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Slavery in the Roman economy

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Abstract: This paper discusses the location of slavery in the Roman economy. It deals with the size and distribution of the slave population and the economics of slave labor and offers a chronological sketch of the development of Roman slavery.

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Building on Greek and Hellenistic institutions, ancient Rome created the largest slave society in history.¹ There are several reasons for defining the Roman Empire as a slave society, above all in its Italian core but also to varying degrees in its subject territories. Slaves, numbering in the millions and widely dispersed, accounted for a non-trivial share of its total population. In key areas, slaves were not merely present but supported what has been termed a ‘slave mode of production,’ a mode that rested both on an integrated system of enslavement, slave trade, and slave employment in production, and on “the systematic subjection of slaves to the control of their masters in the process of production and reproduction.”² Most importantly, Rome counts as a slave society in terms of the structural location of slavery: dominant groups, once again above all at the core, relied to a significant degree of slave labor to generate surplus and maintain their position of dominance.³ Since the role of slavery in central productive processes turned Rome into a ‘slave economy’ just as the widespread domination of slaves as a primary social relationship made it a ‘slave society,’ these two terms may be used interchangeably, especially in those strata where slaves and ex-slaves continuously enveloped owners and patrons and mediated their interaction with the freeborn population. In short, Rome was a ‘slave society’ to the extent that without slavery it would have looked profoundly different.⁴

In keeping with the theme of this volume, this chapter focuses on the economic dimension of Roman slavery.⁵ It addresses the three principal questions of ‘what,’ ‘why,’ and ‘how.’ What was the Roman slave economy like – what did slaves do, where, and for whom; how many were there and where did they come from; and how did Roman slavery compare to other major slave systems in world history? Why did Romans employ slave labor the way they did?

This paper will be published as Chapter 6 of W. Scheidel (ed.), *The Cambridge Companion to the Roman Economy*.

¹ If the Roman Empire contained several million slaves (see Section 1) for twenty or more generations, anywhere from 100 to 200 million individual slaves would have existed during the Roman period, depending on overall numbers and the incidence of manumission. By comparison, the transatlantic slave trade involved no more than 10 million people and although the total slave population of the New World around 1860 may briefly have approximated that of the Roman Empire the underlying slave system was less long-lived and for the most part more modest in scale. This is not to say that ‘Roman slavery’ should be regarded as a single unified institution: the Roman Empire encompassed a conglomerate of (perhaps increasingly interrelated) ‘slaveries.’

For general surveys of Roman slavery, see Bradley 1994 and chapters 11-22 of Bradley and Cartledge (eds.) 2010. Westermann 1955 is still useful as a survey of the evidence while Finley 1998 remains the most incisive discussion of the nature of Greco-Roman slavery. For slavery in the Roman Republic, see Hopkins 1978: 1-115 and Dumont 1987; for the Later Roman Empire, see Harper forthcoming. Bellen and Heinen (eds.) 2003 provide the most comprehensive bibliography. For world-historical context, see Patterson 1982; Finkelman and Miller (eds.) 1998; Turley 2000; Flaig 2009.

I owe thanks to Keith Bradley, Kyle Harper, Elio Lo Cascio, and Henrik Mouritsen for comments on this chapter and/or sharing unpublished work with me.

² See Lovejoy 2000: 10 for the former and Wickham 1994: 85; 2005: 260-2 for the latter.

³ For the concept of ‘slave society,’ see variously Hopkins 1978: 99-102; Finley 1998: 147-50, 274 (originally published in 1978 and 1982); Patterson 1982: 353 (for the equivalent notion of ‘large-scale slave system’); Oakes 1990: 36-9; Bradley 1994: 12-14; Turley 2000: 4-5, 62-3, 76-100; and cf. also de Ste Croix 1981: 509. I use the terms ‘society’ and ‘economy’ in a generic sense without wishing to imply unity or high levels of integration.

⁴ Oakes 1990: 37-8 introduces the useful criterion of counterfactual outcomes. In this respect, ancient Rome was much more of a slave society than most other societies in history yet markedly less so than New World slave systems, which would simply not have existed in any even remotely comparable form without slavery. This suggests that the notion of a spectrum is more appropriate than the often-invoked and deceptively neat dichotomy of ‘societies with slaves’ and ‘slave societies.’

⁵ For this reason, notwithstanding slavery’s primary and universal quality as a system of domination (Patterson 1982: 1-101, esp. 13), it is treated here above in the first instance as a labor system (cf. Lovejoy 2000: 5).

How did the Roman slave system develop over time? The overall objective is to assess the economic importance and consequences of Roman slavery, its contribution to the formation of the Roman economy as a distinctively imperial system of domination, production, and exchange.

1 Slavery in the Roman Empire

Throughout the centuries that have produced the most evidence, from the late Republic to late antiquity, slavery is amply documented. This documentation primarily conveys the impression that slavery was important and ubiquitous without enabling us to quantify its scale and contribution: it is much easier to establish the presence of slaves in the record or to encounter sentiments that consider their presence common than to measure their numbers, origins, and spatial and occupational distribution. For this reason, any modern assessments of the overall importance of Roman slavery are bound to remain uncomfortably vague, at least by the standards of the study of modern slave societies.

Relevant information comes from a wide range of sources, such as literary accounts, legal sources, inscriptions, papyri, and (albeit often more tenuously) from material remains.⁶ Class bias permeates many of these sources: literature was composed by and for elites, law catered to them, and inscriptions recording slaves and freedpersons frequently emanated from the social networks of the propertied. In some sense this is not a serious problem: evidence of elite interest and involvement in slavery is critical for establishing the structural location of Roman slavery. At the same time, the nature of the evidence, with relatively few exceptions, makes it more difficult to answer questions about the spread of slavery into sub-elite groups and into more peripheral regions. Occasional references offer tantalizing glimpses of a world that may have been thoroughly permeated by the institution of slavery: in 214 BCE, middling Roman citizens could be expected to own slaves; in surviving census records from Roman Egypt during the first few centuries CE, some 13 per cent of adequately documented households owned slaves; and literary sources repeatedly portray slaveownership as a common feature well beyond elite circles.⁷

Slaves were engaged in an enormous variety of activities, as estate managers, field hands, shepherds, hunters, domestic servants, craftsmen, construction workers, retailers, miners, clerks, teachers, doctors, midwives, wetnurses, textile workers, potters, and entertainers. In addition to private sector employment, they worked in public administration and served in military support functions. They were owned by private individuals as well as the state, communities, temples, and partnerships. As *servi vicarii*, slaves were put at the disposal of fellow slaves. Their responsibilities ranged from the most basic tasks of footmen and water-carriers to the complex duties of stewards and business managers. Slaves could be kept in chains or placed in positions of trust, resided in their owners' homes or were apprenticed or rented out. They are attested in every part of the Empire. Freed slaves were active in a similarly wide range of occupations, and in addition rose into the most senior echelons of private and public administration.⁸

⁶ 'Roman' is defined very broadly, with emphasis on Italy and citizen society but encompassing all areas under Roman rule. In keeping with the overall perspective of this volume, I focus on the economic properties of the imperial system (see Chapter 1).

⁷ Rosenstein 2008: 5-7 on Liv. 24.11.7-8 (214 BCE); Bagnall and Frier 2006: 70, with Bagnall, Frier and Rutherford 1997: 98 (31 of 234 households, but the record is skewed in favor of slave-rich urban settings). Harper forthcoming: ch.1 gathers dozens of late Roman references suggestive of widespread slaveownership.

⁸ Bradley 1994: 57-80 and Bodel 2010 are the most accessible discussions of Roman slave labor. Public slaves: Weaver 1972 (state); Weiss 2004 (cities). *Vicarii*: Reduzzi Merola 1990. Slaves in the military sector: Welwei 1988. Staerman and Trofimova 1975; Staerman et al. 1987; Marinovic et al. 1992 provide geographical surveys of the evidence. Hezser 2005, on ancient Jewish slavery, also covers the Roman period. For freedpersons, see below, ***.

As already noted, it is difficult to translate this powerful impression of ubiquity into a demographic assessment. Roman sources do not report the number of slaves in any particular community, let alone in entire regions or the Empire as a whole. The only apparent exception, Galen's casual claim that his hometown of Pergamum in Asia Minor was inhabited by 40,000 (adult male) citizens and 80,000 'wives and slaves' makes us wonder how children fit into this scheme. A number of texts refer to large-scale slaveowning in Italy and the provinces: 4,116 slaves bequeathed by a rich freedman, 400 slaves each in the households of a Roman aristocrat and a North African landowner, 2,000 slaves owned to a pretender, imperial legislation addressing owners of more than 500 slaves, more than 500 slaves repairing buildings in the city of Rome and 700 slaves taking care of its aqueducts, more than 152 slaves owned by a single landowner on a small Aegean island, 107 public slaves appropriated from an Anatolian town, 1,000 or 2,000 slaves ascribed to each of the wealthy of Antioch in Syria, 3,000 and 6,000 slaves held by two Cappadocian temples; and 2,400 or more rural slaves freed by a late Roman aristocrat.⁹ Although some of these figures may well reflect rhetorical stylization or hyperbole, they are probably just the tip of the iceberg.

Nevertheless, isolated numbers do not readily support broad generalizations. Modern estimates of overall slave numbers are logically related to our assumptions about slaves' presence in different occupations, whereas the latter are also a function of the former: we are dealing with an equation replete with known unknowns. All we can confidently posit are logical corollaries: if slaves had been very numerous, slavery had to have been widespread, not limited to the rich and urban settings but extending into the general population and/or the countryside – which is just another way of saying that for slaves to have played an important role in farming there had to be very many of them.

