Finance, Manpower, and the Rise of Rome

by

Michael James Taylor

A dissertation submitted in partial satisfaction of the requirements

of the degree of

Doctor of Philosophy

in

History

in the

Graduate Division

of the

University of California, Berkeley

Committee in Charge:

Carlos F. Noreña, Chair

Erich S. Gruen

Nathan Stewart Rosenstein

Todd M. Hickey

Spring, 2015

Abstract

This dissertation is a comparative study of the great powers in the Mediterranean world during the third and second centuries BC: the imperial republics of Rome and Carthage in the West, and the great Hellenistic dynasties of Antigonid Macedonia, Ptolemaic Egypt, and the Seleucid Near East. These states fought a series of wars among one another; the end result was the establishment of Roman hegemony across the entire Mediterranean. Why Rome? This dissertation treats two metrics of state power, manpower mobilization and state revenues, and examines them in relationship to the known outcomes of interstate warfare.

Part I of the dissertation reconstructs the manpower resources of each power. Each chapter in this section focuses on a particular power and explores three separate issues. I first determine the maximum mobilization each state could achieve. Next, I explore the strategies each state used to obtain recruits, in particular citizen soldiers, subject levies, and mercenary hires. Finally, each chapter concludes with a discussion of the military organization employed by each state in arranging coherent fighting units.

Part II reconstructs the state revenues of each power, using a method of forensic accounting based on estimated expenditures (in particular the cost of armies) and critical examination of fragmentary source references to tax rates, mining revenues, and other sources of state income.

The dissertation concludes that the Romans enjoyed a substantial comparative advantage over any of the Hellenistic powers in terms of the maximum mobilization rate, with a peak deployment of 175,000 soldiers in 190 BC. By comparison, the maximum Seleucid and Ptolemaic mobilizations both stood at around 80,000, while the Macedonian mobilization peaked at approximately 45,000. While this advantage has important explanatory power as to why Rome defeated the Seleucid and Macedonian kingdoms, is important to note that Rome deployed only a fraction of her manpower against these kingdoms, and frequently fought outnumbered in the decisive battles of the period. Moreover, Rome lacked significant manpower superiority over Carthage during much of the Second Punic War. In fact, during the opening decade of the war, Carthage deployed more soldiers than Rome did. Here the varying manpower strategies of the two states proved decisive. While Carthage managed to detach some of Rome's Italian allies, an enormous core of citizen manpower remained to Rome's advantage. While Carthage's military deployment rivaled Rome's in size, with approximately 170,000 troops deployed in 215 BC, it lacked a similar core of citizen troops. Through force and diplomacy, the Romans peeled away the subject populations that provided the bulk of Carthaginian manpower, in particular the Iberians and Numidians.

On the side of state finance, the dissertation finds surprising disconnects between state revenues and military success. The wealthiest state, the Ptolemaic dynasty, extracted enormous revenues from the agricultural regions of Egypt (roughly 90 million *drachmai*), but after the middle of the third century the geopolitical fortunes of the dynasty declined markedly. Meanwhile, the Romans had perhaps the smallest revenues during the third century, and their lack of

fiscal sophistication was represented by a clumsy system of caste bronze coinage. Roman revenues did rise over the course of the successful imperial activity in the second century, but remained comparatively modest even during the period of unquestioned military dominance.

The organization of the Roman state accounts for its ability to mobilize more men for less money. The Roman habit of exploiting subject populations in Italy for unpaid military service dramatically lowered Roman military costs. Furthermore, citizen troops served for far lower pay than their counterparts in the Hellenistic East. Finally, the Republican nature of the Roman state (and Carthage as well) eliminated the substantial expense of maintaining a sumptuous royal court.

The dissertation concludes by discussing the role of resources in the arc of Mediterranean history during the period. It argues that Macedonia was an under resourced state both in terms of manpower and revenues, but one that "punched above its weight" due to an effective, well-organized army based on a heavily militarized citizenry. It notes that the geographic position of both the Seleucids and the Ptolemies made it difficult for them to exert control over the entirety of the Mediterranean, although each had the resources to gain hegemony over the Eastern Mediterranean, in the manner of the Ottoman Turks in the early modern period. Yet dynastic difficulties in both states and a tripartite balance of power in the East prevented either power from gaining permanent control over the east.

Ultimately, the dissertation concludes that, on the level of resources, Carthage was the only serious challenger to Rome. Like Rome, Carthage was centrally located, a geographic advantage that could have supported extending domination over the whole Mediterranean basin. During the Second Punic War, Carthage's revenues and manpower mobilization equaled, and at times exceeded, that of Rome. It is not difficult to imagine an alternative history in which Carthage gained hegemony of the Mediterranean.

Nonetheless, Rome's republican system of government, its expansive system of citizenship, and its exploitation of Italian subjects for military service allowed it to raise unusually large, effective military forces despite a limited fiscal base. As a result, Rome was not only an effective conquest state, but the only state in history to unify the Mediterranean.

