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Population and demography

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Abstract: This paper provides a general overview of Greco-Roman population history.

1. The Challenge of Demography*

Demography, the study of the size, structure and development of human populations, is finally beginning to receive more attention among ancient historians (Scheidel 2001b). Yet we still have a long way to go, not only in establishing even the most basic features of ancient populations but even more so in applying this information to our interpretations of all aspects of the Greco-Roman world. Concerned with birth, death and migration and desperate to measure, model and quantify, populations studies may seem both forbiddingly technical and safely remote from the humanistic interests and skills of most students of antiquity. Moreover, usable evidence is scarce, and generally requires comparative and interdisciplinary approaches to make any sense at all. At the same time, however, we must bear in mind that demography is much more than just numbers, and relevant to much of what we seek to know and understand about the distant past. In pre-modern societies, population size was the best indicator of economic performance; the distribution of people between town and country was instrumental in the creation of collective identity and may reflect the scale of division of labor and commerce; human mobility mediated information flows and culture change; mortality and morbidity were principal determinants of well-being and determined fertility (and thus gender relations), investment in human capital, and economic productivity, and more generally shaped people's hopes and fears. The same is true of marriage customs and household structure. Classical civilization was the product of a thoroughly alien environment of frequent pregnancy and sudden death. Along with technological progress and scientific discovery, it was demographic change that separated the modern world from the more distant past. Archaic patterns of marriage, reproduction and death seemed as natural and immutable then as they are exotic to us, and we cannot hope to approach ancient history without a solid understanding of what these conditions were and how they permeated life. This is the true challenge of demography. All I can do here is provide a short road map of recent progress, abiding problems, the principal areas of controversy, and the broader historical implications of ancient population studies.

2. Death and Disease

Thanks to modern advances in public health, medicine and nutrition, mean life expectancy at birth today exceeds 80 years in Japan and reaches the high 60s for the world as a whole. These conditions represent a dramatic break even from the fairly recent past: averages of less than 30 years still prevailed in parts of eighteenth-century France, nineteenth-century Spain and Russia, and early twentieth-century India and China. This leaves no doubt that ancient societies must have experienced similarly low levels of life expectancy. Precision is beyond our reach: modern estimates are guided by the fact that at levels below 20 years, even very fertile populations would have found it difficult to survive, and that comparative evidence rules out levels of well above 30 years for the ancient world overall. Considerable variation may have occurred within this range, from particularly high mortality in large unhealthy cities and malarious lowlands to significantly better odds of survival in sparsely settled and salubrious areas, especially at higher altitudes. Empirical data are rare and of uneven quality. Several hundred census returns from Roman Egypt from the first three centuries AD that have survived on papyrus and list the members of individual households with their ages and family ties provide the best demographic evidence for classical antiquity. The aggregate age distribution of the recorded population is consistent with a mean life expectancy at birth of between 20 and 30 years (Bagnall and Frier 1994: 75-110 with Scheidel 2001a: 118-80). Human skeletal remains have been unearthed in large numbers but are of limited value for demographic analysis: despite

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ongoing progress (e.g., Hoppa and Vaupel (eds) 2002), it remains difficult to determine the precise age of adult bones, and, more seriously, we cannot tell whether the age structure of cemetery populations matched that of actual living groups or was distorted by burial customs or migration. Owing to selective funerary commemoration governed by age and gender, the tens of thousands of ages at death recorded on Roman tombstones do not permit us to infer levels of life expectancy (Parkin 1992: 5-58; Scheidel 2001c). Differential mortality is almost impossible to trace: all we know is that Roman emperors who died of natural causes and other elite groups seem to have experienced a mean life expectancy at birth in the high 20s, which suggests that the rich and powerful could not expect to live signicantly – if at all – longer than the general population (Scheidel 1999). The health hazards of urban residence may have been to blame.