The only proper statistics come from the census returns of Roman Egypt in the first three centuries CE. Close to 15 percent of urban residents and more than 8 percent of villagers, mostly in Middle Egypt, were slaves, but only 7 percent of the residents of a town in Upper Egypt. This points to significant variation even within a putatively fairly homogeneous region, and higher rates of slaveownership are plausible but not attested in Alexandria.¹⁰ The evidence is consistent with a rough estimate that between 5 to 10 percent of the population of Roman Egypt was made up of slaves.¹¹ Much more limited and fragmentary data from fourth-century CE census inscriptions from the Aegean point to a significant slave presence on rural holdings but do not permit more general estimates.¹²

Modern attention has traditionally centered on Italy, which may well have been the most slave-rich part of the Empire. Given that blanket guesses at overall tallies are of no value, the only even remotely promising way of getting some sense of the overall size of the Italian slave population is by estimating likely demand for slave labor.¹³ This approach, for what it is worth, works best for rural slavery, an area where slave numbers can be more reliably linked to labor requirements. Estimates of rural slavery are highly sensitive to our assumptions about slaves' involvement in grain production, ranging from around a quarter of a million slaves (for low involvement) to perhaps three times as many (for high involvement). The scale of urban slavery is

⁹ Galen 5.49 (ed. Kühn); Plin. *NH* 33.135; Tac. *Ann.* 14.43; Apul. *Apol.* 93; SHA *Firmus* 12.2; Gai. *Inst.* 1.43 (cf. *ILS* 2927); Plut. *Crass.* 2; Frontin. *Aqu.* 116; Harper 2008: 107 (Thera); *IGRR* 4.914; Ioh. Chrys. *Homil. In Mt.* 63.4 (*PG* 58.608); Strabo 12.2.3, 6; *Vita Melaniae (L)* 18.3. Cf. also Athen. 272e and, perhaps, Jos. *Ant.* 13.359. For references to large but unspecified numbers of slaves, see Harper forthcoming.

¹⁰ Bagnall, Frier and Rutherford 1997: 98. For Alexandria, see esp. P.Oxy XLIV 3197. Biezunska-Malowist 1977 discusses slavery in Roman Egypt.

¹¹ See Scheidel 2010b for the computational process, implying a target rate of 7 percent.

¹² Harper 2008: 101-4 (on Tralles, Lesbos, and Thera).

¹³ Scheidel 2005: 64-6, rejecting Brunt 1987: 124-5 and earlier guesses.

even more difficult to assess because it is very difficult to determine demand for services. A proposed range from half a million to one million urban slaves reflects these uncertainties.¹⁴ It is quite possible but by no means certain that slavery was, in numerical terms, a predominantly urban phenomenon: an epigraphic roster of from Herculaneum makes it hard to avoid the conclusion that a very large part and perhaps the majority of its inhabitants were current and former slaves, an observation that indicates the potential for extraordinary levels of slaveownership in the very core of the imperial system.¹⁵

Complicating matters further, abiding uncertainties about the size of the free population of Roman Italy make it difficult to convert any estimate of overall slave numbers into a proportion: 1 to 1.5 million slaves might represent 15 to 25 percent of the population of imperial Italy (see Chapter 1), and their share may have been even larger in the western central Italy. Empirical information for the bulk of the imperial population, the 80-odd percent residing outside Italy and Egypt, is non-existent and even conjectures are therefore fraught with great hazards. A speculative reconstruction bounded by the estimates for Italy and Egypt suggests a share of slaves in the imperial population of somewhere around 10 percent, a figure that should best be taken as an order of magnitude in the sense that much lower (<5 percent) or higher (20+ percent) would seem more difficult to defend.¹⁶

Estimates of slave numbers are logically connected to those of the slave supply and the incidence of manumission. Both of these features are well documented in qualitative terms but usually impossible to measure empirically. Ancient sources mention various sources of slaves from capture in warfare and kidnapping by pirates and brigands to penal slavery, the enslavement of abandoned or sold children, self-sale, foreign imports, and birth to slave women. Roman historiography emphasizes violent seizure especially during the Republican period: from 297 to 167 BCE alone, some 700,000 slaves were reportedly enslaved in military campaigns, a tally that does not lay claim to completeness, and millions of slaves were supposedly created in later wars. Other types of seizure and imports would have added to these totals.¹⁷

While capture was clearly an important means of building up a large slave population in Roman Italy and Sicily, natural reproduction had probably always been of considerable importance and eventually became the single most dominant source of slaves. This observation cannot be directly derived from ancient sources, which mention home-born slaves (*vernae* or *oikogeneis*) but not do normally allow quantification. Under Roman law, the children of slave women retained the status of their mothers. The rate of natural reproduction of a slave population is a function of servile sex ratios, (de facto if not formal) family formation, and manumission rates, none of which are adequately documented. Yet although these multiple uncertainties may seem to forestall any estimate of the relative contribution of natural reproduction to the Roman slave supply, there can be little doubt about its overall significance. Due to the sheer size of the imperial slave population, running in the millions, sources other than natural reproduction would have been demographically insufficient to maintain this system for centuries. Claims to the contrary inevitably entail implausible rates of capture in war or child enslavement. Moreover, capture in warfare most likely produced a surfeit of slave women, thereby already facilitating natural reproduction early on, and comparative data show that imbalanced servile sex ratios in

¹⁴ Scheidel 2005: 66-71, for a total of 1-1.5 million slaves in Italy. See also De Ligt 2004: 745-7 for lower numbers than previously assumed. Jongman 2003: 113-16 emphasizes the limits of slave employment in Italian agriculture, but see now Harper forthcoming ch.4 on agricultural slavery more generally. That grain cultivation by slaves was feasible in principle (Spurr 1986: 133-43; Scheidel 1994) does not tell us whether it was common.

¹⁵ CIL X 1403, with Mouritsen 2007.

¹⁶ Scheidel 2010b, for an estimate of 7-13 percent. Harper forthcoming posits a similar total.

¹⁷ For discussions of the sources of Roman slaves, see Bradley 1987b; 1994: 31-56; Scheidel 2010b; Harper forthcoming: ch.2. Enslavement tallies: Scheidel 2010b: table 2. Slave trade: Boese 1973; Harris 1980; 1999; Bodel 2005.

any case tend to even out over time. Recent scholarship has stressed the economic contributions of slave women and children.¹⁸

What little empirical evidence happens to exist supports this evaluation. The sex ratio of slaves recorded in Roman Egyptian census returns is fairly balanced up to age thirty, when differential manumission practices appear to have released men but retained women of childbearing age; slave children were common. Similar impressions can be gleaned from a census inscription from the Aegean island of Thera. The fact that in Diocletian's Price Edict of 301 CE, slave women reached already their peak value as teenagers is consistent with appreciation of their reproductive capacity. Possible counterexamples are ambiguous at best. If it could be ascertained whether the overrepresentation of males in the skeletal record from Herculaneum reflects the structure of the local population of slaves and freedpersons, we would have to surmise that this particular environment was not conducive to adequate rates of natural reproduction. The acquisition of highly skilled male slaves by elite households would have skewed sex ratios in favor of males. However, high (i.e., male-heavy) sex ratios of slaves and freedpersons found in clusters epitaphs such as the *columbaria* of aristocratic households may, albeit to an unknowable extent, merely be a function of commemoration practices that disfavored women.¹⁹

Manumission rates are mostly unknown. The prominence of freedpersons in Italian funerary epigraphy has convincingly been attributed to 'epigraphic habit,' represented by that group's unusually strong desire for a particular form of commemoration. Cultural preferences for specifying the age at death of those who died young may well account for the fact that the majority of freedpersons in Rome and Italy are reported to have died before they turned thirty.²⁰ The best evidence for the frequency of manumission in Roman Italy is furnished by epigraphic rosters that list the members of associations (*collegia*) or other entities and by the wax tablets recording business dealings that have survived in Pompeii and Herculaneum: freedmen are strongly represented in all these documents.²¹ As already noted, frequent male manumission is implied by Egyptian census returns. Other sources refer to young as well as elderly slaves but cannot be used for quantification.²² It remains unclear if the concentration of references to freedpersons in urban settings reflects actual imbalances between town and country.²³

If millions of slaves lived in the Roman Empire, as seems very likely, many had to be the offspring of slaves because alternative sources would not have sufficed to sustain the whole system. If many slaves descended from slaves, manumission could not have been very common at

¹⁸ For supporting argument, see Scheidel 1997; 2005 (*contra* Harris 1999); 2010b; and cf. McKeown 2007: 124-40 on the debate. *Vernae*: Herrmann-Otto 1994. Roth 2007 and Laes 2008 emphasize labor by slave women and children; and note also the former's attractive argument that female labor would have greatly increased the profitability of Roman *villa* estates. At the same time, slave labor remained sensitive to gender norms: Saller 2003.

¹⁹ Scheidel 1997: 160-3 (Egypt); Harper 2008: 106-19 (Thera); Diocletian's Price Edict § 29 with Scheidel 1996: 72-3 (prices); Camodeca 2008 with Capasso 2001: 956-71 (Herculaneum); Scheidel 2005: 73 and Mouritsen 2011: ch.5 (inscriptions). Burial niches in *columbaria* were often unmarked. Saller 2003: 203 and above, Chapter 5, estimates that it would have made financial sense to raise foundlings as slaves.

²⁰ See Mouritsen 2005 and 2011: ch.5, finally laying to rest the notion of frequent and early (urban) manumission propounded by Alföldy 1986: 286-331.

²¹ See Mouritsen 2011: ch.6.

²² Old slaves: Wiedemann 1996. Constraints on manumission: Wiedemann 1985.

