortion in the recording of the data. Here a comparison with the breakdown of slaves by age cohort in the Egyptian data is helpful (Fig. 2).

There is one overriding parallel between the two data-sets. Both populations show a large number of slave children but a steep drop in the teens. On Thera, the decline after twelve years was calamitous. Bracketing the possibility of anomalous factors like a local 'baby boom' or a boatload of imports, this pattern should be explained by one of two causes. Perhaps the data truly reflect the age structure of the population on Thera, in which case an age-specific mortality factor ravaged adolescent slaves. Such a scenario is entirely possible in particular demographic niches of the ancient world.<sup>155</sup> But it seems

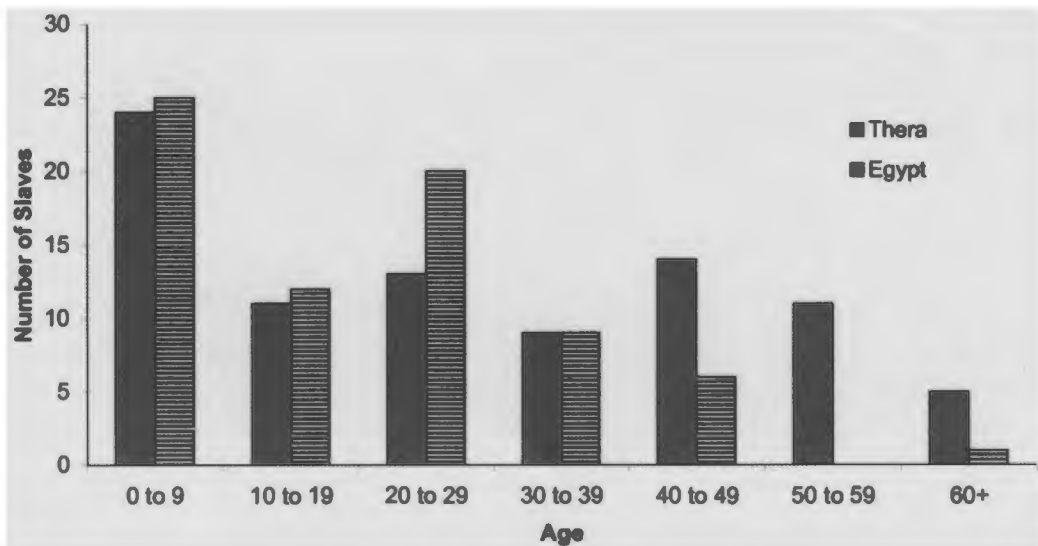


FIG. 2. Age cohorts in Thera and Egypt.

<sup>155</sup> Scheidel, *op. cit.* (n. 144), 8.

more likely that the severe cohort decline is due, at least in part, to distortion motivated by tax evasion. All of the information is filtered through a count conducted for fiscal purposes. Given the similarity of the pattern in Egypt (where pathogenic and social conditions were different, but the fiscal environment comparable), and the truly catastrophic drop after age twelve on Thera, tax evasion makes an attractive explanation. This would explain the under-reporting of ages for slaves in their teens, when tax liability is presumed to have begun.<sup>156</sup>

There are two salient differences in the data from Egypt and Thera, and these may be related to a distortion introduced through recording practices. The first is the extent of age rounding. While the Egyptian census records show surprisingly little age rounding, the inscription from Thera shows a distinct tendency for rounding, from twenty years and up.<sup>157</sup> The ratios of ages divisible by five per total number of ages in each bracket are as follows:

AGE	DIVISIBLE BY 5	TOTAL
0-9	3	24
10-19	7	11
20-29	7	13
30-39	6	9
40-49	11	14
50-59	5	11
60+	4	5

The ages of children under ten were by far the least likely to be rounded. This could either reflect a need to track ages carefully until the owner was liable for taxes on the children or simply the greater ease with which the age of children can be guessed at a glance. Age-rounding is commonly correlated with levels of illiteracy, so it is not intrinsically surprising to find that age-rounding was prominent among rural slaves.<sup>158</sup> Moreover, if the pattern is driven by an awareness of when tax liability began, it confirms the influence of the fiscal context on the recording of this data.