Faced with such inadequate sources, ancient historians have increasingly embraced model life tables to arrive at a better idea of the probable age structure of ancient populations (e.g., Hopkins 1966; Hansen 1985; Parkin 1992; Frier 2000). Models for high-mortality environments are derived through algorithmic extrapolation from known historical population structures (Coale and Demeny 1983; see Fig. 1). Unfortunately, this method requires reliable base data that are only available for relatively recent populations that had already overcome pernicious diseases such as endemic smallpox or plague, malaria and tuberculosis that used to wreak havoc in earlier periods of history and distorted age structures in unpredictable ways (Scheidel 2001c). Growing awareness of this problem has encouraged attempts to create high-mortality models that accommodate such factors and might offer a more realistic approximation of ancient conditions (Woods forthcoming). Even so, we will always have to allow for wide margins of uncertainty. For all these reasons, it seems unlikely that our knowledge of ancient mortality will ever progress much beyond the most basic features: that infant mortality (i.e., in the first year of life) was very high, perhaps around 30 per cent; that maybe half of all people died before they were old enough to bear or father children; that death was as much a phenomenon of childhood as of old age; and that ancient populations were therefore necessarily very young, similar (albeit for different reasons) to those of developing countries today.

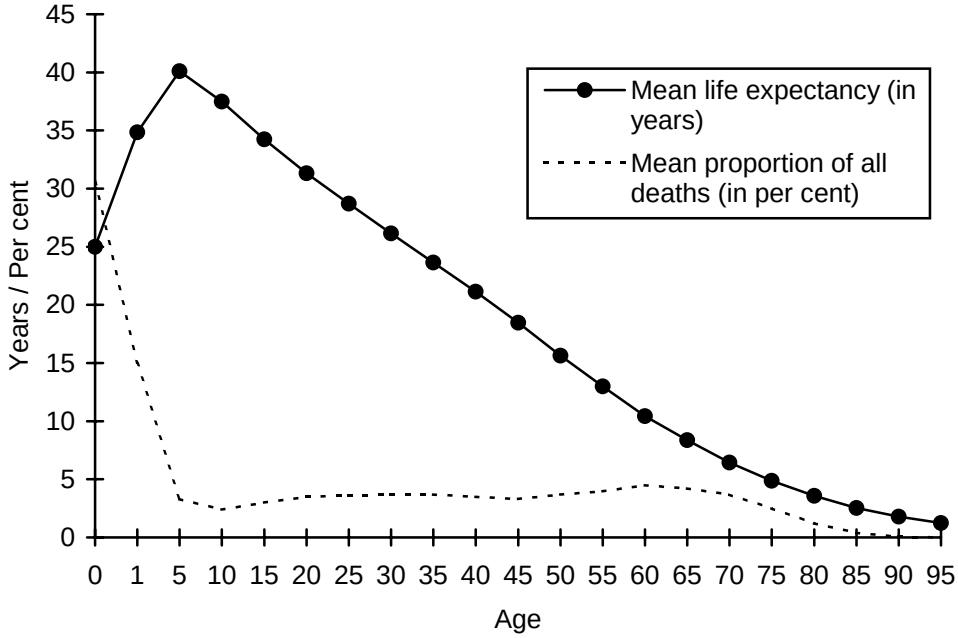

Fig. 1 Mean life expectancy at age *x* (0, 1, 5, etc) and mean proportion of all deaths occurring between ages *x* and *x*+*n* (0-1, 1-5, 5-10, etc) in a model population with a mean life expectancy at birth of 25 years
Source: Coale and Demeny 1983: 43 (Model West Level 3 Females)