²³ Rarity of rural manumission is often assumed but hard to substantiate: the epigraphic record mostly reveals absence of evidence (but see now Harper 2008: 115-6 for some indirect epigraphic evidence). The relative neglect of manumission by the Roman agronomists and the preponderance of effort-intensive tasks in the countryside (see Section 2) support the traditional view; it seems that even estate managers were rarely manumitted (Carlsen 1996: 96-100). For various reasons, such as skills, proximity to owners, and employment opportunities for ex-slaves, urban slavery may very well have been more conducive to manumission.

most ages because it would have simultaneously increased demand for replacements and interfered with their supply. In the final analysis, therefore, the four variables of slave numbers, societal penetration by slavery, servile natural reproduction, and manumission rates are inextricably interrelated and none of them can be considered in isolation: assumptions about any one of them inevitably entail assumptions about the others. While an appreciation of this nexus does not reveal actual conditions, it very helpfully constrains our imagination by narrowing our choices to particular scenarios: a smaller slave population with concomitantly limited societal penetration would be compatible with a greater importance of various forms of capture and habitual manumission, whereas a larger slave population logically requires higher natural reproduction rates and less manumission. Regardless of our hunches and preferences, the debate necessarily has to acknowledge this matrix in order to retain a measure of intellectual respectability.²⁴

The preponderance of the evidence favors the notion of a Roman imperial slave system that was sufficiently large in scale for natural reproduction to have been its most important means of maintenance and manumission to have been fairly limited. High slave prices likewise speak against indiscriminate manumission (see below, Section 2). Then again, regional variation may have been significant, and a wide range of sources of supply would have been required to support the system once it had reached its apex, mitigating shortfalls arising from locally skewed sex ratios, manumission, flight, and health hazards connected perhaps not so much with slave labor per se as with urban residence and attendant exposure to infectious disease.

This leaves the question of how Roman slavery compared to other major slave systems in history. Ancient Greek and Roman slavery – or more precisely conditions observed in classical Athens and Roman Italy – were in many ways very similar. Both systems were primarily intrusive (that is, dependent on the enslavement of outsiders) and formally treated slaves as chattel; engaged in both capture and purchase; imported slaves into densely settled cores; and employed them in a wide variety of occupations in both town and country, including on slave estates. Access to land rather than labor was the critical variable. Apart from issues of scale, which are not relevant to the consideration of structural features, and minor variations in style, the only main differences lie in the frequency of manumission and especially in the manner in which freedpersons were integrated into society. Although conditions in other regions may have varied, in focusing on the best-documented areas it is fair to say that with only relatively slight modifications, Roman slavery effectively *was* Greek slavery. This need not be a coincidence: just as the Roman imperial economy is best seen as an extension and maturation of the Hellenistic economy, Roman chattel slavery might be regarded as an extension and adaptation of Aegean forms of slavery, mediated perhaps by (generally poorly known) practices among the western Greeks and Carthaginians (see below, Section 3).

These similarities are thrown into sharp relief by comparison between Roman slavery and the modern slave systems of the New World, which differed much more significantly. American slaveries were peripheral, characterized by less manumission or integration (even in Brazil), focused on agricultural slavery and constricted the range of slave activities, a restriction that was strongly associated with racial bias. Slavery was fully commercialized, in the double sense that slaves almost exclusively produced for markets and were purchased rather than captured. Labor, not land, was scarce. Despite some similarities – such as the higher valuation of male slaves, the organization of plantations, or the influence of Roman law on some of the American slave systems –, differences dominate. Indeed, among post-ancient slave systems, slavery in the Sokoto Caliphate in nineteenth-century West Africa offers the most parallels to the Roman experience.

²⁴ For this reason alone, the recurrent condemnation of parametric models is misguided. Their purpose is not to show ‘how it really was’ but to establish the logical implications of modern reconstructions, and they are therefore inevitably less arbitrary than improperly contextualized claims advanced on the basis of particular source references or individual preconceptions.

Similarities include the wide range of servile occupations, urban and rural employment, intrusiveness and frequent capture, and the centripetal movement of slaves. Higher valuation of women (in part a function of African labor regimes), a higher degree of non-market allocation of slaves and non-market production, and the critical importance of labor rather than land represent the main differences.²⁵ Even so, controlling for ecologically contingent differences (in terms of gender and the ratio of land to labor), observed organizational similarities outweigh the differences, which are primarily a consequence of lower commercial development. Comparative approaches to Roman slavery, which have thus far privileged the New World, need to adopt a more global perspective.

2 The economy of Roman slavery

There are three basic preconditions for the employment of slave labor. Two of them concern supply: slavery must be institutionally acceptable and slaves must be effectively available. The third and ultimately most important one is that there must be demand for slave labor because alternative sources of labor are – or are considered to be – insufficient or otherwise inadequate. The third variable subsumes several preconditions that are commonly regarded as separate but are actually components of demand: significant asset inequality (creating demand for non-family labor), accumulation of capital (allowing the acquisition of slaves) or military power (allowing their capture), the existence of markets (allowing the sale of the products of slave labor), constraints on the free labor supply, and employers' tastes.²⁶

While the three basic preconditions must be met to facilitate slave labor, a large-scale system such as the one that existed in the Roman Empire depends on an additional condition to be viable in the long term. Slaves must, on average, produce enough to justify the capital input associated with their purchase and maintenance. This condition, which does not strictly speaking require slave labor to be more profitable than free labor, applies for the simple reason that in a system where millions of slaves were kept for centuries, it is not credible to view slavery primarily as a mean of surplus consumption: although not all slaves had to earn their keep, and although the importance of status value of slaveownership and path dependence should not be underrated, it is difficult to see how such a system could have survived on such a large scale and for such a long time if it was burdened by structural deficits. The notion that in this very fundamental sense, slave labor must have been 'profitable' receives further support from the observation that slave prices were considerable (see below).

The property rights over labor that the institution of slavery bestowed on slaveowners required them to make a capital investment that was not necessary for the employment of free labor. The fixed capital invested in slaves diminished as slaves aged, and further depreciation was caused by the probability of loss due to death, flight, or manumission. High and unpredictable mortality at all ages added considerably to the total cost of slaveownership (see Chapter 16). The incidence of defection cannot be measured but appears to have been non-trivial, as was the incidence of manumission. We also have to allow for the possibility of costly avoidance or resistance behavior that might have been specific to slave labor as opposed to work for others more generally.²⁷ In addition to bearing the cost of acquiring slaves, owners had to pay wages in the form of maintenance, provide for supervision, and might also incur additional tax liabilities.

²⁵ See Lovejoy 1979; 1981.

²⁶ This refines my earlier statement in Scheidel 2008: 115-16. For different disaggregations of the third factor, see Finley 1998: 154; Cartledge 2002a: 162.

²⁷ Slave flight: Bellen 1971; Bradley 1994: 118-21. It is much easier to document and argue about slave resistance (see especially Bradley 1989; 1990; 1994: 107-31; 2010a) than to relate it to baseline levels of malfeasance and counterfactuals (i.e., how wage laborers or serfs would have behaved).

From a narrowly economic perspective, slave labor was sustainable if, for a given output, slaves' 'wages' were lower than free wages by an amount that was at least equivalent to the depreciation of the fixed capital invested in the slaves, or if slaves' output was greater by at least the same amount than that of free workers. For a number of reasons, it is impossible to test this assumption for the Roman world. First, although we are sometimes able to compare free wages and subsistence costs, this exercise would not tell us about the ratios of inputs to outputs: if slaves could be made to work more for the same wage, comparisons between wages and subsistence levels would not tell us about marginal productivity.²⁸ Second, even the most basic slave wages may generally have differed from bare physiological subsistence, and would almost certainly have done so to the extent that their tasks favored the application of reward incentives (see below). Third, we have to take account of transaction costs such as those associated with the potential for higher turnover rates for free labor. Fourth, we cannot assume simple substitutability: owing to lack of skills or other reasons, free labor need not have been available to perform particular tasks. Fifth, Roman slave labor was organized in very different ways, from quasi-familial domestic service to rationalized large-scale production, yet owners were required to make equivalent capital investments in slaves regardless of how they used them, which means that we would have to find ways to ascertain the average profitability of slave labor across a wide range of contexts. I belabor this point to show that the profitability of Roman slave labor cannot be empirically determined.²⁹ This, however, does not mean that it did not matter. Faced with the large-scale and long-term slave system of the Roman Empire, we must proceed on the assumption that slavery was, indeed, profitable.

This raises the question which factors could have accounted for this outcome. In the absence of measurements, the best we can do is to weigh probabilities whose relative significance is open to debate. Labor may become scarce for various reasons. They include a shift in the ratio of labor to resources, especially land, for instance when the Black Death raised real wages in late medieval Europe or when colonial plantation farming opened up land in the New World after the indigenous population had been decimated by epidemics. Commitments of the free labor force to public service such as war, whether compulsory and/or (at least potentially) more rewarding than civilian employment, may also contribute to labor scarcity.

In the case of Republican Rome, the seizure and reallocation of arable land during the Italian conquests suggest that labor had not originally been scarce, even though these redistributions may have raised the price of labor at the center. Massive attrition during the first two Punic Wars would have had a similar effect. Both demographic and institutional developments that reduced elite access to and control over labor were intimately related to war-making and empire-building. The Roman Republic and its Italian allies shared high military participation rates, a situation that can be traced back to the fourth century BCE and continued into the early monarchical period.³⁰ Military service put pressure on the labor supply not only by increasing attrition by death or migration: it also served to destabilize and 'thin out' labor markets by raising unpredictability and turnover costs (see below). This process primarily affected young adults, the healthiest segment of the labor force and the one most amenable to migration in search of resources and skills acquisition. Roman military mobilization was facilitated by the abolition of debt-bondage and other forms of state-society bargaining that enhanced the freedom of citizens which, in turn, diminished the elite's capacity for controlling labor outside slavery and favored the rise of non-coercive contractual tenancy and wage labor arrangements (see Chapter 7). All these developments coincided with ongoing expansion of (generally successful) warfare which

²⁸ For higher outputs relative to inputs in slavery, see Barzel 1977.

²⁹ For the same reason, *contra* Jongman 2007: 601-2, we cannot readily infer free wages from slave prices.