The tendency to age-rounding may partially account for the second important divergence between the data from Thera and Egypt: the large number of old slaves on Thera. Part of the answer lies in a particular anomaly with the data from Thera: seven slaves were 'about forty' (πρὸς μ), the only age recorded as an estimate. Some of these should be in their thirties. Moreover, age-rounding contributes to over-estimation of age, a phenomenon called 'age shoving'.<sup>159</sup> The high incidence of age-rounding in the adult population has probably distorted the observed age structure on Thera in favour of old age. Another possible factor is that tax liability ended at some age, providing an incentive to overstate the age of a slave.<sup>160</sup> But these distortions may only account for part of the difference, and it will be necessary to consider that Egyptian slaves, concentrated in cities, probably suffered the adverse effects of excess urban mortality, whereas the population on Thera was relatively healthy.<sup>161</sup>

<sup>156</sup> Jones, *op. cit.* (n. 2), 51; Bagnall and Frier, *op. cit.* (n. 142), 97. Although in Egypt only males were taxed, in our region females were taxed, but at half the rate of males: *CT* 13.11.2 (A.D. 386). In the Florentine *catasto*, young males mysteriously disappear at the age of tax liability: Klapisch-Zuber, *op. cit.* (n. 154), 102.

<sup>157</sup> Bagnall and Frier, *op. cit.* (n. 142), 44-5.

<sup>158</sup> See Duncan-Jones, *op. cit.* (n. 2), 79-92.

<sup>159</sup> Bagnall and Frier, *op. cit.* (n. 142), 44.

<sup>160</sup> *Dig.* 50.15.3; Bagnall and Frier, *op. cit.* (n. 142), 107.

<sup>161</sup> Concentration in cities: Bagnall and Frier, *op. cit.* (n. 142), 70-1.

The data from Thera, then, probably reflect significant distortions introduced by recording practices. These would include an under-count of males, particularly young males, and a tendency to over-estimate the ages of adult slaves. Despite these distortions, the age structure of the slave population on Thera is an invaluable measure of the demography of a group of rural slaves. It is worth trying to explore the age structure from Thera in detail. It is intuitively plausible that the slave and free populations had structurally distinct demographic profiles: hard labour, poor nutrition, environmental stress, marriage patterns, restricted privacy, and exposure to pathogens may have altered mortality and fertility along lines of status.<sup>162</sup> Moreover, while it is difficult to control for flows of the free population between different areas in the Egyptian census documents, the slave population is a social group for which ‘migration’ — in and out — represents a factor that is particularly difficult to observe in the evidence as it is preserved.<sup>163</sup> Manumission represents a unique and complicating variable in the age structure of a slave population. Nevertheless, the inscription from Thera allows us to explore, cautiously, each of these demographic parameters.

First, mortality. The assumption that slaves experienced higher mortality in the Roman world ‘may seem intuitively plausible but remains impossible to substantiate’.<sup>164</sup> Frankly, poverty, poor health, and imperfect nutrition were the common lot in the ancient world, and it is important to approach the data on mortality without prejudice. The overall age structure of the slave population on Thera — even assuming some age-shoving and tax evasion — would argue against the supposition of an excessively brutal mortality regime for rural slaves. The steep drop in the 10–19 bracket could be related to an age-specific mortality pattern, but, on the other hand, the slow rate of attrition among adult slaves on Thera is equally striking. This is not to imply that the institution of slavery was not cruel, nor to resurrect ideas about the humanity of ancient slavery. The relationship of domination was a subtle and complex search for control that could call upon pain or reward as necessary.<sup>165</sup> Even if age-shoving and fiscal distortion cause the record to overstate the number of old slaves, the evidence from Thera would suggest that agricultural slavery on this island does not compare to the devastating mortality regimes known for some New World slave systems. The population looks relatively healthy and may confirm that location was more important than status as a determinant of health.<sup>166</sup>

Migration is another factor in a population’s age structure. In the case of slaves, migration is involuntary. The age profile of the slave population on Thera could be explained by the purchase of a large number of very young slaves. The slave market is likely to have fluctuated and such a scenario is imaginable, as is the temporary transfer of urban slaves to the countryside for rearing.<sup>167</sup> There were thirteen female children and nine male children; females were disproportionately exposed as infants and perhaps some of them were transferred — via ‘social migration’ — into the slave population, a scenario which should seem distinctly possible here.<sup>168</sup> Emigration can also not be ruled out. If the reproductive capacity of this owner’s slaves exceeded his need for labour, he might sell off the children as they reached adolescence — the period of maximum value on the market — perhaps

<sup>162</sup> Scheidel, *op. cit.* (n. 144), 11, warns against taking any singular model of Roman age structure as typical. Nevertheless, the work of Bagnall and Frier, *op. cit.* (n. 142), on Egypt provides the basic point of reference.

<sup>163</sup> Scheidel, *op. cit.* (n. 144), 21–4.

<sup>164</sup> Scheidel, *op. cit.* (n. 146), 29.