Table of Contents

Acknowledgement:

Thanks to my wife Kelsey and our little Caroline, for their love and support.

Introduction: Armies and Taxation in the Age of Anarchy

This dissertation explores a transformative period in Mediterranean history, from roughly 280-146.[1] During this period, five major powers dominated the Mediterranean basin: the imperial Republics of Rome and Carthage in the West, and three successor dynasties which had emerged out of the violent partitioning of Alexander the Great's empire: Antigonid Macedonia, Ptolemaic Egypt, and the Seleucid Near East. These states existed in a ferocious international system that Arthur Eckstein has recently labeled "Mediterranean Anarchy."[2] The entire period was characterized by repeated bouts of hegemonic warfare: the Ptolemies and Seleucids fought at least six major "Syrian Wars."[3] Ptolemaic Egypt and Antigonid Macedonia sparred during the Chremonidean War and engaged in subsequent naval encounters in the Cycladic islands, while Philip V sought acquire his share of Ptolemaic territory following the death of Ptolemy V.[4] Carthage fought three wars with Rome, as did the Antigonids of Macedonia.[5] Rome and the Seleucid Kingdom clashed vehemently in the so-called "Syrian War" of 192-189.[6] In addition to fighting against one another, the great powers were frequently at war with smaller states, as well as with non-state societies.[7]

We know the cumulative outcome of these conflicts: Rome achieved hegemony over the entire Mediterranean, a hegemony that hardened over the course of time into a system of direct imperial control. In the process, Rome annexed and incorporated every other major power: Carthage and Macedonia in 146, the Seleucid kingdom in 66, and finally Ptolemaic Egypt in 30, an event which traditionally marks the official end of what modern historians call the Hellenistic World.

This dissertation takes as its starting point a basic and longstanding question: why did Rome win? It seeks an answer to this question through analysis of two interrelated metrics of state power: fiscal extraction and military mobilization. The hypothesis to be tested is the extent that advantages in money and men explain the known outcomes of interstate warfare.

This question cannot stand in a vacuum. When it comes to interstate competition, state power is inherently relative, and must be measured against that of peer and rival states. Yet there is a surprising dearth of comparative modern studies. Many of the questions posed by this dissertation, of course, have been explored in the context of single states. Philip Kay has written a fiscal history of the Roman Republic, for example, which provides an update to Tenney Frank's early 20th century work on the public finances of the Roman

[1] All dates are BC unless otherwise noted.
[2] Eckstein 2006.
[3] Grainger 2010.
[4] Tarn 1909, Momigliano and Fraser 1950, Eckstein 2008: 150-168.
[5] For narrative histories of the Punic Wars, see Lazenby 1978 and 1996; Hoyos 2011 provides a companion treatment of the conflict, while Hoyos 2015 produces a narrative history of the wars aimed at a general audience.
[6] Grainger 2002.
[7] For an overview of the constant warfare of only one power, Macedonia, see Chaniotis 2002: 4-6. Harris 1979 emphasizes the appalling frequency of Roman warfare.

Republic.[8] Roman manpower was the subject of P.A. Brunt's monograph on Italian manpower, and this subject has received updated treatments by Nathan Rosenstein, Luuk De Ligt, Saskia Hin, and many others.[9] G.G. Aphergis has discussed the Seleucid royal economy, while Bezalel Bar Kochva remains the cornerstone study of the Seleucid army.[10] Christelle Fischer-Bovet has just produced an important new study on the Ptolemaic army, which includes some limited comparative discussion of Ptolemaic state power *vis-a-vis* their Seleucid rivals.[11] Dexter Hoyos includes discussions of Carthaginian fiscal and military strength in discussions of Barcid imperialism during the Second Punic War.[12] Nicholas Sekunda has recently produced a new study of the Antigonid royal army.[13] Aside from the occasional digression, all of these studies (which have served as valuable signposts in my own research) focus on a single power. This is certainly understandable, as the relevant political boundaries make each product intelligible and complete. In the sections that follow, I will present my own conclusions on the manpower and finances of each state. To understand the dynamics of the multi-polar Hellenistic world, a comparative perspective is essential, and the comparative nature of the project is central to its purpose.

Aspects of State Power[14]

In his panoramic exploration of state power, Michael Mann has identified four basic metrics of social power: Ideological, Military, Economic, and Political.[15] Some of these, such as the Military and the Economic, are more amenable to measurement than others. Ideology is something easy to describe but difficult to quantify. One does not easily turn the court poetry of Theocritus, the messaging implicit in the splendor of a Hellenistic palace, or the use of the slogan "freedom of the Greeks" into a data set.[16] Lacking data on public opinion, it is impossible to measure the effectiveness of these modalities of ancient propaganda.[17] Likewise, the Political is difficult to quantify for the ancient world, even as it is possible to produce descriptive accounts of political organization and orientation- work on the structure of Hellenistic courts and the constitutional mechanics of the Roman Republic, for example.[18] It may be easy to produce any number of quantitative metrics to describe the Ideological and Political in modern democracy: seats controlled by a particular political party, fundraising