At the same time, two areas in particular hold considerable promise: the study of the causes of mortality, and our understanding of its broader historical implications. Ancient demography and medical history, usually two separate fields, have finally begun to merge. Dates of death recorded in epitaphs allow us to reconstruct the seasonal distribution of mortality which is indicative of the underlying causes of death, especially infectious diseases which tend to be seasonal in character: this approach has produced new insights into the disease environments of ancient Rome, Italy, North Africa and Egypt (Shaw 1996; Scheidel 2001a: 1-117 and 2003a). Moreover, rich literary evidence for the prevalence of malaria and its effects in Italy from antiquity to the recent past has made it possible to account for demographic variation in the peninsula (Sallares 2002). DNA recovered from ancient skeletons increasingly provides direct evidence of ancient pathogens: recent findings include the discovery of malignant tertian malaria (*P. falciparum*) in a late Roman child cemetery in Italy (Sallares et al. 2004) and the identification of typhoid fever in an Athenian mass grave that has been linked to the plague of 430 BC famously described by Thucydides (2.47-55; Papagrigorakis et al. 2006). Epidemiological computer simulations have been marshalled to model the likely demographic impact of the so-called 'Antonine Plague' that spread through the Roman world in the late second century AD (Zelener 2003), and scientific knowledge can also be brought to bear on the plague pandemic of the sixth century AD (Sallares forthcoming) or the gradual dissemination of leprosy. Further progress will depend on the extent of transdisciplinary collaboration between ancient historians and scientists.

More traditionally-minded historians will want to focus on the manifold consequences of high and unpredictable mortality: the destabilization of families, the ubiquity of widows and

orphans, disincentives to investment in education, the disruption of trust networks that sustain commerce, and more generally the social and cultural responses to pervasive risk and frequent loss, including religious beliefs. For these purposes, even rough models of ancient mortality proffer a useful approximation of demographic conditions, and comparative source material from the more recent past – shaped by similar experiences – is abundant yet still largely neglected by students of antiquity. Ancient social, economic and cultural history can only gain from an enhanced appreciation of how pervasively mortality regimes shaped all aspects of people's lives.

3. Reproduction and Fertility Control

High mortality logically implies high fertility. For instance, a mean life expectancy at birth of 25 years compels – on average – every woman surviving to menopause to give birth to approximately five children to maintain existing population size. The corresponding rate was higher still for married women: one reconstruction posits a lifetime mean of 8.4 births for continuously married women in Roman Egypt (Frier 2000: 801). Whilst allowing for short-term variation, the balance of births and deaths must have been fairly stable in the long run: even a seemingly moderate net shortfall of 1 birth per woman (of, say, 4 instead of 5) would have halved a given population within three generations whereas a net surplus of 1 birth per woman would have doubled it, neither of which was at all likely to happen. At the same time, even high fertility was mediated by an array of reproductive strategies. While the modern concept of family planning (defined as the deliberate cessation of reproduction contingent on the number or sex of existing offspring) cannot be transposed to early societies, various mechanisms of fertility control were available and employed to varying degrees. Historically, female age at first marriage and the overall incidence of female marriage as well as remarriage used to be crucial determinants of fertility levels. Means of control within marriage include birth-spacing through lactational amenorrhea (i.e., temporary infertility induced by breastfeeding) or abstinence, chemical contraception, and more invasive forms of intervention such as abortion, exposure, 'benign neglect', and outright infanticide.

While changes in marriage age or frequency may well have been important, we are unable to observe them in the record. By contrast, fertility control within marriage is at least dimly perceptible: the Egyptian census returns show multi-year intervals between births that must have been determined by cultural practices (Frier 1994). Some of the contraceptives and abortifacients discussed in ancient literature may indeed have been effective (Riddle 1992, 1997), yet we cannot tell whether married couples would have resorted to such hazardous means or would even have wished to have fewer children in the first place. For the most part, ancient concerns about deliberately low fertility are best understood as moralizing rhetoric (Scheidel 2001b: 37-44): there is no sign that ancient populations shrank out of sync with available resources. Comparative evidence suggests that elites may have been most likely to curtail family size in order to preserve their estates and attendant status (Caldwell 2004). Roman emperors can be shown to have reproduced at replacement level but the representative value of this sample remains unclear (Scheidel 1999). At the other end of the social spectrum, the reproductive performance of slaves is largely unknown (Scheidel 2005). Exposure, whilst reducing family size, did not always depress overall reproductivity since some babies were picked up and raised as slaves (Boswell 1990: 53-179): the scale of this practice is obscure but may have been considerable (Harris 1994). Overall, the potential of postnatal intervention to ease population pressure is a big unknown for ancient historians (cf. Scheidel 2007).