<sup>165</sup> Perfectly clear in the ancient sources: Julian, *Or.* 9.15 (Ed. Rochefort (1932–1964), vol. 2.1, 163–4); Lactantius, *Inst. div.* 5.18 (Ed. S. Brandt, CSEL 19.1 (1890), 461). See K. Bradley, *Slaves and Masters in the Roman Empire: A Study in Social Control* (1987). Pain and reward incentives are not mutually exclusive as modes of domination, but see S. Fenoaltea, ‘Slavery and supervision in comparative perspective: a model’, *Journal of Economic History* 44 (1984), 635–68.

<sup>166</sup> As argued by Scheidel, *op. cit.* (n. 146), 15.

<sup>167</sup> Such children were supposed to be numbered among the urban slaves: *Dig.* 50.16.210; *Dig.* 32.99.3.

<sup>168</sup> W. Harris, ‘Child-exposure in the Roman Empire’, *JRS* 84 (1994), 1–22; Bagnall, *op. cit.* (n. 151).

even to other owners on the island.<sup>169</sup> But the abundance of adult female slaves and the close association between the children on the inscription and the females (demonstrated below) reinforce the impression that this was largely a self-reproducing population without dramatic interference through purchase or sale.

Manumission is another crucial determinant in the age structure of a slave population. The frequency of manumission in the Roman slave system is a matter of controversy. An older tradition argued that the Romans manumitted slaves with such regularity that the whole institution of slavery was an improvised means of assimilation. This has been replaced by a more plausible paradigm in which manumission was common enough to be an effective means of social control, but not the fate of most slaves.<sup>170</sup> The census returns of Egypt provide the most objective data on manumission in the Roman Empire; they display an important pattern by which some males were manumitted around thirty, while females were kept in slavery in order to reproduce new slaves.<sup>171</sup> Nevertheless, the incidence of rural manumission remains almost a complete mystery, due to lack of evidence. The usual assumption is that rates of manumission in the countryside were negligible.<sup>172</sup> The data from Thera may at last allow us to test for manumission in an agrarian social environment.

The age and sex structure of the population can be searched for patterns of attrition. The sample size is small, but the data from Thera parallel the Egyptian evidence. The imbalance towards women is distinctly more pronounced after thirty years of age (12:22 = .55), where there are nearly twice as many women as men, than before thirty (17:25 = .68). Since tax evasion encourages the under-counting of males, this distortion usually abates with age; we might expect there to be a relatively greater number of old males, rather than fewer.<sup>173</sup> Bracketing the possibility of higher male mortality, the pattern suggests that, as in Egypt, there was a gendered manumission system which freed more men than women, in order to exploit the slave woman's reproductive potential.<sup>174</sup> Just as importantly, it provides some of our best evidence that rural slaves were manumitted at structurally significant levels. Even the limited use of manumission in agricultural slavery would argue for internal hierarchies on the estate and slaves in positions of responsibility.<sup>175</sup> It may also mean that some of the *paroikoi* were freedmen.<sup>176</sup> But the 'long tail' of the age curve on this island, the relatively large proportion of old slaves, reminds us that manumission was not a sure shot as a slave grew older. Only the shift in the sex ratio, not an abnormal rate of overall attrition, supports the hypothesis of male manumission.

Fertility is the hardest demographic parameter to gauge from the inscription. Fertility is the outcome of a variety of factors, including age at marriage, modes of reproductive control, incidence of remarriage, etc. The reproductive success of the Roman slave population

<sup>169</sup> See K. Bradley, 'The age at time of sale of female slaves', *Arethusa* 11 (1978), 243–52. Cf. *Edictum de pretiis rerum venalium* 29 (Ed. M. Giaccherio (1974), 208).

<sup>170</sup> The high estimates of G. Alföldy, 'Die Freilassung von Sklaven und die Struktur der Sklaverei in der römischen Kaiserzeit', *Rivista storica dell'antichità* 2 (1972), 97–129, have been received with general scepticism. More realistic estimates are available in T. Wiedemann, 'The regularity of manumission at Rome', *CQ* 35 (1985), 162–75; K. Hopkins, *Conquerors and Slaves* (1978), 115–32; Bradley, *op. cit.* (n. 165), 81–112; K. Bradley, *Slavery and Society at Rome* (1994), 154–65.

<sup>171</sup> Bagnall and Frier, *op. cit.* (n. 142), 71, 156–8.

<sup>172</sup> e.g. Bradley, *op. cit.* (n. 170), 163; Wiedemann, *op. cit.* (n. 170), 162–3; Duncan-Jones, *op. cit.* (n. 95), 25.

<sup>173</sup> cf. Bagnall and Frier, *op. cit.* (n. 142), 98–9; Scheidel, *op. cit.* (n. 144), 14. The most anomalous sex/age grouping on Thera is the near-total absence of males in their late teens and early twenties.