³⁰ See Scheidel 2004 (migrations); Brunt 1987 (attrition). Service commitments: Hopkins 1978: 31-5; Scheidel 2007: 325 fig.1. For the nexus between high mobilization levels and slavery in city-states and beyond, see Scheidel 2008: 117-23.

triggered capital inflows and facilitated the capture and purchase of slaves, and with Italy's integration into Hellenistic economic systems where rational organization of slave labor had long been established. Taken together, these processes converged in creating an environment that was highly conducive to the employment of slave labor.³¹

However, while this may explain the rise of slavery in Roman Italy, we also need to explain how it was sustained and why it was apparently not uncommon in other parts of the Empire. These questions are lent urgency by the fact that throughout the monarchical period, Roman slave prices were high in terms of subsistence costs and probable per capita GDP. Existing price data are far from satisfactory but sufficient to establish that from the first to the early fourth centuries CE, the price of a young adult male slave without special skills, expressed in wheat equivalent, normally fell in a range of 4 tons plus/minus 40 percent, equivalent to between 4 and 8 times mean annual per capita GDP in the Roman Empire. Real prices remained at comparable levels until the sixth century CE. In this respect, Roman slave prices resembled those in the United States around 1850, when a comparable slave was valued at the equivalent of 7 times mean annual national per capita GDP. In terms of labor, the initial capital outlay for a Roman slave was very roughly worth 1,000 daily wages for an unskilled rural laborer. In so far as slave prices reflected the value of slave labor, slaveownership that regularly required considerable capital outlays (or entailed equivalent opportunity costs if slave offspring were retained) ought to have generated considerable benefits as well.³²

How did owners obtain such benefits? Because of its reliance on fixed capital, slave labor is particularly suited to economic activities with relatively steady employment opportunities.³³ These may be divided into effort-intensive and care-intensive types of work. The former are amenable to close supervision and the application of pain incentives, and include mining, lumbering, field labor performed by gangs, and basic construction work. The successful performance of the latter depends to a greater extent on the ability to motivate workers with the help of reward incentives. They tend to be characterized by a higher degree of autonomy and include artisanal, commercial, and management activities, domestic service, herding, and specialized forms of agricultural labor. Effort-intensive activities involve more supervision costs than costs for rewards, and *vice versa* for care-intensive work. In practice, we encounter a spectrum from effort-intensive to care-intensive labor matched by a spectrum of treatment from harsh and closely monitored to autonomous and more benign, a spectrum that also reflects the

³¹ While this array of contributing factors may seem to overdetermine outcomes, we lack the necessary data to create a more parsimonious explanation. Compare Finley's famous model (Finley 1998: 157-8; cf. Morris 2002: 29-41) of the rise of chattel slavery in ancient Greece that emphasizes the nexus between the abolition of debt bondage, private landownership, and citizen rights that made the free population less susceptible to exploitation and created a binary distinction between free and slave (for which see also Ste Croix 1981: 141; Patterson 1991). This dichotomy was one of the basic determinants of social identity: Cartledge 1993: 118-51. As Finley 1981: 165-6 intimates, an analogous process may have occurred in fourth-century BCE Rome. Hopkins 1978: 1-98 develops a comprehensive model of the growth of slavery in Roman Italy driven by the mobilization of citizens and capital inflows.

³² For nominal and real slave prices, see Scheidel 2005b; Harper 2010; and cf. also Ruffing and Drexhage 2008. (I define 'real' prices in relation to other goods: what one might call the 'effective' slave price is the price of purchase minus the resale value plus the opportunity cost of capital, maintenance, and depreciation.) Manumission fees recorded in Delphi in the last two centuries BCE, which may but need not reflect actual slave prices (see below, n.***), mostly fall in the same range (see Scheidel *ibid.*). For the Republican period, see below, Section 3. For Roman GDP: see Chapter 1, n.***. American slave prices and GDP: Scheidel 1996: 74, with <http://www.measuringworth.org/usgdp/>. Harper 2010, drawing on comparative evidence, elucidates the economic significance of ancient slave prices.

³³ Anderson and Gallman 1977: 26. Fixed capital cannot be varied unlike circulating capital such as wages. Eggertsson 1990: 203-13 provides a useful brief survey of the economics of slave labor.

overall likelihood of manumission (from low to high).³⁴ Unlike in the New World, where slaves were concentrated in effort-intensive activities, Roman slaves were successfully employed and managed across the entire spectrum.

Slave labor for effort-intensive tasks makes sense both for unpleasant or dangerous activities such as mining and whenever labor markets are ‘thin’ in the sense that turnover costs are high and labor cannot readily be substituted over time, as in farming. Differences in the supply of free labor help account for variation in the employment of slaves in such activities in different parts of the Roman Empire.³⁵ Effort-intensive slave labor also allows rationalization that generates economies of scale, as in gang labor.³⁶ The employment of slaves in care-intensives tasks makes sense when human capital is scarce, which generally appears to have been the case (see Chapter 5), but also requires owners to be legally and culturally capable of applying the appropriate reward incentives. Therefore, this type of slave labor flourishes most in ‘open’ slave systems where institutional arrangements and cultural norms allow slaves to be granted autonomy, assume positions of trust, and to be freed and become socially integrated upon manumission. In contrast to the more racialist ‘closed’ slave systems of the New World and to a lesser degree even to the more exclusive Greek polis, all these preconditions were met by Roman law and practice.³⁷ Roman institutions maximized owners’ flexibility in managing their slaves: just as secure property rights enabled ruthless exploitation, societal inclusivity supported the use of reward incentives and created opportunities to continue to benefit from slaves after their manumission (see below). This flexibility accounts for the employment of slave labor in an extraordinarily wide range of settings, from the use of chained slaves and gangs in effort-intensive tasks to the existence of highly autonomous slaves who were endowed with their own sub-slaves (*vicarii*) and business accounts (*peculia*) and subsequently flourished as freedmen, with some of their descendants even joining the political ruling class.³⁸ Unfortunately, the evidence does not allow us to measure the relative prevalence of these various types of occupations.³⁹ The gradual integration of local elites into an empire-wide ruling class, accompanied by the spread of Roman law and custom, may well have encouraged employers to embrace and adapt these highly flexible arrangements outside the core areas of Greco-Roman chattel slavery.

Manumission was an integral element of the reward-incentive system.⁴⁰ Like slavery itself, it was a multi-faceted practice, not merely a benefit but also a powerful source of anxiety and thus social control both during slavery (as an outcome that was always possible but never guaranteed) and beyond, especially when the freedperson’s kin were retained in bondage.⁴¹

³⁴ Fenoaltea 1984. Canarella and Tomaske 1975 and Findlay 1975 discuss the balance between coercion and rewards.

³⁵ See Hanes 1996 for turnover costs, and Scheidel 2008: 111-12.

³⁶ E.g., Metzger 1975; Toman 2005.

³⁷ Scheidel 2008: 112-15, drawing on Watson 1980; Temin 2004.

³⁸ Backhaus 1989 (*servi vincti*); Kaltenstadler 1978; Carandini 1988: 19-108, 287-326 (rational organization). For privileges, see above, n.***, and Bradley 1987a: 39-112.

³⁹ Joshel 1992: 173-82 lists occupational designations and measures their representation in the epigraphic record of the city of Rome. The representational dominance of certain sectors (manufacturing, domestic service, and administration) may be a function of the intensity of association with elite owners, even though less prominently documented occupational fields (such as construction and transportation) may well have involved less slave labor. Silver 2009 considers the relationship between terminological specificity and the frequency of occupations.

⁴⁰ Mouritsen 2011: ch.5 and 6 is now the fundamental treatment. Valuable earlier work includes Treggiari 1969 and Fabre 1981.

⁴¹ Manumission was functionally analogous to slave families, which likewise served as a reward, a means of control, and a source of profit: see Bradley 1987a: 47-80, for familial relations as a means of control, and above n.*** for the importance of slave reproduction.

Although manumission may not have been an indispensable strategy given that alternative benefits – wages, autonomy, *peculium*, *vicarii*, and quasi-familial relations – could be employed to manipulate slave behavior, it was attractive to owners because it did not merely represent a reward but also a means of continuing to draw on a former slave’s labor. The latter was made possible by a lasting bond between patrons and freed slaves.⁴² This relationship was constructed in pseudo-kinship terms, advertised by the freedperson’s assuming elements of the name of the former owner. Freed slaves commonly continued to belong to the patron’s *familia*, merely adjusting their status, and sometimes were not only married to or buried with other members of that household but even continued to reside with their former owners. As Henrik Mouritsen puts it, “manumission did not mark the end of a process but represented a point on a broad continuum of incentives that covered the entire working life of the slave/freedman.”⁴³

In working with and through their freed slaves, patrons continued to be able to apply both reward incentives – such as benefits from agency arrangements and investment – and (moderate) pain incentives, especially if kin remained enslaved. Moreover, immediate pecuniary gains from manumission might accrue to owners. Manumission fees equivalent to the replacement value of a freed slave and the imposition of service obligations (*paramone*) are well documented in the Hellenistic East. Payments for manumission are also attested in Roman society but it is unclear how common they were.⁴⁴ Continuing bonds between former owners and slaves may often have been the most important benefit to both parties. Wealthy Romans were said to operate *per servos atque libertos*, with the help of slaves and freedmen.⁴⁵ Through the latter, individual Romans as well as the state extended the relationships of slavery into the sphere of the free citizenry. Unlike more reciprocal kin networks or patron-client relationships, freedpersons’ dependence on their former owners created networks of subordination and trust that could not readily be replicated among those who had not passed through slavery. From a social perspective, slavery and manumission made it possible to convert material resources into personal power and domination, commodifying labor relations and familial relations. From an economic perspective, manumission helped owners to balance the costs and gains of slave labor.

Gains from slavery relative to the employment of free labor accrued from lowered transaction costs, control over human capital, the rationalization of labor arrangements, a possible muting of gender constraints on labor, the reproductive capacity of slaves that renewed the fixed capital they represented, and the creation of appropriately socialized and skilled free(ed) agents. They also included any additional utility derived from the direct domination of other human beings, such as sexual services and status enhancement. Costs were incurred by fixed capital outlays, depreciation including unpredictable attrition risks, supervision costs in so far as slaves required monitoring beyond working hours, the need to maintain idle workers or find lessees, and tax liabilities.⁴⁶ While we cannot blithely assume that the former consistently exceeded the latter, they must regularly have done so across a wide range of occupations in order to account for the

⁴² Mouritsen 2011: ch.6, and also Los 1995. This was a globally common pattern: Patterson 1982: 240-61. Genuinely independent freedmen (cf. Garnsey 1998: 28-44) may have been (much?) rarer.