Sex selection is a related problem. Even today, femicidal practices are known to create imbalanced sex ratios (most notably in parts of South and East Asia), and anthropological

evidence for this custom is not uncommon: some scholars have used records of male-biased sex ratios to argue that something similar may have happened in the ancient world, especially among the Greeks (Pomeroy 1983; Brulé 1992). However, we cannot normally tell if such imbalances reflect actual femicide or merely discriminatory underreporting. Moreover, if femicide did indeed occur, it may have aimed to offset male excess mortality in violent conflict, analogous to strategies observed in some tribal cultures (Scheidel forthcoming d). In the end, postnatal intervention for the purposes of fertility control or sex selection *may* conceivably have been an important determinant of social relations and even economic development but is almost impossible to investigate. This serves as a powerful reminder that demography mattered even when we cannot hope to find out how.

4. Marriage, Families and Households

Moving beyond impressionist accounts derived from literary sources, demographic study of the ancient family now focuses on quantifiable features such as marriage age and household structure. In general, and in keeping with later Mediterranean practice, early marriage for women and late marriage for men appears to have been common among Greeks and Romans. Like other elites in history, Roman aristocrats entered unions at unusually young ages, in the early to mid-teens for women and the late teens for men (Lelis et al. 2003: 103-25). Non-elite customs can only be assessed indirectly, by measuring shifts in commemorative patterns in epitaphs: thus, the age at which spouses replaced parents as commemorators for young adults is taken to reflect the age of first marriage. This method implies a substantial gap between a mean female marriage age of around age 20 and male marriage around age 30 in the western half of the empire (Shaw 1987; Saller 1994: 25-41). However, as the available evidence is largely limited to urban environments and the first few centuries AD, we are left wondering about marriage practice in the countryside – where men may have married earlier (as they did in late medieval Tuscany, for example) – and about conditions in Republican Italy. The latter is particularly vexing because our understanding of the social impact of Roman mass conscription of young men critically depends on the average age of first marriage (Rosenstein 2004): if recruits had already acquired spouses and children, their absence might have been more disruptive than in the event of delayed marriage. As it is, the current model of late male marriage papers over big gaps in our knowledge but is simply the best we have got (Scheidel forthcoming b). By comparison, the Roman Egyptian census returns indicate slightly less delay, with first marriage in the late teens for women and from the early twenties onward for men (Bagnall and Frier 1994: 111-8).

The same census documents allow us to determine the mix of nuclear and complex households in that province: well over half of all recorded individuals belonged to extended-family or multi-couple households (Bagnall and Frier 1994: 57-74). While the Greek evidence is meager, Roman conditions are once again inferred from funerary epigraphy: since most deceased free civilians were commemorated by members of the nuclear family (spouses or children), single-couple households are thought to have been common (Saller and Shaw 1984). Urban bias, however, raises the possibility that rural households may have been more complex, as they were in Roman Egypt. Complex households are likewise known from other eastern provinces of the Roman empire (Martin 1996; Sadurska and Bounni 1994). Household composition matters because it is associated with the degree of autonomy of married couples – who may strike out on their own (‘neolocality’) or remain embedded in extended families – as well as economic performance. Extended families provide better safeguards against risk but also are also conducive to higher fertility that may lower living standards, whereas neolocality would make it harder for widows and orphans to cope.

These broader consequences of ancient marriage and household patterns have gradually begun to atract attention among historians (see Fig. 2). The later men married, the more likely their wives were to be widowed and their children to grow up fatherless (Krause 1994-5). In Roman society, paternal mortality severely constricted the actual scope of *patria potestas*, a father's (fairly) absolute authority over his household (Saller 1994: 114-32). Divorce, generally easier to come by than in the recent past, would have added further to the instability of families. All in all, we end up with a picture that has much in common with modern conditions of fluidity and hybrid reconfiguration: step-parenting and adoption of relatives was common, creating complex arrangements that can only be documented for elite circles (Bradley 1991: 125-76) but would likely have occurred across all classes. Stereotypical ideologies of patriarchy were hard to reconcile with demographic realities.