[8] Kay 2014.
[9] Brunt, 1971, Rosenstein, 2004, DeLigt 2011, Hin 2013.
[10] Bar Kochva 1976.
[11] Fischer-Bovet 2014.
[12] Hoyos 2003.
[13] Sekunda 2013.
[14] I define "state" as a set of interlocking institutions (e.g royal courts, armies, popular assemblies, magistrates, priesthoods, advisory councils, etc.) which are broadly seen as legitimate within a certain territory, are capable of effecting policies, to include maintaining a monopoly (or near-monopoly) on violence. States can be considered "empires" when they control the internal and external affairs of traditionally sovereign political entities, usually as the result of conquest (Doyle 1986: 44).
[15] Mann 1986: 22-33.
[16] On the last point, see the thorough discussion in Dmitriev 2011.
[17] Noreña 2011 does quantify ideological messaging in the High Roman Empire based on an exhaustive study of coin types.
[18] E.g. Strootman 2014 for the Hellenistic court and Vervaet 2014 for a recent study on technical problems of Roman political organization.

reports, votes garnered during a particular election, public approval ratings. This type of data by and large does not exist for the ancient world.

What can be reconstructed—imperfectly to be sure— are metrics of military mobilization (for which the sources provide a significant number of data points), and the scope and scale of state revenues (less well attested, but capable of reconstruction, at least in general outlines).

In this dissertation, then, I will reconstruct two sets of data for comparative purposes: (i) military mobilization and (ii) annual revenues. One would expect these two metrics to be closely related. States utilized the coercive power of armies and navies to control tributary territory, and most of the proceeds of tribute went to funding the armies and navies. Walter Scheidel has referred to this this neat cycle as "the military-tributary complex," the pulse of extraction and expenditure that underwrote pre-modern empires.[19] One goal is to elucidate the diversity of these military-tributary complexes as they existed in the ancient world. For as we will see, the five states in this study had radically different strategies for recruiting and organizing military manpower, as well as diverse modalities of extracting money and material resources.

Scholarship:

The first is the "quantitative turn" in ancient history over the past generation. This trend is admittedly not new. Karl Julius Beloch published an epic demographic study of the ancient world, *Die Bevölkerung der griechisch-römischen Welt,* in 1886. His quantitative approach, which drew on the relatively new science of demography, was received with skepticism by Theodor Mommsen, among others, and Beloch was denied a professorship at Warsaw before finding success at Leipzig. Fewer professional hurdles stood in the way of Tenney Frank, the leading early 20th century practitioner of quantitative studies, who capped a long career at Bryn Mawr and Johns Hopkins with the Sather Professorship at the University of California, Berkeley in 1930. While Frank's *Economic Survey of Ancient Rome* rested on traditional philological methods—culling price references from the literary sources, for example —he was deeply interested in the fiscal history of the Roman state. In this respect, he stood in stark contrast to Michael Rostovtzeff, whose *Social and Economic History of the Hellenistic World,* while far more sophisticated in its integration of epigraphic, papyrological and archaeological material, paid only the briefest attention to the fiscal histories of Hellenistic states.

The crisis of the Second World War led to renewed interest in quantifying ancient military manpower, most notably that of Rome. Adam Afzelius' studies on Republican Roman military deployments, published in 1942 and 1944, as well as Johannes Thiel's 1949 study on the strength of the Republican Roman navy, written during the dark years of occupation, exemplify this trend. Beloch, Afzelius and Thiel all provided raw materials for P.A. Brunt's 1971 positivist masterpiece, *Italian Manpower*, which sought to settle once and for all the great problems of Roman demography, Italian ecology, and Republican military recruitment.

[19] Scheidel 2015: 201.

Meanwhile, Brunt's junior contemporary, Keith Hopkins, began to take ancient quantitative studies in a new direction. Hopkins believed that the use of abstract models could explain various questions of Roman social and economic history. In his seminal 1980 article, "Taxes and Trade in the Roman Empire," Hopkins estimated not only the Roman state budget, but also the entire Gross Domestic Product of the Roman Empire.[20] While much of Hopkins' work did not utilize quantitative data, he led the way for a new generation of research inspired by the quantitative methods of modern social science. No scholar has embodied this current approach more than Walter Scheidel, who in particular has revived the application of modern demographic methods and models to problems in ancient history.