⁴³ Mouritsen 2011: *** (quote). Co-residence: see *ibid.* ch.6 n.124-5 and Fabre 1981: 131-62. Marriage: Fabre 1981: 163-215; Bürge 1988.

⁴⁴ Straus 1973 (Egypt); Hopkins 1978: 131-71 (Delphi). Mouritsen 2011: ch.5 holds that payment for manumission was less common in Rome; in so far as it severed bonds it may have been more of an alternative to than an element of continuing patron-freedman relations. Days of service (*operae*) ex-slaves owed their patrons (Waldstein 1986) may not have been particularly profitable.

⁴⁵ Cai. *Dig.* 40.9.10. For their employment in top elite households, see Treggiari 1975; Hasegawa 2005; Mouritsen forthcoming. See also Kirschenbaum 1987 for their role as agents in commerce.

⁴⁶ For attrition, see above, ***. Steady employment was more important for slaves than in other labor systems: Anderson and Gallman 1977. Leasing was a viable option but incurred transaction costs and risks of impairment. Slaveownership established property tax obligations, for instance through the poll tax attested in Roman Egypt and the inheritance and manumission taxes imposed on Roman citizens.

scale and duration of the Roman slave system. The tremendous flexibility of management strategies from brute force to ample rewards made slavery a highly versatile and adaptable institution, thereby ensuring its success in a variety of contexts.

3 The development of Roman slavery

We do not know when Rome became a slave society. The Law of the Twelve Tables, if it does indeed date from the fifth century BCE, merely documents the existence of slavery at that time. The annalistic tradition, unreliable as it may be, indicates that slavery was already common in the fourth and third centuries BCE.⁴⁷ Early references must be treated with caution, such as the claim of mass enslavement following the conquest of Veii in the 390s BCE, the introduction of a manumission tax in 357 BCE, and political conflict over the tribal enrolment of freedmen in 312 BCE. While the abolition of debt-bondage (*nexum*) in 326 or 313 BCE may have been facilitated by elite access to slave labor, any such connection must ultimately remain conjecture. We move onto somewhat more solid ground with the large tallies of enslaved captives in the final stages of the wars that established Roman hegemony over peninsular Italy in the early third century BCE and the provision that Romans provide slaves for public service during the Second Punic War.⁴⁸

That all of this predates the emergence of the Italian *villa* system and the massive urbanization of the late second and first centuries BCE should not be considered a serious problem. First of all, there is no need to assume that all war captives were employed by Romans. In the earliest stages of Roman expansion, slaves may have been sold to Greek and Punic traders. It is hardly unreasonable to conjecture significant demand for slaves in the more developed regions to the south: we hear about Greek enslavement of other Greeks in Sicily and of Africans, and the treaty of 346 BCE between Rome and Carthage mentioned the Carthaginian slave trade in Italy.⁴⁹ Just as the Gauls, Dacians, and Germans who later sold slaves to the Romans, the early Roman state occupied a semiperipheral position relative to a more developed (Greco-Punic) core and there is no compelling reason to believe that it did not sell slaves merely because our much later sources did not write (or know or care) about it.

More importantly, however, military commitments by the citizenry were already high, thereby curbing the civilian labor supply and raising turnover risks. As colonists left Latium to settle conquered and redistributed land, slaves may have taken their place.⁵⁰ It is at least possible that precursors of the later *villa*, the so-called ‘Hellenistic’ farms that appear to have produced for the market, already employed slave labor.⁵¹ Moreover, we do not know how commercialized Roman slavery was in this period: if war captives had been allocated to citizens, capital outlays would have been avoided, and slaves could usefully be employed in small-scale units of

⁴⁷ For the early stages of Roman slavery, see Welwei 2000; Bradley 2010b. The notion that slavery used to be a characteristic of Mediterranean societies is correct (Horden and Purcell 2000: 388-91, following Braudel) but unhelpful in as much as it neglects the critical importance of organizational variation (cf. above, Chapter 1, ***).

⁴⁸ Rosenstein 2008: 5-7, on Liv. 24.11.7-8 (but cf. Welwei 1988: 35, 37). It is unfortunate that we are ignorant of the participation of slaves in the large naval campaigns of the First Punic War: Welwei *ibid.* 29-34.

⁴⁹ Volkman 1990: 57, 148 (Greeks); Polyb. 3.24 (treaty). It is unclear to what extent the western Greeks employed indigenous serfs but that institution may have been in decline: Van Wees 2003, especially 45-6 on Syracuse.

⁵⁰ Centrifugal mobility and high commitments: Scheidel 2004: 10-12; 2007: 325 fig.1.

⁵¹ Rathbone 1983: 162; Terrenato 2001. Rosivach 1993 provides instructive comparanda for the possible role of smaller-scale slavery.

production.⁵² Unlike other ancient states such as Pharaonic Egypt and Assyria that imported large numbers of war captives, the Roman Republic did not control them collectively but earmarked them for private use through purchase and, perhaps, other means. In a period of little regular state income and primitive accumulation through plunder, slaveownership represented one of few opportunities for elites to privatize of the gains from empire.⁵³

The notion that slavery was already widespread in the late third and early second centuries BCE receives support not only from the aforementioned provision that citizens commit slaves to the war effort in 214 BCE and reports of slave uprisings in the early second century BCE but also from events such as the mass enslavement of the population of Epirus in 167 BCE which, however inflated by the record, is hard to understand except in the context of an existing large-scale system of slave labor and concomitant demand for labor replacement and augmentation.⁵⁴

In the Italian core of the growing empire, this system continued to expand under the late Republic, a period of unusually dynamic economic development that witnessed unprecedented capital inflows; high mobility engendered by migration and at times extraordinary military commitments of the free labor force, both of which would have destabilized labor markets; and growing access to slaves through war and trade. Both the demand for and the supply of slaves soared. Rapid urbanization and the spread of *villa* estates – perhaps a new style rather than a new system of labor but surely indicative of increases in scale (and attendant economies of scale) – were closely linked to the expansion of slavery in this period.⁵⁵ It would be moot to argue whether this process was the result of Roman imperialism or of new commercial opportunities: in as much as Roman economic development was a consequence of empire (see Chapter 1), empire was both the ultimate cause of economic expansion and the proximate cause of slave imports.

To the east and south of Italy, conquest brought slave-rich regions under Roman control. There is no good reason to regard this as an expansion of Roman slavery except in the trivial sense that local slaveowners came to be subject to Roman rule. It makes better sense to view this as a process of integration or, more boldly, even as a step in the incorporation of Italy into the Hellenistic slave system: if anything, urbanization and slaveownership made Roman society look more Greek. The probable Greek and Punic roots of the Roman *villa* illustrate this premise.⁵⁶

Outside Italy and Sicily, net growth of slavery as a result of Roman expansion occurred in the first instance farther west and north. Owing to the scarcity of regional textual documentation prior to late antiquity and uncertainty about the status of the labor forces of provincial *villa* estates, it is supremely difficult to gauge the scale and chronology of this process. We may conjecture that Roman-style slavery extended at least to the nodal points of provincial development. The extent of slave labor in the countryside remains an intractable issue: most of the relevant evidence is fairly late and the modalities of labor organization are obscure.⁵⁷

⁵² References of allocation of war captives in the sixth and fifth centuries BCE (Volkman 1990: 37) need not be true but might reflect actual later practice. See also Caes. *BG* 7.89.5. The evidence from Sokoto, whilst not necessarily germane to the Roman case, is suggestive.

⁵³ Contrast Oded 1979; Gundlach 1994.

⁵⁴ Bradley 1989: 41-3 (uprisings); Ziolkowski 1986 (Epirus); and above, n.***.

⁵⁵ E.g., Carandini 1988: 19-326; Marzano 2007: 125-53. Expansion: Giardina and Schiavone (eds.) 1981; Morel 2007. Mobility and commitments: Scheidel 2004: 10-13, 21 fig.1; 2007: 323-9. Capital inflows: above, Chapter 1, n.***. Gains for commoners: Scheidel 2007: 329-33.

⁵⁶ Fentress 2001.

⁵⁷ The prominence of freedmen in the epigraphic record of Narbo (Narbonne) may reflect the replication of Italian practices of slavery and manumission: Woolf 1998: 99. For slavery in the western provinces in general, see Staerman et al. 1987; Morley 2010; Harper forthcoming: ch.4. Finds of chains on rural estates in Roman Gaul might be linked to slave labor: Thompson 2003: 217-44; Henning 2008. For other forms of labor, see, e.g. Whittaker 1993: ch.1-2, and below, Chapter 7.

During the first two centuries of the monarchy and perhaps also later, population growth can be expected to have put downward pressure on the cost of labor while a reduction in the scale of warfare curbed the slave supply, and that the congruence of these two developments reduced the appeal of slave labor.⁵⁸ Although the logical premises of this model are sound, empirical testing poses great challenges. In the western regions, there would have been ample scope for economic development (including the adoption of slave labor) before Malthusian constraints made themselves felt (see Chapter 1). In more developed regions, such as Italy and the Eastern Mediterranean, slavery may very well have stopped expanding but we cannot simply assume major contractions. Established slaveholdings would have generated large numbers of slave children. The imperial integration of slave markets favored regions with high nominal incomes, such as Italy, giving it a comparative advantage in the competition for slave labor.⁵⁹ The fact that the net expansion of the Italian *villa* system peaked in the first century BCE does not prove a subsequent decline in the slave mode of production because the archaeological record may merely reflect changes in elite residential patterns or concentration of landownership. The apparent decline in some agricultural exports might just as well reflect growing local demand as reductions in rural slave labor. We cannot be sure whether rural slavery contracted and/or came to be differently organized.⁶⁰

In principle, slave labor remained suitable for higher-risk, higher-investment ventures that required supervision and produced commodities for the market. It is therefore telling that adult male slaves continued to be more highly valued than their female counterparts, a historically uncommon feature that suggests the heavy involvement of slaves in productive activities.⁶¹ The apparent long-term stability of slave prices in the monarchical period (see Section 2) is potentially of great importance to our understanding of Roman slavery but difficult to interpret. It is logically compatible with stable demand and supply, diminished demand and supply, and increased demand and supply, which seems to be the least likely scenario. If the price of labor fell thanks to demographic growth, slave prices could have remained high even if imports declined relative to the demand for replacements.