<sup>174</sup> Male and female mortality is generally balanced in under-developed populations: Bagnall and Frier, *op. cit.* (n. 142), 95–9; Scheidel, *op. cit.* (n. 144), 21.

<sup>175</sup> Mediterranean agriculture required 'care' in addition to 'effort', in the formulation of Fenoaltea, so it would make sense to find manumission, a hallmark of care-intensive slave labour, responsibility, and worker hierarchies: Fenoaltea, *op. cit.* (n. 165). Cf. S. Cole, 'Capitalism and freedom: manumissions and the slave market in Louisiana, 1725–1820', *Journal of Economic History* 65 (2005), 1008–27.

<sup>176</sup> See above: this would encourage us to believe that manumission was part of the developmental cycle of rural dependency in the fourth and fifth centuries.

is a controversial matter, again due to sheer lack of evidence. But Scheidel's argument that if the Roman slave population from the late Republic into the Empire was on the order of five million or more slaves, *then* natural reproduction had to be the dominant source of new slaves, has seemed really unassailable, even given that it rests entirely on careful modelling rather than positive data.<sup>177</sup> Despite its limits, the Thera inscription can make an important contribution to this discussion.

Though here the ground becomes less firm, it may be possible to discern nuclear relationships among the slaves. The slaves could have been recorded in any number of ways: oldest to youngest, alphabetical, at random. But, as the editor has noticed, they are grouped 'manifestement par familles, chaque famille commençant par le membre le plus âgé'.<sup>178</sup> The other census inscriptions from Thera record the free labourers by family, listing the oldest member first and descending by age. In the case of free workers, the family relations were explicitly stated. The census noted if a person was a wife, son, or daughter. For example, 'Paroikoi: Theodore from the location called Politike, thirty years old, Zosima, *his wife*, twenty years old, and Theodora, *their daughter*, two years old, one cow, one donkey, five sheep'.<sup>179</sup> A slave group was listed in this manner: 'Eutychos, forty years old, Theodoula, twenty-five years old, Lampadion, x years old, Eutychos, four years old'.<sup>180</sup> By all appearances, the organizational principle was the same as in the case of the free workers, but the relations between individual slaves were not made explicit.

The ordering principle behind the names is in itself a significant fact and suggests that private life among this community of slaves was organized according to smaller, family-type groups. The slave's private life was entirely under the control of the master, in legal terms; in material terms, this power was mediated by a number of complex economic, disciplinary, and managerial considerations. The domination of slaves, particularly in agriculture, is constrained by its ends-oriented nature, and concessions to private life can be an important component of maintaining economic control. There is serious comparative evidence that family opportunity is the greatest determinant of reproductive success in a slave population. The reproductive rates seen in North American slavery were the product of a rather simple recipe. Space, physical independence, privacy, and opportunity, rather than deliberate breeding policies, were behind the fertility of the American slave population.<sup>181</sup> It is of tremendous importance that the slaves' names on Thera were organized by family-type groups.

Nevertheless, given the constraints that status imposed on the slave family, it is presumptuous to assume that the slaves carried on normal family lives which the census official refused to recognize out of juridical purism. We should scrutinize the inscription for quantitative patterns in the presumptive familial groupings. It is certain that women and children were prominent in this population. This makes it intuitively plausible that the natural reproduction of the slave population was important on this estate. A distinct pattern in the register serves to link the children to the adult females and thus may strengthen the inference of natural reproduction. In twelve instances where children (< fifteen years) follow an adult whose sex is known, seven of the adults were females. In three cases, the adults were males. In two cases, the sequence was adult male, adult female, child — a plausible nuclear family.<sup>182</sup>

<sup>177</sup> The lack of evidence is a recognized problem: Scheidel, *op. cit.* (n. 3): 'unfortunately, our sources do not permit any empirical assessment of this issue.'

<sup>178</sup> Geroussi-Bendermacher, *op. cit.* (n. 1), 345.

<sup>179</sup> Kiourtzian, *op. cit.* (n. 1), no. 142a.

<sup>180</sup> Geroussi-Bendermacher, *op. cit.* (n. 1), 343.

<sup>181</sup> R. Fogel, *Without Consent or Contract: The Rise and Fall of American Slavery* (1989), 114–53.

<sup>182</sup> For my judgements on the family groupings, see the Appendix. It is important to note that where legible, the children *always* appear in descending order of age and are *always* preceded by a plausible adult — there are no stranded children. This makes it possible to assign Ἰάβραν and Ἐλπίδα as adult female-child sequences. The sequence Εὔτυχον - Θεοδούλην - Λαμπάδιον - Εὔτυχον has been grouped as a nuclear family, even though the age of Λαμπάδιον is illegible, because the identity of the father-son name would make it likely that this is a father-mother-son-son group.