Ancient economics has largely moved past the "primitivist" and "modernizer" schools that dominated debate in the late 20th century, mostly in response to the ardent "primitivist" views of Moses Finley.[21] There is increasing consensus that production and exchange in the ancient world was sufficiently dynamic and complex to bear analysis as a properly economic phenomenon. But a schism remains as to how the ancient economy should be analyzed. On one side is what might be called the "Oxford school," which relies more heavily on compiling and processing quantitative evidence, most recently for example A.K. Bowman and A. Wilson's Oxford Roman Economy Project.[22] Meanwhile, what might be called the "Cambridge-Stanford" school is much more suspicious of the quantitative data points preserved in literary sources, and prefers instead to begin with models of the ancient economy that fit within the overarching frameworks of the ancient sources and deductive reasoning. This is of course a crude characterization, but suffice it to say this dissertation aligns more closely with the "Oxford" school of thought, particularly in its trust of the general accuracy of the data points preserved in the literary sources, and the belief that they can be compiled and analyzed in a meaningful way.

A different methodology has dominated the study of warfare in the Hellenistic world over the past decade, which may be termed "the turn towards the polis." Privileging epigraphic evidence, recent works on Hellenistic warfare have emphasized the role of the Greek poleis in the rough-and-tumble game of Hellenistic geopolitics, suggesting that these poleis remained vibrant politic al communities, retaining substantial agency, and even a degree of autonomy, in the centuries following the Battle of Chaeronea in 338. This approach is epitomized by the most recent major monograph study of Hellenistic warfare, A. Chaniotis' *War in the Hellenistic World: A Social and Cultural History*.[23] In a similar vein, John Ma's *Antiochos III and the Cities of Western Asia Minor* is a study in military and diplomatic interaction that that focuses on the political agency of the *poleis*.[24] In many ways, this "turn towards the polis" has been a useful corrective to an earlier view of the polis as an impotent and obsolete political structure in

[20] Hopkins revisited this problem, with some modifications, in Hopkins 1995.
[21] In particular Finley 1973, based on his UC Berkeley Sather lectures.
[22] This project consists of the series Oxford Studies in the Roman Economy, as well as an online aspect at http://www.romaneconomy.ox.ac.uk.
[23] Chaniotis 2005. Ma 2000 emphasizes the military orientation of the Hellensitic *poleis*.
[24] Ma 1999.

the age of warrior kings.[25] But while the "kings and cities" model has become a firmly established methodological prism for examining the political history of the Hellenistic world, when it comes to warfare the disproportionate power and agency of the kings must not be understated.

Sources and Methods

Very little of what was once a substantial corpus of state documents survives, mostly in the form of papyrus fragments from Egypt, and epigraphically preserved royal letters.[26] The documents that do survive tend to reveal a great deal about a particular moment of local resource extraction (the tax rate of a particular estate, for example), but seldom anything touching on larger state revenues and extraction. A historian armed with a few hundred tax returns or a dozen bank receipts could hardly recount the financial system of the United States in the early 21st century. While papyrological and epigraphic evidence are considered in this dissertation, the primary evidence for reconstructing state finance and manpower lies in the narrative histories of the period, which provide numerous data points on military mobilizations, since warfare was a prime focus of ancient historical narrative.

The most important historian of this period was Polybius, who wrote in Rome in the mid second century, where he had been taken as a hostage following the Third Macedonian War.[27] Polybius is particularly valuable for us because of his connections to high-level state decision-makers: he was the friend of Scipio Aemilianus, a gateway to other members of the Roman senatorial elite, including Gaius Laelius, consul in 190 and a key lieutenant of Scipio Africanus, who served as an oral source.[28] Polybius was also personally acquainted with the Seleucid prince Demetrius, a fellow hostage who assumed the Seleucid throne in 161.[29] Polybius' contacts made it possible for him to enjoy an easy and relatively unrestricted exile, and to engage in archival research in Rome.[30] He also had immediate access to other now-lost Hellenistic histories, including the Roman history of Fabius Pictor, the Carthaginian history of Sosylus, the Western narratives of Timeaus and Phylarchus, and the work of Zeno of Rhodes.[31] Given that his narratives in Books IV and V include the early careers of Philip V and Antiochus III, it seems likely that he had access to a royal history produced in

[25] For the "end of the city-state," see for example Gomme 1937: 217-225, although he dates it to the Chremonidean War, rather than the Battle of Chaeronea.
[26] E.g. Egyptian tax receipts, Muhs 2011; for epigraphic evidence of royal correspondence, Wells 1934 remains the standard collection.
[27] The standard commentary remains Walbank, 1957-1967. Useful monographs on the historian include Walbank 1972, Eckstein 1982, Champion 2004, Baronowski 2011 and Derow 2014.
[28] Friendship with Scipio Aemilianus: Polybius 31.23-24. Gaius Laelius as an oral source: 10.3.2-3.
[29] Polybius 31.11-12. See Edson 1958 for an overview of literary sources for the Seleucid empire.
[30] Polybius 3.26.1 for research amongst the records of the Temple of Jupiter. Polybius 10.9.3 implies Polybius had access at least to internal records maintained by the Scipios.
[31] Fabius Pictor as a source: 1.58.5, 3.8.1,8. The prickly Polybius usually informs us he has used a source through trenchant criticism, for example Sosylus as a "barbershop gossip" (3.20.5), as well as extended rants against Timaeus (12.3-16, 23-28) and Zeno (16.14-20). His criticism of Phylarchus and Pictor, namely that they are biased towards the Carthaginians and Romans respectively, seems mild in comparison.