Kyle Harper has argued against the notion of a massive decline of Roman slavery in the fourth century CE. Qualitative evidence, for what it is worth, and a sprinkling of census data point to substantial levels of slaveownership. It is unlikely that the emerging 'colonate' eroded the status of free workers to the extent that it undermined slave labor, and there is no sign that lots of slaves were transformed into quasi-tenants. While villas boomed in many regions, we cannot be sure about the composition of their labor force.⁶² In so far as the employment of slaves was

⁵⁸ Lo Cascio 2009: 189 and 2010, a more sophisticated version of the 'conquest thesis' (critiqued by Harper forthcoming) that accords critical importance to changes in the slave supply. The incorporation of a demographic dimension is important and all too rare in Roman economic history: see above, Chapter 1.

⁵⁹ Slave prices of the Republican period are virtually unknown but ransom rates are sporadically documented: see Prachner 1995. Higher fees for unconditional release in Delphi during the transition from republic to monarchy, albeit conceivably a reflection of rising slave prices (Hopkins 1978: 162-3), are difficult to interpret due to changes in sample size and our ignorance of their circumstances (cf. Duncan-Jones 1984). Although the enslavement of war captives continued under the monarchy (Bradley 2004), its relative contribution to the slave supply probably declined given that campaigns became less extensive at a time when the overall slave population was probably larger than before. The catchment area for slave imports was relatively sparsely populated: Scheidel 1997: 159-60. Nominal slave prices appear to have been fairly homogeneous outside Egypt (where regulations constrained slave exports, depressing nominal prices). For higher nominal incomes and prices in Italy, see Freyberg 1989.

⁶⁰ Marzano 2007: 199-222.

⁶¹ Scheidel 1996: 72-73 (on Diocletian's Price Edict); Harper 2010.

⁶² See Harper forthcoming. Shaw 1998: 31-43 is more nuanced. MacMullen 1987 and Whittaker 1987 are among the most salient earlier studies. Quantitative data: Harper 2008. For villas, see Lewit 2004; cf. Vera 1995. For the nature of the colonate, see, e.g. Grey 2007, and below, Chapter 7.

associated with elites' commodity production and exchange, and in so far as elite profits from such ventures and from their involvement in the state sustained elite access to the services of slaves, there is no obvious reason why the slave system should have been greatly weakened prior to the fifth century CE. By the same token we would expect it to have contracted during the fifth and sixth centuries CE as these favorable preconditions began to disappear in the west and more radical forms of constraining workers' freedom emerged in the east.⁶³

Rising nominal slave prices under the early Caliphate may have been related to labor shortages caused by the plague and/or inflows of African bullion.⁶⁴ By that time, the economic center of gravity in western Eurasia had once again shifted back to the Aegean and especially the Near East, both of which Europe took to supplying with slaves.⁶⁵ The Roman system of slavery, centered on Italy, had come to an end and, like the Roman Empire itself, was never rebuilt.

4 Conclusion: slavery, empire, and the nature of the Roman economy

The Roman economy was made distinctively 'Roman' by the institution of empire which, both directly and indirectly, mobilized resources in novel ways and ultimately accounted for the economic expansion we observe in the historical record (see Chapter 1). Empire facilitated a system of exchange that favored production for the market, a feature which in turn favored the employment of slave labor and the slave mode of production with its comprehensive control and rationalized organization. Just as most production and consumption were contained within households, most economic activities continued to be performed by free or semi-autonomous workers. Nevertheless, in terms of its intrinsic character and its structural location, slavery occupied a central position in the Roman economy.

By nature, empire and chattel slavery were very much alike, constituting analogous systems of violent and asymmetric domination and predatory appropriation that mobilized and allocated resources and created, sustained, and reinforced inequality and hierarchy. It was not by coincidence that slavery and empire flourished and declined together. Complementing imperial power over collectives, slavery ensured elite power over individuals. The fact that both empire and slavery were rooted in violent domination did not require violence to be continuously expressed or exercised: by necessity, state rulers and slaveowners both relied on the effective sharing of claimed resources and ostensible acts of beneficence in the management of their affairs. None of this altered the essence of imperial rule or slavery, nor did it diminish rulers' and owners' entitlement to and capacity for violent intervention.

The structural location of Roman slavery was not primarily a function of scale. A vital component of the households and ventures of the dominant groups (be they rulers, landowners, or even merchants), slave labor occupied a central position in the creation, management, and consumption of elite wealth and social power. Slavery and manumission enabled elite members to create distinctive networks of subordination and economic control that increased their autonomy from the free commoner population.⁶⁶

Slavery had mixed effects on labor markets and the economic standing of the freeborn working population. On the one hand, access to enslaved outsiders may have curbed the elite's

⁶³ See in general Wickham 2005, and cf. above, Chapter 1. *Adscripticii* may have been more similar to slaves: Harper forthcoming.

⁶⁴ See Harper 2010. High real wages due to labor shortage: Scheidel 2010b: ***.

⁶⁵ Harper forthcoming; McCormick 2001: 733-77; Henning 2008; Rotman 2009: 57-81.

⁶⁶ This is a variant of the more global thesis advanced by Miller 2008 that throughout world history, slavery empowered owners relative to competitors who lacked access to slaves, thereby allowing the former to effect innovations. In the Roman case, slaveownership did not create a new dominant class but redefined the relationship between slaveowning dominants and the bulk of the freeborn population.

desire to control non-slave labor with the help of institutions such as debt-bondage. On the other, elite reliance on slaves and freedpersons would have disfavored freeborn workers by constricting their access to employment in the households and businesses of the wealthy and discouraging investment in human capital beyond the confines of these households and businesses.⁶⁷ Slavery also distorted labor markets. While it is true that slaves participated in labor markets in that they effectively received wages (in the form of maintenance and reward incentives) and their compensation levels were sensitive to their tasks, the extent of owners' claims to their slaves greatly raised the costs the latter faced in changing employers and consequently reduced slaves' bargaining power.⁶⁸

One might object that all forms of labor for others involve asymmetries and coercion. Even so, chattel slavery, farm tenancy, wage labor and serfdom differ in many ways, including owners' capacity for violence against workers and direct control over their labor. The specific configuration of labor regimes that underpinned the position of the dominant groups matters a great deal to our understanding of a given economic system. Slavery may be regarded as the 'dominant exception' of the Roman economy. Wherever slave labor was organized in a rational fashion, on a large scale and geared to production for the market, it arguably represented the most advanced – the most 'capitalist' – segment of the Roman economy. As such, it was the leading edge of intensive growth, making it possible to re-organize manufacturing processes and colonize the countryside with capital. Unlike in the slave societies of the New World, Roman slave labor never dominated market production in quantitative terms but created vital pockets of development.⁶⁹ Scholarly fashion swings like a pendulum: the study of the Roman economy has moved from sweeping claims about the absolute centrality of slave labor to a growing lack of enthusiasm for this topic.⁷⁰ Adjustment of what may have been an excessive emphasis on slavery among previous generations of scholars has led to indifference that is now itself in need of adjustment. Slavery is critical to our understanding of the Roman imperial economy as a product of organized violence and coercive integration.

References

- Alföldy, G. (1986) *Die römische Gesellschaft: Ausgewählte Beiträge*. Stuttgart.
- Anderson, R. and Gallman, R. (1977) "Slaves as fixed capital: slave labor and Southern economic development," *Journal of American History* 64: 24-46.
- Aubert, J.-J. (1994) *Business Managers in Ancient Rome: A Social and Economic Study of Institores, 200 B.C. – A.D. 250*. Leiden.
- Backhaus, W. (1989) "Servi vincti," *Klio* 71: 321-9.
- Bagnall, R. S. and Frier, B. W. (2006) *The Demography of Roman Egypt*. Exp. ed. Cambridge.

⁶⁷ For example, Aubert 1994: 417-20 observes that the link between Roman business management and slavery was closer than legal institutions would lead us to expect if employers had been indifferent to their agents' status. Preference for unfree agents and attendant career opportunities may help explain the phenomenon of voluntary enslavement: Ramin and Veyne 1981.

⁶⁸ On slavery within labor markets, see Temin 2004, who notes that premodern 'free' labor was often subject to serious constraints on mobility and choice (cf. also Banaji 2003); but see below, Chapter 7, for Roman free labor institutions. Slave could defect to seek new employment (Bellen 1971) but attendant risks were high.

⁶⁹ See especially Carandini 1988: 318-23; Schiavone 2000: 63-5, 108-64.

⁷⁰ See Morley 2009: 150-2 for choice quotations from Hume, Marx, Engels, and Weber, or more recently the work done in the 1980s (such as Finley 1998, first published in 1980; Giardina and Schiavone (eds.) 1981; de Ste Croix 1981; Carandini 1989), and contrast the effective absence of slavery from the 82-page mission statement of the current Oxford Roman Economy Project: Chapter 1, ***. For abiding interest in the overall importance of ancient Greek slavery, cf. Cartledge 2002a; 2000b.