## FAMILIAL PATTERNS IN THE SLAVE POPULATION OF THERA

Adult Female – Child	7
Adult Male – Child	3
Adult Male – Adult Female – Child	2

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The numbers are very small, but the ‘adult female, child’ pattern appears twice as often as the ‘adult male, child’ pattern. ‘Mothers’ outnumber ‘fathers’ plus ‘nuclear families’. This suggests practical, if not necessarily biological, motherhood.<sup>183</sup> In two of three cases where there is an ‘adult male, child’ sequence, the child has the same name as the adult, supporting the thesis that these are fathers and that the whole pattern is not simply a book-keeping accident.<sup>184</sup> Many mothers must have died young, of course, and it is not surprising to find what appear to be father-child patterns.<sup>185</sup>

The predominance of ‘mothers’ over ‘fathers’ and over ‘families’ is encouraged by the fact that the whole population contained a greater number of adult females than adult males. The frequency or rarity of fathers and nuclear families ultimately depends on ‘where’ the missing adult males are. Perhaps they were dead, manumitted, part of another property, or non-existent.<sup>186</sup> If the ordering of names does reflect an effort to count slaves in familial groups, it is possible to test the frequency of husband-wife sequences. Following the pattern of the free population, a slave marriage would appear in the inscription as the sequence ‘adult male, adult female’. There are thirty-two adult women, ranging from fifteen to sixty years old, in the list. If an individual woman was ‘married’ at the time of the census, she should, presumably, be preceded in the list by an adult male. Of the thirty-two adult women, ten are in a sequence that is indeterminate: the preceding name or age is lost. That leaves twenty-two adult women for whom we have sufficient demographic data (sex + age) about the preceding name to know whether or not it was a possible husband. Of those, fourteen do not have a husband listed before them; eight, possibly, do.

## ADULT SLAVE WOMEN AND MARRIAGE

Possibly married	8
Apparently not married	14
Uncertain	10

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The test could be repeated for males. Presumably, a male who was married at the time of the census would be followed by an adult female. Of the sixteen adult men, ranging from eighteen to sixty-six years old, three are in a sequence that is indeterminate. Of the remaining thirteen, eight are followed by an adult female; five of them are not (two being our ‘widowers’— that is, followed by a child slave with his name).

## ADULT SLAVE MEN AND MARRIAGE

Possibly married	8
Apparently not married	5
Uncertain	3

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<sup>183</sup> We should recall that urban slaves could be sent to the countryside for rearing. Likewise, some number of exposed infants may have been imported into the population.

<sup>184</sup> Εὐτυχιανόν-Εὐτυχίαν, Διονύσιον-Διονύσιον. For Egyptian data suggesting slave children named after their father, see Bagnall and Frier, *op. cit.* (n. 142), 159.

<sup>185</sup> Mortality frequently produced single-parent families, Bagnall and Frier, *op. cit.* (n. 142), 123.

<sup>186</sup> cf. a slave population with relatively high fertility in Brazil: A. Metcalf, ‘Searching for the slave family in colonial Brazil: a reconstruction from São Paulo’, *Journal of Family History* 16 (1991), 283–97, at 290: ‘Fathers of their children remained nebulous figures on the fringes of the family.’



The inscription thus includes eight possible conjugal sequences — adult male followed by adult female. It is important to note that even these are not certain to be marriages. Of the six pairs, two of them include couples who have a related name (Zosimos and Zosima; Ammianos and Ammias). These could be brother-sister pairs or marriages (or even both), and it is impossible to know for sure.

The conjugal scenarios disproportionately include the oldest slaves. The ages of the ‘married’ men are sixty-six, sixty-five, sixty, fifty, forty, *c.* forty, twenty-eight, and twenty-something years old. The two most likely nuclear groups are the family of Eutychos, forty years old, his wife Theodoula, twenty-five, Lampadion, *x* years old, and Eutychos, four, along with the family of Ammianos, around forty, Ammias, twenty, and the baby Eutychos. The number of nuclear units which can be identified with relative certainty is thus strikingly small, although there are other probable cases.<sup>187</sup> The most glaring pattern is that all males fifty or older are apparently married. This is a striking anomaly. It is possible that marriage was a reward for survival or long-term service, but perhaps the simplest explanation is that we are able to see marriages precisely when the men have not died or been freed. The marriage rate among men is higher than among women, especially if the three unmarried ‘fathers’ are excluded as widowers (eight of the ten remaining adult men were married), so that the large number of unmarried women could be explained either by a real shortage of available men or by the fact that adult men have been manumitted.<sup>188</sup>