each court; the close preparations for the Raphia campaign likely reveal familiarity with an internal Ptolemaic court history as well.[32]

Polybius was keenly interested in the size and composition of field armies in major battles, and provides numerous "snapshots" of field forces for every major power, including the Antigonid army at Sellasia, the Ptolemaic and Seleucid armies at Raphia, the Roman and Antigonid armies at Cynoscephalae, and so on. He was less interested in state finance, though, other than the occasional reference to a windfall of loot or an indemnity payment. Polybius' history covered the period from 264-242 briefly; the period from 225-167 in more detail; and the period from the Third Macedonian War to the Third Punic War as an addendum. Unfortunately, his work survives only in fragmentary form, and for the period from 200 onward there are far more lacunae in the text.

Writing in the time of Augustus, Livy is nonetheless more valuable to this project than Polybius, particularly with respect to reconstructing Roman military deployments and fiscal outlays.[33] Livy drew upon a long Roman tradition of what we might call "public quantification," transmitted by previous annalists, and ultimately rooted in both official state proclamations and private aristocratic boasts. For example, in one of the earliest Roman victory monuments, the naval column of Gaius Duilius, we see claims about the numbers of ships he sank and captured, and the sums of loot he paid into the treasury. [34] Publically available information such as this was compiled in the annalistic tradition, culminating in Livy's own history.

In addition, there are the accounts of later historians who digested previous (though now-lost) works, imperial-era sources such Diodorus, Strabo, Pliny the Elder, Plutarch, Appian, and Josephus, among others. Far removed from the period, but still preserving valuable nuggets of information, are late imperial sources such as St. Jerome, who drew on Seleucid and Ptolemaic history to comment on the Book of Daniel, and Athenaeus, whose "clever diners" concerned themselves with aspects of Hellenistic courtly splendor.

How reliable are these sources? They are certainly not infallible. In many cases, authors round numbers according to cultural precepts, although it does not much matter for our purposes if the number 27,534 rounds to 30,000 because of a cultural preference for numbers beginning with "3."[35]

Nonetheless, it should be emphasized that the metrics explored in this dissertation represent data that ancient states themselves tracked. I am not, for example, trying to recreate figures that ancient states did not understand at all: GDP or National Incomes, for example. But states needed to know (and did know) how many men they had under arms—they had to keep track in order to pay and supply them.[36] Although ancient states did not create formal budgets in the modern sense, they maintained accounts as well as a sense of financial resources coming in and going out. We know that states kept these records. In at least one instance, we know that a historian had direct access to such records: Polybius claims to have seen bronze tablets set up by Hannibal, which

[32] Ptolemaic courtly history for the Raphia campaign: Bar Kochva 1976: 128-130.
[33] For a commentary on the third and fourth decade, see Briscoe 1981; 2008; 2012. Livy has recently received his own "Companion" treatment, see Mineo 2014.
[34] Kondratieff 2004: 14-15.
[35] Scheidel 1996.
[36] Rosenstein 2004: 130.

announced his army strength and composition. (Elsewhere, Polybius reports on the content of the bronze-inscribed treaties between Rome and Carthage).[37] This project rests on the assumption that other reliable state records, including army rolls, census records, treasury inventories, and other documents were available, and that they provided the basis for many (if not all) of the quantification of these matters by various historians. Some distortion is inevitable: a fact could be misquoted by a historian, or incorrectly transmitted by the manuscript tradition. And some historians, the notorious Valerius Antias, for example, seemed to have enjoyed fabricating numbers.[38]

A margin of error is therefore inevitable in a project of this nature. Fortunately, given the comparative enterprise, exact estimates of revenue down to the drachma or manpower down to the hoplite are neither advisable nor necessary. Throughout this dissertation, I deliberately round numbers, as exactitude is impossible and the impression of exactitude would be intellectually disingenuous. Yet given the general quality of the two most important sources, the origin of quantitative references in state documents, the quantitative evidence derived from the sources of this period is for the most part accurate. Given the aims of this dissertation, the analysis can withstand a significant margin of error, even one approaching twenty to thirty percent. Nowhere will I consider it to have much explanatory power if one state has 125% the manpower or revenues of another state. Rather, the conclusion would be that the two states in fact stood at relative parity, once a reasonable margin of error is factored in. In the event, however, that a state's revenues or manpower are determined to stand at 200% or 300% in comparison to those of another state, I would posit that the former state was substantially more powerful by this metric than the latter. As we will see, the discrepancies between various metrics of state power could indeed reach this order of magnitude.

[37] Polybius 3.26 (Carthaginian treaty); 3.33.18 (Hannibal's strength).
[38] The rehabilitation of Antias in Laroche 1977, who suggests that Valerius' errors are the result of incompetence with an abacus, is not entirely convincing.