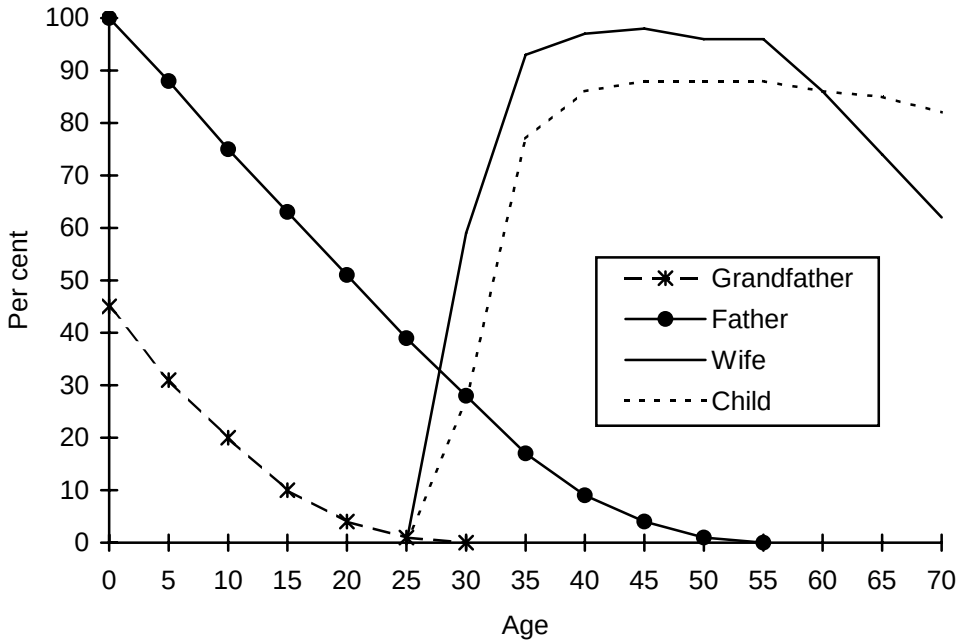

Fig. 2 Approximate proportion of Roman men at age *x* with at least one living relative in a given category
Source: Saller 1994: 52

Meanwhile, what is arguably the single most striking feature of Greco-Roman marriage has failed to raise any curiosity at all – the fact that Greeks (after Homer's heroes) and Romans were strictly (serially) monogamous regardless of their socio-economic status, just like modern westerners but unlike most other early civilizations. While our own experience might tempt us to take this for granted, we must ask how this principle came to be so firmly established even among (customarily polygynous) elites – the egalitarian ethos of the city-state is a plausible candidate –, how it co-existed with de facto polygyny facilitated by sexual congress with chattel slaves (Scheidel forthcoming c), and how it became entrenched in Christian doctrine that survived the fall of the Roman state and ensured its survival and spread in later European (and subsequently world) history. In this strangely neglected area, ancient history has a vital contribution to make to our understanding of the global evolution of marriage.