If this interpretation is sound, there are two patterns that seem to conflict: many children, relatively few married women. Reproductive success is usually contingent on a certain level of stability and privacy in the slave’s personal life. Though ultimately it remains necessary to entertain a variety of interpretive solutions to the age structure exhibited on Thera (e.g. breeding, importation, pathogens, randomness), there are converging reasons to accept a dual resolution in which family life and male manumission were both important on the island. The hypothesis of family life is supported *prima facie* by the sheer number of women and children in the population, a fact which had been predicted but never empirically verified. The ordering principle by which the engravers recorded the slaves is in itself another significant clue in favour of this view. The fact that adult women are associated with the children is further corroboration, as is the small but elegant fact that in two of three sequences where men precede children, they share the same name. The high marriage rates among available men also signal the importance of family life within this population. The hypothesis of reproductive success is not incompatible with an interpretation that sees child exposure as an additional source of new slaves.

The reasons to believe in male manumission are also compelling. The principal support is the shift in the sex ratio after the age of thirty. When we might expect the fiscal distortion in favour of females to abate, the proportion of women in the population grows. Mortality regimes in under-developed populations are usually not strongly sex specific, though we must admit that differential mortality by gender remains a possibility. Most importantly, the evidence for reproductive success on this estate is itself a persuasive argument for male manumission: if this population was as fertile as it impressionistically appears, then fathers are needed, and manumission would be an effective explanation for where the ‘missing’ husbands and fathers are. A final support for this reconstruction is that

<sup>187</sup> For example, ‘Εὐσεβῆν, 40’, followed by ‘Μοσχῶ, age unknown’, followed by three children including ‘Εὐσεβῆν, 12’.

<sup>188</sup> It is also possible that the slave ‘mothers’ were ‘married’ to men who belonged to another estate, though there is evidence that masters tried to keep their slaves’ relationships in-house. M. Flory, ‘Family in *familia*: kinship and community in slavery’, *AJAH* 3 (1978), 78–95, especially 78–82; Cato, *De agr.* 143 (152); Varro, *De re rustica* 1.17.5, 2.10.6; Columella, *De re rustica* 1.8.5; Tertullian, *Ad uxorem* 2.8.1 (Ed. C. Munier, *SC* 273 (1980), 145). Also, *CT* 2.25.1 (A.D. 325) assumes that if slave families were separated between owners, the family was broken apart. R. Steckel, ‘The fertility of American slaves’, *Research in Economic History* 7 (1982), 239–86, at 270–1, shows that the incidence of cross-plantation marriage in America was variable, and as the size of properties increased, the incidence of cross-plantation marriages declined. It was rare in Brazil: Metcalf, *op. cit.* (n. 186), 286.

the allowance of slave families is consonant with the practice of manumission, since both point to a style of domination more subtle than unremitting pain incentives.<sup>189</sup> The implications for the study of Late Roman estate management are manifold, since it should have to account for the mobilization of female and child labour, the use of familial relations as a strategy of domination, and the creation of hierarchies on the estate through manumission.<sup>190</sup>

The argument for natural reproduction within the Roman slave population has always relied on logical plausibility rather than evidence. The inscription from Thera provides us at last with concrete data in support of the hypothesis. This is not to claim that the slave population was entirely self-reproducing, for the slave supply clearly drew on alternative sources, and we do not know how representative this estate was of the overall distribution of slaves, geographically and socially.<sup>191</sup> But whatever the limits of this information — and they are real enough — it is important that the only documentary source for a large, rural slave estate exhibits precisely the demographic profile which has been deduced as necessary to sustain a large slave population over a long stretch of time.

## VI CONCLUSIONS

The Greek census inscriptions are a unique but challenging set of documents that yield precious insights into the Late Roman countryside. These inscriptions were probably engraved after the middle of the fourth century, and they may be artefacts of the aggressively centralizing fiscal policy of Valens. The documents of Egypt provide the basic comparative framework, but the census inscriptions allow us to explore classic questions about wealth and labour in a region of the Empire with an older municipal élite and in greater proximity to central trade networks. Significantly, the inscriptions confirm the image of a countryside rooted in village structures, where the urban aristocracy could influence but not utterly dominate the rural sector. Most of the properties reflected in the inscriptions are curial-scale holdings, ranging from modest to lavish. Properties on the order of several hundred *iugera* compare with other provincial, curial estates. The inscriptions suggest that landed wealth was highly stratified, but they also insist that a broad class of urban owners participated in the exploitation of agricultural resources. Perhaps the most striking datum, essentially unremarked, is the extent of land held by the senatorial order. If the later fourth-century dating is right, the inscriptions reflect the transformation of the Eastern élite at an instant of particular momentum.