PART I

Manpower

Chapter 1: Manpower Strategies

There were four basic manpower strategies available to states in the third and second century: 1) part-time citizen-soldiers conscripted for campaigns and then demobilized, 2) professional cadres maintained in standing units, 3) levies of drafted subject peoples, and 4) foreign mercenaries. The boundaries between these categories were often blurred: professional cadres, for example, might consist of either full-time citizen soldiers or foreign mercenary hires; subject levies might be motivated by the same patriotism and desire to defend the homeland as citizen soldiers. Nevertheless, the differences between these various manpower strategies are sufficient to make them useful analytic categories when discussing the mobilizations of the various great powers. I exclude one source of manpower that many ancient states (including Rome) exploited in moments of military emergency: slaves. This is not to say that recourse to slaves, sometimes given freedom in exchange for their service, was uncommon. Rather, it was everywhere an emergency measure, and never a standard or preferred method of filling the ranks.[39]

Citizen-soldiers:

Citizens of ancient states enjoyed certain privileges and were in turn expected to discharge specific duties, including military service. Most citizen-soldiers were required to provide their own arms and equipment; in practice, this expense limited military service to land-owning men. Cavalry were recruited from an even higher social class. Although not all citizen-cavalry were necessarily "aristocratic," as a rule they owned more property than even the most prosperous heavy infantryman. [40]

The privileges of citizens varied. For Roman citizens, voting was the most obvious privilege. Roman citizens voted frequently to elect magistrates and enact laws.[41] The rise of the renegade agrarian reformer C. Flaminius (cos. 223, 217) offered clear proof of the people's power to trump the aristocratic will of the Senate.[42] In moments of military crisis, the electoral reflexes of Roman citizen-soldiers appeared almost a knee-jerk response, for example in the election of the tribune Lucius Marcius as interim commander in 211 following the death of the Scipio brothers.[43] The Romans themselves voted in *centuriae*, named after the military unit, making explicit the link between military service and voting rights.[44] However, given the limited space available to conduct voting, and the distance of most members of the growing citizen body from Rome, by the third

---

[39] On slaves in ancient armies, see Hunt 1988.
[40] See McCall 2002: 5-12 on Republican Roman cavalry.
[41] For the classic if extreme view on democratic elements in the Roman constitution, see Millar, 1984. I hope to publish a study in links between political participation and military service. Republic.
[42] See Vishnia 1996 for a discussion of the vigorous popular politics of the third and second centuries.
[43] Livy, 25.37; Valerius Maximus 2.7.15; Cicero *Pro Bablo*, 34. Lazenby 1978: 131; Nicolet 1980:
[44] Vaahtera 1993 argues that the word itself may originate from the clamor of weapons and shields as a sign of acclamation.

century there was a growing disconnect between frequent military service and infrequent electoral participation.[45] Nonetheless, citizenship also carried with it other legal protections, the most important of which was *provocatio,* the right to appeal the decision of a Roman magistrate.

There is reason to believe that Carthage also possessed democratic elements in its mixed constitution, with the citizen body electing magistrates and enacting legislation.[46] Polybius claimed that the Carthaginian constitution was more democratic than the Roman.[47] Despite this, voting in Carthage was largely separated from military participation, at least by the late third century. Military service was not required of Carthaginian citizens. If more Roman citizens fought than voted, more Carthaginian citizens voted than fought.

Macedonian citizens did not vote in organized elections to elect magistrates, although the acclamation of the military assembly did play a role in the ceremonial nomination of new kings, and was also used to legitimate controversial royal decisions, in particular the execution of nobles accused of treason.[48] The Macedonian assembly possessed symbolic power, although it did not play a functional role in decision-making as Roman assemblies did.[49]

Citizenship in the technical sense of the Greek word *politeia*, or membership in a *poli*s, was limited in the Ptolemaic and Seleucid kingdoms to citizens of the various *poleis*. Ironically, this excluded many military and veteran settlers in both empires, who were unaffiliated with a *polis*. While a significant number of veteran and garrison settlements in the Seleucid kingdom enjoyed *polis* status, virtually all Ptolemaic *kleroi* were scattered among native villages.[50] Even in the Seleucid realm, many settlers lived in sub-polis communities known as *katoikiai*.[51] Despite the lack of formal citizenship, extra-*polis* military settlers in the Seleucid and Ptolemaic empires were bound to the king through a set of privileges and obligations, with the salient privilege being a land grant, which carried with it the obligation of military service. Thus, these populations had many of the favorable characteristics that define "citizen" soldiers.