- Bagnall, R. S., Frier, B. W., and Rutherford, I. C. (1997) *The Census Register P.Oxy. 984: The Reverse of Pindar's Paeans*. Brussels.
- Banaji, J. (2003) "The fictions of free labour," *Historical Materialism* 11.3: 69-95.
- Barzel, Y. (1977) "An economic analysis of slavery," *Journal of Law and Economics* 20: 87-110.
- Bellen, H. (1971) *Studien zur Sklavenflucht im römischen Kaiserreich*. Wiesbaden.
- Bellen, H. and Heinen, H. (eds.) (2003) *Bibliographie zur antiken Sklaverei*. 2 vols. Stuttgart.
- Biezunska-Malowist, I. (1977) *L'esclavage dans l'Égypte gréco-romaine II: Période romaine*. Wrocław.
- Bodel, J. (2005) "Caveat emptor: towards a study of Roman slave traders," *Jornal of Roman Archaeology* 18: 181-95.
- Bodel, J. (2010) "Slave labour and Roman society," in Bradley and Cartledge (eds.) (2010).
- Boese, W. E. (1973) "A study of the slave trade and the sources of slaves in the Roman Republic and the Early Roman Empire," unpublished dissertation University of Washington.
- Bradley, K. R. (1987a) *Slaves and Masters in the Roman Empire: A Study in Social Control*. New York.
- Bradley, K. R. (1987b) "On the Roman slave supply and slavebreeding," in Finley (ed.) (1987): 42-64.
- Bradley, K. R. (1989) *Slavery and Rebellion in the Roman World, 140 B.C.-70 B.C.* Bloomington.
- Bradley, K. R. (1990) "Servus onerosus: Roman law and the troublesome slave," *Slavery and Abolition* 11: 135-57.
- Bradley, K. (1994) *Slavery and Society at Rome*. Cambridge.
- Bradley, K. (2004) "On captives under the Principate," *Phoenix* 58: 298-318.
- Bradley, K. (2010a) "Resisting slavery at Rome," in Bradley and Cartledge (eds.) (2010).
- Bradley, K. (2010b) "Slavery in the Roman Republic," in Bradley and Cartledge (eds.) (2010).
- Bradley, K. and Cartledge, P. (eds.) (2010) *The Cambridge World History of Slavery, 1: The Ancient Mediterranean World*. Cambridge.
- Brunt, P. A. (1987) *Italian Manpower 225 B.C. – A.D. 14*. Rev. ed. Oxford.
- Bürge, A. (1988) "Cum in familia nubas: Zur wirtschaftlichen und sozialen Bedeutung der familia libertorum," *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte, Romanistische Abteilung* 105: 312-33.
- Camodeca, G. (2008) "La popolazione degli ultimi decenni di Ercolano," in *Ercolano: Tre Secoli di Scoperte*. Naples: 86-103.
- Canarella, G. and Tomasko, J. A. (1975) "The optimal utilization of slaves," *Journal of Economic History* 35: 621-9.
- Capasso, L. (2001) *I fuggiaschi di ercolano: paleobiologia delle vittime dell'eruzione vesuviana del 79 d.C.* Rome.
- Carandini, A. (1988) *Schiavi in Italia: gli strumenti pensanti dei Romani fra tarda Repubblica a medio Impero*. Rome.
- Carlsen, J. (1995) *Vilici and Roman Estate Managers until AD 284*. Rome.
- Cartledge, P. (1993) *The Greeks: A Portrait of Self and Others*. Oxford.
- Cartledge, P. (2002a) "The political economy of Greek slavery," In Cartledge, Cohen, and Foxhall (eds.) (2002): 156-66.
- Cartledge, P. 2002b "Greek civilisation and slavery," in *Classics in Progress: Essays on Ancient Greece and Rome*, ed. T. P. Wiseman. Oxford: 247-62.
- Dal Lago, E. and Katsari, C. (eds.) (2008) *Slave Systems: Ancient and Modern*. Cambridge.
- Dumont, J. C. (1987) *Servus: Rome et l'esclavage sous la république*. Rome.
- Duncan-Jones, R. P. (1984) "Problems of the Delphic manumission payments 200-1 B.C.," *Zeitschrift für Papyrologie und Epigraphik* 57: 203-9.
- Eggertsson, T. (1990) *Economic Behavior and Institutions*. Cambridge.

- Fabre, G. (1981) *Libertus: Recherches sur les rapports patron-affranchi à la fin de la République romaine*. Rome.
- Fenoaltea, S. (1984) "Slavery and supervision in comparative perspective: a model," *Journal of Economic History* 44: 635-68.
- Fentress, E. (2001) "Villas, wine and kilns: the landscape of Jerba in the late Hellenistic period," *Journal of Roman Archaeology* 14: 249-68.
- Findlay, R. (1975) "Slavery, incentives, and manumission: a theoretical model," *Journal of Political Economy* 83: 923-34.
- Finkelman, P. and Miller, J. C. (eds.) (1998) *Macmillan Encyclopedia of World Slavery*. 2 vols. New York.
- Finley, M. I. (1981) *Economy and Society in Ancient Greece*, eds. B. D. Shaw and R. P. Saller. London.
- Finley, M. I. (ed.) (1987) *Classical Slavery*. London.
- Finley, M. I. (1998) *Ancient Slavery and Modern Ideology*, exp. ed. ed. B. D. Shaw. Princeton.
- Flaig, E. (2009) *Weltgeschichte der Sklaverei*. Munich.
- Freyberg, H.-U. von (1989) *Kapitalverkehr und Handel im römischen Kaiserreich (27 v. Chr. – 235 n. Chr.)*. Freiburg.
- Garnsey, P. (1998) *Cities, Peasants and Food in Classical Antiquity: Essays in Social and Economic History*, ed. W. Scheidel. Cambridge.
- Giardina, A. and Schiavone, A. (eds.) (1981) *Società romana e produzione schiavistica*. 3 vols. Bari.
- Grey, C. (2007) "Contextualizing *colonatus*: the *origo* of the Late Roman Empire," *Journal of Roman Studies* 97: 155-75.
- Gundlach, R. (1994) *Die Zwangsumsiedlung auswärtiger Bevölkerung als Mittel ägyptischer Politik bis zum Ende des Mittleren Reiches*. Stuttgart.
- Hanes, C. (1996) "Turnover cost and the distribution of slave labor in Anglo-America," *Journal of Economic History* 56: 307-29.
- Harper, K. (2008) "The Greek census inscriptions of late antiquity," *Journal of Roman Studies* 98: 83-119.
- Harper, K. (2010) "Slave prices in late antiquity (and in the very long run)," *Historia* 59: 206-38.
- Harper, K. (forthcoming) *Slavery in the Late Roman World, AD 275-425*. Cambridge.
- Harris, W. V. (1980) "Towards a study of the Roman slave trade," in *The Seaborne Commerce of Ancient Rome: Studies in Archaeology and History*, eds. J. H. D'Arms and E. C. Kopff. Rome: 117-40.
- Harris, W. V. (1999) "Demography, geography and the sources of Roman slaves," *Journal of Roman Studies* 89: 62-75.
- Hasegawa, K. (2005) *The Familia Urbana during the Early Empire: A Study of Columbaria Inscriptions*. Oxford.
- Henning, J. (2008) "Strong rulers – weak economy? Rome, the Carolingians and the archaeology of slavery in the first millennium AD," in *The Long Morning of Early Medieval Europe*, eds. J. R. Davis and M. McCormick. Burlington: 33-53.
- Herrmann-Otto, E. (1994) *Ex ancilla natus: Untersuchungen zu den "hausgeborenen" Sklaven und Sklavinnen im Westen des römischen Kaiserreiches*. Stuttgart.
- Hezser, C. (2005) *Jewish Slavery in Antiquity*. Oxford.
- Hopkins, K. (1978) *Conquerors and Slaves: Sociological Studies in Roman History, 1*. Cambridge.
- Horden, P. and Purcell, N. (2000) *The Corrupting Sea: A Study of Mediterranean History*. Oxford.
- Jongman, W. (2003) "Slavery and the growth of Rome: the transformation of Italy in the second and first centuries BCE," in *Rome the Cosmopolis*, eds. C. Edwards and G. Woolf. Cambridge: 100-22.

- Jongman, W. (2007) "The early Roman empire: consumption," in Scheidel, Morris, and Saller (eds.) (2007): 592-618.
- Joshel, S. R. (1992) *Work, Identity, and Legal Status at Rome: A Study of the Occupational Inscriptions*. Norman.
- Kaltenstadler, W. (1978) *Arbeitsorganisation und Führungssystem bei den römischen Agrarschriftstellern (Cato, Varro, Columella)*. Stuttgart.
- Kirschenbaum, A. (1987), *Sons, Slaves and Freedmen in Roman Commerce*. Jerusalem.
- Laes, C. (2008) "Child slaves at work in Roman antiquity," *Ancient Society* 38: 235-83.
- Lewit, T. (2004) *Villas, Farms, and the Late Roman Rural Economy: Third to Fifth Centuries AD*. Oxford.
- De Ligt, L. (2004) "Poverty and demography: the case of the Gracchan land reforms," *Mnemosyne* 57: 725-57.
- Lo Cascio, E. (2009) *Crescita e declino: studi di storia dell'economia romana*. Rome.
- Lo Cascio, E. (2010) "Thinking slave and free in coordinates," in *By the Sweat of Your Brown: Roman Slavery in its Socio-Economic Setting*, ed. U. Roth. London.
- Los, A. (1995) "La condition sociale des affranchis privés au 1^{er} siècle après J.-C.," *Annales: Histoire, Sciences Sociales* 50: 1011-43.
- Lovejoy, P. E. (1979) "The characteristics of plantations in the nineteenth-century Sokoto Caliphate," *The American Historical Review* 84: 1267-92.
- Lovejoy, P. E. (1981) "Slavery in the Sokoto caliphate," in *The Ideology of Slavery in Africa*, ed. P. E. Lovejoy. Beverly Hills: 201-43.
- Lovejoy, P. E. (2000) *Transformations in Slavery: A History of Slavery in Africa*. 2nd ed. Cambridge.
- MacMullen, R. (1987) "Late Roman slavery," *Historia* 36: 359-82.
- Marinovic, L. P., Golubcova, E. S., Sifman, I. S., and Pavlovskaja, A. I. (1992) *Die Sklaverei in den östlichen Provinzen des römischen Reiches im 1.-3. Jahrhundert*. Stuttgart.
- Marzano, A. (2007) *Roman Villas in Central Italy: A Social and Economic History*. Leiden.
- McCormick, M. (2001) *Origins of the European Economy: Communications and Commerce, AD 300-900*. Cambridge.
- McKeown, N. (2007) *The Invention of Ancient Slavery?* London.
- Metzler, J. (1975) "Rational management, modern business practices, and economies of scale in the ante-bellum southern plantations," *Explorations in Economic History* 12: 123-50.
- Miller, J. C. (2008) "Slaving as historical process: examples from the ancient Mediterranean and the modern Atlantic," in Dal Lago and Katsari (eds.) (2008): 70-102.
- Morel, J.-P. (2007) "Early Rome and Italy," in Scheidel, Morris, and Saller (eds.) (2007): 487-510.
- Morley, N. (2009) *Antiquity and Modernity*. Malden MA.
- Morley, N. (2010) "Slavery under the Principate," in Bradley and Cartledge (eds.) (2010).
- Morris, I. (2002) "Hard surfaces," in *Money, Labour and Land: Approaches to the Economies of Ancient Greece*, eds. P. Cartledge, E. E. Cohen, and L. Foxhall. London: 8-43.
- Mouritsen, H. (2005) "Freedmen and decurions: epitaphs and social history in imperial Italy," *Journal of Roman Studies* 95: 38-63.
- Mouritsen, H. (2007) "CIL X 1403: the *album* from Herculaneum and the nomenclature of the Latini Iuniani," *Zeitschrift für Papyrologie und Epigraphik* 161: 288-90.
- Mouritsen, H. (2011) *The Freedman in the Roman World*. Cambridge.
- Mouritsen, H. (forthcoming) "Slavery and manumission in the Roman elite: a study of the *columbaria* of the Volusii Saturnini and the Statilii Tauri," in *Ancient Slavery and Material Culture*, ed. M. George.
- Oakes, J. (1990) *Slavery and Freedom: An Interpretation of the Old South*. New York.
- Oded, B. (1979) *Mass Deportations and Deportees in the Neo-Assyrian Empire*. Wiesbaden.
- Patterson, O. (1982) *Slavery and Social Death: A Comparative Study*. Cambridge MA.