5. Population Number

Questions of size have long occupied center stage in the study of ancient population, reaching back at least as far as David Hume in the eighteenth century (Hume [1752] 1998). Following a shift in focus from size to structure in the 1980s and 1990s, controversies over population number are now experiencing a comeback and force us to reconsider our most fundamental assumptions about the character of ancient societies. Studies of particular locales or groups can take us only so far, increasingly for want of anything new to say: this is certainly true of the perennial favorites, the debates about the size of the number of residents of classical Attica and the imperial metropolis of Rome. The key question for Athens is whether, when and to what extent its population outstripped local food production and relied on maritime grain imports (Garnsey 1998: 183-200), an issue that is of more than antiquarian interest since it shapes our understanding of the driving forces behind political and military developments (Krotscheck forthcoming). By contrast, Rome's utter dependence on imported food has never been in doubt: here, the main problem is how to reconcile the huge population size implied by the recorded number of recipients of the grain dole with the limited extent of residential areas within the city boundaries: a grand total of up to 1 million would imply extremely high – though perhaps not impossible – settlement density (Lo Cascio 1997; Storey 1997). Much depends on the question of whether the *suburbium* was demographically integrated into the urban core (Witcher 2005). Attempts to gauge the numerical size of social groups face even more formidable obstacles: thus, questions about the number of slaves in Attica or in Roman Italy, to name just two of the most prominent examples, are ultimately unanswerable, and can only be addressed on the basis of probabilistic modeling of demand for labor that puts some constraints on otherwise completely free-floating guesses (Scheidel 2005). Similar problems bedevil the demographic study of religious groups such as Jews or early Christians in the Roman empire (Wasserstein 1996; Hopkins 1998).

In any case, all these debates are dwarfed in importance by more general questions about the gross population of the core regions of the ancient Mediterranean world. A new comprehensive survey of all the evidence for the size of Greek poleis has prompted a higher estimate of the total number of all Greeks (Hansen in press): we may now have to reckon with some 7 to 9 million people, albeit including assimilated indigenes, resident aliens, and slaves. Indeed, on some readings, parts of classical Greece such as Boeotia or Aegina were more densely settled than in any subsequent period prior to the twentieth century. These observations raise profound questions about the scale of Greek population growth between the nadir of the Early Iron Age around 1000 BC and the classical period 500 years later (Scheidel 2003b), about the relative demographic strength of the Greeks and their competitors (although the population size of the Persian empire, for instance, is also unclear: cf. Aperghis 2004: 35-58), and most importantly about economic performance. If the Greeks of the archaic and classical periods grew to be very numerous and even added to natural growth by importing lots of slaves but nevertheless experienced substantial improvements in living standards (Morris 2004), their economies must have been unusually strong by pre-modern standards, which makes it necessary to revisit long-standing debates about the nature of 'the ancient economy' (Finley 1999; Manning and Morris (eds) 2005).

Roman population size is an even greater conundrum. While the number of Roman citizens – and hence the population of Italy as a whole – may seem unusually well documented thanks to a series of surviving census tallies stretching from the early Republic into the first century AD, on closer inspection these records create more problems than they solve. These counts, traditionally confined to adult men, rise gently in the second century BC but jump tenfold

between 114 and 28 BC (roughly from 400,000 to 4 million) before returning to much slower growth to 5 million in AD 14 and 6 million in AD 47. As this cannot possibly be read as a straightforward demographic progression, we have to choose between two ways of making sense of these figures. What we might call the 'low count' assumes that the Republican figures are broadly correct and the later ones are so much higher because of an undocumented switch to the registration of all men, women and children of citizen status, and allows us to read the apparent tenfold increase as a tripling or at best quadrupling of the citizenry caused by the enfranchisement of the Italian allies and residents of northern Italy and the beginning spread of citizenship to the provinces (Beloch 1886; Brunt 1971; Scheidel 2004). Conversely, the 'high count' is based on the belief that coverage remained unchanged but holds that Republican counts were increasingly defective and thus exaggerated the apparent scale of the first-century BC increase. In this scenario, 4 to 6 million adult male citizens (or even more allowing for some undercount), most of them located in Italy proper, translate to a final Italian population of anywhere from 15 to 20 million including women, children, aliens and slaves (Frank 1930; Lo Cascio 1994; Morley 2001; Lo Cascio and Malanima 2005; Kron 2005b), and, therefore, a regional population density not encountered again until the nineteenth century.