Partial citizenships are well attested in Rome, where the Latin rights (*ius Latii*) and the citizenship without the vote (*civitas sine suffragio*) constituted two categories of quasi-citizenship. Latins enjoyed all the privileges of Roman citizenship, and could vote in Roman elections when visiting Rome.[52] They

---

[45] Scheidel 2005: 13. The theoretical maximum for elections in the Campus Martius was perhaps 40,000. Scullard 1951:20 believed that a mere 5000 citizens were able to vote during the Second Punic War, when some 80,000 citizens were in the legions. On generally low rates of Roman voter participation: MacMullen 1980, Mouritsen 2001: 18-37, Juhne 2006.
[46] Hoyos 2003: 31; Warmington 1960: 120, Fritz, 1954: 114-122.
[47] Polybius 6.51-52.
[48] e.g. Polybius 5.29.6.
[49] Anson 1981, 1985.
[50] Griffith 1935: 163 believed that Ptolemaic weakness *vis a vis* the Selecuid army could largely be explained by the fact that many Seleucid military colonies were *poleis,* and so benefited from polis institutions like the gymnasium to enhance military readiness and esprit de corps. His argument is unconvincing, in part due to the relative success of the Ptolemaic army until the Sixth Syrian War, and perhaps more importantly, the presence of gymnasia even in Ptolemaic villages; see Bowman and Rathbone 1992: 121.
[51] E.g. Strabo 13.4.4 (Thyateira); Polybius 5.65.10 for non-Macedonian *katoikoi* (Thracians and Gauls, presumably ex-mercenaries) in Egypt.
[52] Livy 25.3.16.

retained the right to settle in Rome and obtain full Roman citizenship (*ius migratio*), although this right was curtailed after 177.[53] Latins were not subject to taxation (*tributum*); their only liability was military service. Latin rights by the third century were envisioned as a type of "expatriate" citizenship; the majority of Latins were descended from Roman citizens who had given up their citizenship to settle in a Latin colony, though most of the *prisci Latini* had been granted full citizenship.[54]

In the third century, *civitas sine suffragio* was only a small step up from that of an imperial subject. Roman *cives sine suffragio* were burdened with all the duties of citizenship, military service and taxation chief among them, but enjoyed only some of the privileges (*commercium*, *conubium*). As the name implies, they could neither vote nor stand for high office (*ius honorum*). Many *cives sine suffragio* did enjoy a vibrant civic life in their local communities, based on a blend of Roman and native political traditions. They were on occasion promoted to full citizenship.[55] Only two examples of such promotion can be dated to the period in question conclusively: the Sabines, who were likely promoted to *optimus ius* in 268 (no later than 241) and three Volscian communities, Arpinum, Formiae and Fundi, promoted in 188.[56]

In all states, citizens were usually paid for military service, although military pay was modest, usually no more than that of a day laborer. A Roman soldier received approximately two obols a day (3 asses) according to Polybius, although the cost of food, clothing and weapons was deducted from this total.[57] Remuneration in the form of booty, however, was considerably more lucrative. Many citizen soldiers, while technically serving part-time, depended on pay and loot for a significant portion of their income.[58] In addition, veterans were often rewarded with land grants, a practice well attested in every major state except Carthage. For many veterans on the low end of the economic spectrum, these grants allowed them to maintain the economic status necessary to serve.

The advantages of citizen soldiers were many. As citizens, they were motivated by patriotism and identified their own interests with those of the state. It is therefore not necessarily surprising that every state but Carthage used its citizen troops as the core of its army, providing the heavy infantry and cavalry that made the decisive contribution on the battlefield.

Professional Cadres:

Most citizen-soldiers during this period served part time, mobilized (sometimes with great frequency) during periods of wartime but discharged on the ending of the campaign. Nonetheless, most states maintained small professional cadres in standing units, typically comprised of standing units of citizens (or cleruchs). Carthage was the first of the five powers to maintain a full-time force of soldiers, the 2500 strong Sacred Band (modeled on the sacred Band

[53] The very existence of a *ius migratio* is challenged by Broadhead 2007:154-156).
[54] Sherwin-White 1973: 108-116.
[55] The most recent study of local Italian politics is Bispham 2007, focusing on the period from the Social War but discussing developments from the Second Punic War onwards.
[56]Sabines: Livy Per. 19, Arpinum: Livy 38.36.7. It is unclear if these were the last remaining *cives sine suffragio*. Millar (1984: 8) thinks all citizens were *optimo iure* by this time.
[57] Polybius 6.39.12, Nicolet, 1976: 116
[58] Harris 1979: 59-68.

of Thebes and other professional units in the Greek East). The Sacred Band is not attested after the fourth century, and it is unclear if Carthage maintained standing units during the Punic Wars.[59] In the Hellenistic East, Alexander's elite troops provided a model for various special units. Every Hellenistic kingdom maintained a special unit of infantry, between 5,000-10,000 strong, modeled on Alexander's "shield-bearers," the *hypaspides*. In addition, each king maintained several cavalry regiments closely associated with the royal person (i.e. *hippeis basilikoi/hetairoi*). All of these professional cadres acquired the training, experience and *esprit de corps* that made them more effective than citizen militiamen.