As documentary evidence for patterns of labour usage in the Late Empire, the inscriptions are especially valuable. The inscriptions furnish data about the density of registered labour and the overall deployment of slaves and free workers. The documents give the impression of a healthy, intensely-exploited countryside. The Magnesia inscription reveals that labour was disproportionately registered on larger properties. This pattern should not be read as a sign of crisis, but rather as a clue that fiscal dependency was correlated with larger landholdings, even as contract land-leasing between smaller urban landlords and independent villagers survived the rise of fiscal legislation on *coloni*. The ultimate statement made by the census inscriptions is that slave labour was unexpectedly important in this period and region. Although slavery appears to have been a minority component of

<sup>189</sup> cf. U. Roth, 'To have and to be: food, status, and the *peculium* of agricultural slaves', *JRA* 18 (2005), 278–92, for the earlier period.

<sup>190</sup> Concern for female labour, see above, n. 117. Interest in child labour is visible in contemporary agricultural manuals: *Geoponica* 2.2 (Ed. H. Beckh (1895), 34). Jerome was certainly aware that familial relations were an instrument of domination: Jerome, *Vita Malchi* 6 (Ed. C. C. Microw in *Classical Essays Presented to J. A. Kleist* (1946), 33–60, at 44). Internal hierarchies: see the ἀρχιγέωργοι in the estate accounts from Hermonthis in *P. Lips.* 97 at 8.23 and 14.27.

<sup>191</sup> For dissimilar demographic dynamics within subregions of Brazil, Metcalf, op. cit. (n. 186), 284.

the labour force on élite-owned land, it was nevertheless structurally vital within a complex mixed-labour system. The inscriptions imply that élites exercised control over rural production and that slavery was instrumental in the organization of estates.

The new fragment from Thera permits an unprecedented look at the demographic profile of a slave-based estate. The endurance of the Roman slave system is itself a matter of controversy, and the inscription is an important piece of evidence in favour of survival. If the slave system continued into the fourth century, the dominance of natural reproduction in the slave supply is practically certain, but this does not diminish the significance of the evidence from Thera. This document provides our first documentary support for a rural slave population with large numbers of women and children. Perhaps more unexpected is the conclusion that some males were manumitted in their adult years, since rural manumission habits have never been susceptible to empirical study. The supposition of male manumission and servile families requires a model of estate management that emphasizes central control without positing a radically transformative mode of slave-based production.

The census inscriptions bring to life a broad landed aristocracy whose internal composition was in flux. They reflect the dense and varied labour force deployed to work the land. This sample of the agrarian economy demonstrates that in patterns of wealth and labour, social change in Late Antiquity is not reducible to narratives that posit a linear accumulation of property, a dominant form of dependency, or a smooth transition between labour systems. Slavery played an under-appreciated role as an energetic, enterprising élite strove to control production in a vibrant countryside. The eastern Mediterranean in the fourth century was home to a dynamic and complex society. It was the sort of society where a merchant could rise to become an imperial functionary and be rewarded with land and slaves across Greece.<sup>192</sup> The census inscriptions are the debris of a society which could prompt a contemporary priest to complain that his flock would pay no mind to serious matters, because ‘we spend every day scheming, how to buy land, and how to buy slaves, and how to increase our property — we are insatiable ...’.<sup>193</sup>

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<sup>192</sup> e.g. Heliodorus, a man known to Libanius, *Or.* 62.46–8 (Ed. R. Foerster, *Opera* (1903–8), vol. 4, 370).

<sup>193</sup> John Chrysostom, *In acta apostolorum* 32.2 (PG 60, col. 237): ἡμᾶς δὲ μηδὲ ὄναρ θέλειν τὰ τοιαῦτα διαλέγεσθαι, ἀλλ’ ὅπως μὲν ἀγρὸν ἀνησώμεθα, καὶ ὅπως ἀνδράποδα, καὶ ὅπως πλείω τὴν οὐσίαν ποιήσωμεν, καθ’ ἑκάστην ἡμέραν διαλεγόμενοι οὐ λαμβάνομεν κόρον.