Unfortunately, both interpretations raise logical problems. Hence, the 'low count' requires very high levels of popular military mobilization in the Republican period (Lo Cascio 2001), very high levels of urbanization and metropolitan primacy, and high levels of mobility (Scheidel 2004), and suggests that Roman population numbers fell short of those of the High Middle Ages (Kron 2005b). The 'high count', on the other hand, renders Roman Italy exceptionally densely populated by pre-modern standards, calls for a massive demographic collapse at the end of this period, and leaves us wondering why Romans imported millions of slaves at a time of rapid indigenous population growth when they already faced conflict over access to land and underemployment – and why these conflicts ceased in the Principate even as population would at least initially have continued to grow. Perhaps most crucially, it likewise raises questions about the size of the empire's population as a whole: while the 'low count' envisions some 60 to 70 million imperial subjects (comparable to the contemporaneous and similarly sized Han empire in China), with one-tenth of them located in Italy itself, the 'high count' must assume either that the imperial heartland was massively overpopulated relative to its provinces or that the entire empire was much more populous than commonly assumed, presumably in excess of 100 million (Scheidel 2004). It does not help that independent consideration of provincial population size is largely unfeasible outside Egypt, and fails to yield unequivocal results even for that province (Scheidel 2001a: 181-250). If the ancient Greek experience is anything to go by, a 'super-sized' empire is by no means impossible: in fact, it is widely accepted that the Asian and African parts of the empire did not re-attain Roman population densities until the nineteenth century (Frier 2000: 814). The key question is whether the same was true of Italy as well, and how other parts of the Mediterranean measured up.

In the end, just as for the Greek poleis, if we could be certain about population size, we would be better able to compare economic performance in antiquity to conditions in the medieval and early modern periods. Archaeological data may hold the key to this issue: while field surveys can cast some light on patterns of land use in different periods, physical indices of well-being such as body height and dietary regimes may reflect the extent of population pressure. In this sphere, despite an abundance of published local field work, major synthetic analyses are only beginning to appear (Koepke and Baten 2005; Kron 2005a; Jongman 2007; Pelgrom forthcoming). These questions will continue to occupy ancient historians for some time to come, all the more so as they are of fundamental importance for our understanding of classical civilization: how good were very different kinds of ancient states – Greek city-states on the one

hand, the Roman mega-empire on the other – at fostering economic development, how many people could these economies support, and in what style?

6. Distribution and Mobility

The urban-rural split of ancient populations is a closely related issue. More than most pre-modern societies, the Greco-Roman world was dominated by cities. Moving away from old debates about the economic character of ancient cities (revolving around the concepts of the 'consumer' and 'producer' city: e.g., Whittaker 1993; Erdkamp 2001), demographic research needs to concentrate on the degree of urbanization and its social and political consequences. While urbanization is usually regarded as an indicator of economic development, we often cannot tell whether urban residence was linked to non-agrarian occupations: if many farmers lived in urban settlements, a high level of urbanization might create a misleading impression of economic progress. Thus, if it is true that perhaps half of all Greeks in the classical period lived in (mostly very small) towns (Hansen in press), this would tell us a lot about the foundations of civic identity but little about division of labor or agricultural productivity. The contrast between Greece and Roman Italy on the one hand and Roman Egypt on the other is particularly telling: most of the 1,000-odd poleis of the classical Greek world or the over 400 towns of Roman Italy must necessarily have been small and somewhat agrarian in character, whereas the 50 or so cities of Roman Egypt co-existed with numerous and sometimes massive villages that in Greece or Italy might well have been classified as urban communities (Tacoma 2006: 37-68). Ancient urbanization defies straightforward categorization and hinders cross-regional comparisons even within the same timeframe, let alone with later periods. Greco-Roman urbanism often needs to be studied on its own terms.