- Patterson, O. (1991) *Freedom. Vol. I: Freedom in the Making of Western Culture*. London.
- Prachner, G. (1995) "Untersuchungen zum Verhältnis von Lösegeld-Forderungen für Kriegsgefangene im 4. und 3. Jahrhundert v.Chr., zu den Verkaufserlösen bei einer Auktion im Jahre 293 v.Chr. und Sklavenpreisen im italisch-sizilischen und griechischen Raum sowie in Ägypten," *Laverna* 6: 1-40.
- Ramin, J. and Veyne, P. (1981) "Droit romain et société: les homes libres qui passent pour esclaves et l'esclavage volontaire," *Historia* 30: 472-97.
- Rathbone, D. W. (1983) "The slave mode of production in Italy," *Journal of Roman Studies* 73: 160-8.
- Reduzzi Merola, F. (1990), "Servo Parere:" *Studi sulla condizione giuridica degli schiavi vicari e dei sottoposti a schiavi nelle esperienze greca e romana* (Camerino).
- Rosenstein, N. (2008) "Aristocrats and agriculture in the Middle and Late Republic," *Journal of Roman Studies* 98: 1-26.
- Rosivach, V. (1993) "Agricultural slavery in the Northern colonies and in classical Athens: some comparisons," *Comparative Studies in Society and History* 35: 551-67.
- Roth, U. (2007) *Thinking Tools: Agricultural Slavery between Evidence and Models*. London.
- Rotman, Y. (2009) *Byzantine Slavery and the Mediterranean World*. Cambridge MA.
- Ruffing, K. and Drexhage, H.-J. (2008) "Antike Sklavenpreise," in *Antike Lebenswelten: Konstanz – Wandel – Wirkungsmacht*, eds. P. Mauritsch et al. Wiesbaden: 321-51.
- Saller, R. (2003) "Women, slaves, and the economy of the Roman household," in *Early Christian Families in Context: An Interdisciplinary Dialogue*, eds. D. L. Balch and C. Osiek. Grand Rapids: 185-204.
- Scheidel, W. (1994) "Grain cultivation in the villa economy of Roman Italy," in *Landuse in the Roman Empire*, eds. J. Carlsen et al. Rome: 159-66.
- Scheidel, W. (1996) "Reflections on the differential valuation of slaves in Diocletian's price edict and in the United States," *Münstersche Beiträge zur Antiken Handelsgeschichte* 15: 67-79.
- Scheidel, W. (1997) "Quantifying the sources of slaves in the early Roman empire," *Journal of Roman Studies* 87: 156-69.
- Scheidel, W. (2004) "Human mobility in Roman Italy, I: the free population," *Journal of Roman Studies* 94: 1-26.
- Scheidel, W. (2005a) "Human mobility in Roman Italy, II: the slave population," *Journal of Roman Studies* 95: 64-79.
- Scheidel, W. (2005b) "Real slave prices and the relative cost of slave labor in the Greco-Roman world," *Ancient Society* 35: 1-17.
- Scheidel, W. (2007) "A model of real income growth in Roman Italy," *Historia* 56: 322-46.
- Scheidel, W. (2008) "The comparative economics of slavery in the Greco-Roman world," in Dal Lago and Katsari (eds.) (2008): 105-26.
- Scheidel, W. (2010a) "Real wages in early economies: evidence for living standards from 1800 BCE to 1300 CE," *Journal of the Social and Economic History of the Orient* 53: 425-62.
- Scheidel, W. (2010b) "The Roman slave supply," in Bradley and Cartledge (eds.) (2010).
- Scheidel, W., Morris, I., and Saller, R. P. (eds.) (2007) *The Cambridge Economic History of the Greco-Roman World*. Cambridge.
- Schiavone, A. (2000) *The End of the Past: Ancient Rome and the Modern West*. Cambridge MA.
- Shaw, B. D. (1998) "'A wolf by the ears': M. I. Finley's *Ancient Slavery and Modern Ideology* in historical context," in Finley (1998): 3-74.
- Silver, M. (2009) "Must frequently performed economic services have distinctive names? A probe of Finley's hypothesis," *Historia* 58: 246-56.
- Spurr, M. S. (1986) *Arable Cultivation in Roman Italy c.200 B.C.-c.A.D.100*. London.
- Staerman, E. and Trofimova, M. (1975) *La schiavitù nell'Italia imperiale*. Rome.
- Staerman, E. M., Smirin, V. M., Belova, N. N., and Kolosovskaja, J. K. (1987) *Die Sklaverei in den westlichen Provinzen des römischen Reiches im 1.-3. Jahrhundert*. Stuttgart.

- Ste. Croix, G. E. M. de (1981) *The Class Struggle in the Ancient World from the Archaic Age to the Arab Conquests*. London.
- Straus, J. A. (1973) "Deux notes sur l'affranchissement," *Zeitschrift für Papyrologie und Epigraphik* 11: 143-6.
- Temin, P. (2004) "The labor market of the early Roman empire," *Journal of Interdisciplinary History* 34: 513-38.
- Terrenato, N. (2001) "The Auditorium site in Rome and the origins of the villa," *Journal of Roman Archaeology* 14: 5-32.
- Thompson, F. H. (2003) *The Archaeology of Greek and Roman Slavery*. London.
- Toman, J. T. (2005) "The Gang System and Comparative Advantage," *Explorations in Economic History* 42: 310-23.
- Treggiari, S. (1969) *Roman Freedmen during the Late Republic*. Oxford.
- Treggiari, S. (1975) "Jobs in the household of Livia," *Papers of the British School at Rome* 43: 48-77.
- Turley, D. (2000) *Slavery*. Oxford.
- Van Wees, H. (2003) "Conquerors and serfs: wars of conquest and forced labour in archaic Greece," in *Helots and Their Masters in Laconia and Messenia: Histories, Ideologies, Structures*, eds. N. Luraghi and S. E. Alcock. Cambridge MA: 33-80.
- Vera, V. (1995) "Dalla villa perfecta alla villa di Palladio: sulle trasformazioni del sistema agrario in Italia fra principato e dominato," *Athenaeum* 83: 189-211, 331-56.
- Volkman, H. (1990) *Die Massenversklavungen der Einwohner erobert Städte in der hellenistisch-römischen Zeit*. 2nd ed. Stuttgart.
- Waldstein, W. (1986) *Operae Libertorum: Untersuchungen zur Dienstpflicht freigelassener Sklaven*. Stuttgart.
- Watson, J. L. (1980) "Slavery as an institution: open and closed systems," in *Asian and African Systems of Slavery*, ed. J. L. Watson. Berkeley: 1-15.
- Weaver, P. R. C. (1972) *Familia Caesaris: A Social Study of the Emperor's Freedmen and Slaves*. Cambridge.
- Weiss, A. (2004) *Sklave der Stadt: Untersuchungen zur öffentlichen Sklaverei in den Städten des Römischen Reiches*. Stuttgart.
- Welwei, K.-W. (1988) *Unfreie im antiken Kriegsdienst, Dritter Teil: Rom*. Stuttgart.
- Welwei, K.-W. (2000) *Sub corona vendere: Quellenkritische Studien zu Kriegsgefangenschaft und Sklaverei in Rom bis zum Ende des Hannibalkrieges*. Stuttgart.
- Westermann, W. L. (1955) *The Slave Systems of Greek and Roman Antiquity*. Philadelphia.
- Whittaker, C. R. (1987) "Circe's pigs: from slavery to serfdom in the later Roman world," in Finley (ed.) (1987): 88-122.
- Whittaker, C. R. (1993) *Land, City and Trade in the Roman Empire*. Aldershot.
- Wickham, C. (1994) *Land and Power: Studies in Italian and European Social History, 400-1200*. London.
- Wickham, C. (2005) *Framing the Early Middle Ages: Europe and the Mediterranean, 400-800*. Oxford.
- Wiedemann, T. E. J. (1985) "The regularity of manumission at Rome," *Classical Quarterly* 35: 162-75.
- Wiedemann, T. (1996) "Servi senes: the role of old slaves at Rome," *Polis* 8: 275-93.
- Ziolkowski, A. (1986) "The plundering of Epirus in 167 BC: economic considerations," *Papers of the British School at Rome* 54: 69-80.