## APPENDIX 1: THE SLAVES IN THE CENSUS INSCRIPTION OF THERA

NAME	AGE	SEX	MARRIAGE	PARENT	NAME	AGE	SEX	MARRIAGE	PARENT
STONE A					...				
Υγείαν	50	F	Unmarried		...ι...το..	c. 40			
Κτησίβιον	28	M	Married		Στέφανον		M		
Σαμβατίαν	20	F	Married		Ἐπαγάθην	c. 40	F	Unknown	
Ζώσιμον		M			Δρακοντίδαν		M		
Ὁξυχόλιον		M			Ἐπαγάθην	24	F	Unknown	
Κτησίβιον		M			Τείχην	56	F	Unmarried	
Ἀφροδίσιον	25	M	Unmarried		Θεοδότην	36	F	Unmarried	
Ζωσίμιον		M			Εὐτυχίαν	46	F	Unmarried	
Γλαύκην	33	F	Unknown		Ἀπελλάν		M		
Θεόδουλον		M			...σην	7	F		
Χειόνην		F			Διόσκορον		M		
Ἐπαφρόδιτον		M			Ἀφρόδειμον		M		
E...να	35	M	Unmarried	Father	Γλαύκην		F		
Ἴταλίαν	8	F			... (5 lines)				
Κήμωνα	5	M			...v				
Γαμικὴν	30	F	Unmarried	Mother	Ἐπικτήταν	56	F	Unknown	
Ζώσιμον	10	M			Ὁξυχόλιον	2-	M	Married	
...ητον		M			Ἐπικτήταν	18	F	Married	
...ηον	8	M			Δημ				
Σώτειραν	35	F	Unmarried	Mother	Εὐτυχίαν	55	F	Unknown	
Εὔξεινον	15	M			Εὐγένιον	50	M	Married	
Ἀλέξανδρον		M			Μουσογένειαν	40	F	Married	
Εὐτυχιανὸν		M			Εὐτυχίαν		F		
Εὐγένιον		M			Σωφρόνιον		M		
Σώτειραν		F			Δροσινὴν	15	F	Unknown	
Ἐλαίνην	6	F			Σωτείραν	7	F		
Εὐτυχίαν	3	F			Εὐγένιον	4	M		
Φιλουμένην		F			Ζωσίμιον	65	M	Married	
Σώτειραν		F			Ζωσίμην	60	F	Married	
Ζώσιμον	66	M	Married		Εὐ...v	18			
Εὐτυχίαν	60	F	Married		...ελιον	13	M		
Γλαύκην	40	F	Unmarried	Mother	...				
Καλημέρην	4	F			...	46			
...αν		F (?)			STONE B				
...v	20				Γαμικὴν	34	F	Unknown	Mother
...ον	3	M			Ζωπύραν	10	F		
Δροσίνιν					Σώφρονα	8	M		
...	25				Παρδάλιον	5	M		
...ετέαν	9	F			Ἐλπίδα	c. 40	F	Unmarried	
Εὐτυχίαν	6	F			Παννύχιον	-2	M		
...ναν	30	F	Unmarried		Εὐσταθίαν	50	F	Unknown	Mother
...ην					Ζωσίμην	10	F		
...ποδα					...κρ...τι.	8			
...v					...δην		F		

NAME	AGE	SEX	MARRIAGE	PARENT	NAME	AGE	SEX	MARRIAGE	PARENT
...ν	c. 40				Μοσχῶ		F		
...	40				Εὔσεβῆν	12	M		
Ε...					Χαρὰν	10	F		
Εὔτυχίαν	4	F			Ἵγείαν	7	F		
Θεόδουλον		M			Ζώσιμον		M		
Ἐπαγάθην	56	F	Unknown		Εὔτυχιανόν	c. 40	M	Unmarried	Father
Φιλόξενον		M			Εὔτυχίαν	9	F		
Κλαυδιανήν		F			Ελ...νην	51	F	Unmarried	
Ἐπίκτησιν	21	F	Unmarried		Ἐλπιδιανόν	48	M	Unknown	
Ἀμμιανόν	c. 40	M	Married	Father	Ε...ίδα	22	F	Unmarried	
Ἀμμιάδα	20	F	Married	Mother	...αν		F (?)		
Εὔτυχον	1	M			...	c. 40			
Ἰάραρ	-4	F	Unmarried	Mother	...νον		M		
Ζωσίμην	9	F			Δροσινόν		M		
Εὔτυχον	40	M	Married	Father	Εὔτυχίαν	30	F	Unknown	
Θεοδούλην	25	F	Married	Mother	...λυμίερον		M		
Λαμπάδιον		M			Διονύσιον	25	M	Unmarried	Father
Εὔτυχον	4	M			Διονύσιον	5	M		
Ἀγάθωνα	60	M	Married		Ἐλπίδα		F	Unmarried	Mother
Τύχην	52	F	Married		Μούσαν	10	F		
Ζώσιμον		M			Ἵξυχόλιον		M		
...					Σώτειραν		F		
Ἐπίκτησιν		F			Σώτειραν		F		
Εὐγένιον		M			Κλ				
Πρα...ιον	56	M	Unknown		Θεο				
Εὔ...	27				Εὔτυχ...				
...ν	8				Εὔτυχ...				
Ἀφροδισίαν	4	F			Ἐπι...				
Ἵξυχόλιον	30	M	Unmarried		Νε				
Εὔσεβῆν	50	M	Unknown		Ε				