Even more than other branches of ancient demography, the study of population movements suffers greatly from the paucity of quantifiable evidence. Qualitative impressions (e.g., Horden and Purcell 2000: 377-91) simply will not do, and parametric models of putatively plausible flow volumes push us onto thin ice: my attempts to quantify Greek colonization (Scheidel 2003b), migration from and within Roman Italy (Scheidel 2004), and the Roman slave trade (Scheidel 2005) give an idea of what can and cannot be expected from this conjectural approach. Luckily, an entirely new source of information has been opened up by the study of the genetic properties of current populations that allow us to infer earlier migration patterns. Earlier studies of blood group gene frequencies already produced tantalizing results, for instance regarding the extent to which ancient Greek immigrants came to demographically dominate Sicily and southern Italy (Cavalli-Sforza et al. 1994: 277-80). Research on mitochondrial DNA and the Y-chromosome are now the principal means of mapping migratory trajectories, although the ancient Mediterranean has only begun to be covered by this kind of work (e.g., Semino et al. 2004). Other methods add to the scientific armory, such as stable isotope analysis that helps establish where interred individuals had been raised – and thus indicates migration when the isotope signatures associated with their place of origin differ significantly from those of their place of burial: for example, it has been shown that many individuals buried in the Isola Sacra necropolis near the ports of imperial Rome had moved there from other regions (Schwarcz 2002: 194). Science stands to make a major contribution to our understanding of ancient population movements.

7. Outlook

Beginning in the 1960s but primarily since the 1980s, ancient population history has been revolutionised by the adoption of the concepts, methods and questions of the historical demography of the more recent past. This has helped us integrate ancient demography into the wider field of population studies and draw on demographic insights to re-shape our vision of the ancient world. Further progress will result from more synthetic studies of archaeological remains and the application of scientific techniques from anthropometry to genetics. Our ultimate goal is a better appreciation of the 'demographic regimes' of the ancient past, that is the culturally and ecologically specific configuration of demographic factors that governed people's lives, and of how they changed over time. This would make it easier to merge demography with social, economic, cultural and environmental history, and bring us a step closer to a truly integrative 'total history' of the ancient world. Unfortunately, this goal may never be achieved: much of what we would need to know about ancient demography will forever remain out of reach, even as comparative history teaches us how much it would matter in principle. This may seem frustrating, but it also means that demography will keep ancient historians on their toes – and that is a good thing.

Guide to Further Reading

There is currently no single handbook in English that covers all the bases: Scheidel forthcoming a aims to fill this gap. Corvisier and Suder 2000 give a brief general overview in French, while Parkin 1992 and Frier 2000 offer more sophisticated accounts of Roman demography. Scheidel 2001b provides a detailed critical review of existing scholarship. For comprehensive bibliographies, see Suder 1988 and Corvisier and Suder 1996. Bagnall and Frier 1994, a path-breaking analysis of the demographic regime of Roman Egypt, should be read together with the partial re-interpretation in Scheidel 2001a. Scheidel 2001c explores the pitfalls of ancient mortality history, while Sallares 2002 and Scheidel 2001a: ch. 1 and 2003a seek to reconstruct the relationship between disease and death in different parts of the Roman empire. Sallares 1991 is an exceptionally rich interdisciplinary study of the ecological context of Greek population history. Frier 1994 provides a fundamental discussion of ancient fertility regimes, and Eyben 1980/1 collects evidence on fertility control. The history of the Greek family and household has most recently been summarized by Pomeroy 1997. On the Roman side, the key works are Saller and Shaw 1984, arguing for the nuclear character of the Roman household, and Saller 1994, an analysis of Roman family structure and household dynamics. Lacey 1968 and Dixon 1992 offer more general accounts of ancient family life, Treggiari 1991 focuses on Roman marriage, and Gardner and Wiedemann 1991 collect relevant sources in translation. Hansen 1985 is still the best discussion of Athenian population number, while Hansen in press presents a new reconstruction of the overall number of Greeks and the scale of urbanization. Brunt 1971 is the standard work on Roman citizen numbers. Lo Cascio 1994, 1999, Scheidel 2004, and Kron 2005b give a flavor of the controversy about Roman population size. Conjectural attempts to quantify mobility can be found in Scheidel 2003b, 2004, 2005. Scheidel 2007 considers the relationship between demography and the ancient economy.

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