Imperial subjects:

All five states controlled territories with subject populations, yet the terms under which imperial subjects undertook military service varied. Some were required to provide troops as a form of regularized exploitation. We know the most about the levies experienced by Rome's Italian *socii,* "allies" who were in fact subordinate peoples. In other cases, subject peoples did not suffer specific demands, but were still liable to opportunistic, voluntary recruitment. Imperial subjects were usually paid for their service, and were also rewarded with a share of booty. In Rome, at least, Italian subjects were paid in rations, but usually received the same share of booty and land as Roman legionaries. Exceptions to this rule provoked significant protest.[60]

Like citizen soldiers, subjects provided their own weapons, a fact that led to a diverse patchwork of uniform, armor, and kit in large polyglot armies. Native combat techniques could enhance those of citizen-soldiers; for the Seleucids in particular, subject peoples provided archers, cavalry and skirmishers, complementing the porcupine bristle of the Macedonian phalanx.[61]

In the Carthaginian, Roman, and Seleucid armies, subjects could out-number citizen soldiers. Since subjects hailed from once-independent tribes or states, using them in large numbers could be fraught with tension, and even grave risk. Subjects could switch sides, sometimes in protest against misrule, or simply in recognition of shifting political realities. For example, victory in the Second Punic War in large part depended on which side could effectively detach opposing subject populations, actions that will be discussed in following chapters.[62] There were also risks to arming subjects and maintaining them in a state of constant military readiness. Rome's Social War (91-88) is a case in point.[63] Carthage too faced the threat of well-armed but disgruntled subjects; the so-

[59] On the Carthaginian Sacred Band, last attested in 310, Plutarch *Timoleon* 27.3, 28.1-3, also Diodorus 16.80.4, 20.12.3. See Cary 1926: 190-191 is probably correct when he argues that it is in mirrors, if not mimics, the Theban Cacred Band.

[60] In a rare incident where *socii* were paid a below-par donative they followed in sullen silence behind the triumphal chariot to protest. (Livy 41.13.7-8.) Unequal land distributes in Cisalpine Gaul in 177 were also considered worthy of report. (Livy 42.4.4).

[61] Sekunda 2007: 349 argues that the complex arrangements of disparate contingents with various fighting styles made Hellenistic armies more difficult to command and control when compared to largely homogenous Roman armies, but this may over-estimate both the homogeneity of Roman forces and the consistency of Roman success in battle.

[62] Fronda 2010 provides a careful study of the political dynamics of Italian communities caught "between Rome and Carthage."

[63] On the Social War, see most recently Dart 2014.

called Truceless War from 240-238 was a Libyan revolt supported by disgruntled mercenary troops.[64] The revolt of native Egyptian hoplites recruited to fight the battle of Raphia was a major source of Ptolemaic instability in the early second century.[65]

The difference between imperial subjects and independent allies at times becomes blurred. This confusion could be intentional, as imperial states hoped to mollify subjects with the notion that they were "allies" (*socii*, *symmachoi*) rather than subjects. Likewise, formerly independent allies found themselves forcibly reduced to subject states if they refused to cooperate with a major power. As a rule, small and weak polities in the Mediterranean were reduced to subjection or clientage by regional hegemons, while medium sized states, such as Pergamon, Rhodes, and the Aetolian and Achaean Leagues could remain independent allies, in part because they were able to "triangulate" between various hegemonic powers.

Mercenaries:

Soldiers were also available for hire. Mercenaries are differentiated here from citizens and subjects (who were also often paid) to apply only to those volunteering to serve in return for wages a state or empire that was not their own.[66]

Mercenaries provided states with experienced, professional soldiers who could be hired as needed. Nonetheless, mercenary service was not always a transient affair, and hired troops frequently transitioned from a foreign mercenary to a subject or even a citizen of the hiring power. The rewards for mercenaries were frequently the same as citizen rewards: a plot of land in a veterans' colony. For many, mercenary service was not a form of greed or violent opportunism, but of honorable emigration.

Demographic Assumptions:

The demographic turn in ancient studies illuminates many of the dynamics (often nasty, brutish and short) of ancient populations. While this dissertation does not aspire to be a work of demography, demographic considerations will inevitably inform discussions of various manpower pools and the communities from which they were recruited. Modern demographers use Model Life Tables to determine the distribution of age and sex in any given population, and there is general consensus that ancient populations mirrored the distribution of the "Model West" Life Table, based on the population dynamics of significantly under-developed countries in the modern world. While based on modern data, and conditions that do not necessarily mirror those of ancient populations, the Table does correspond with the one "Life Table" surviving from Antiquity, the actuary table for slaves produced by the Roman jurist Ulpian.[67]

One disadvantage of applying model life tables to ancient demographic data is the questionable impression it creates of scientific specificity. Over the

[64] Polybius 1.72. For an in-depth narrative of the Truceless War see Hoyos 2007.
[65] Polybius 5.107.
[66] Trundle 2004: 21-24
[67] Digest 35.2.68. See Frier 1982 for the relationship between Ulpian and modern Model Life Tables.

past thirty years, plenty of criticisms have been made of the failure of the Coale-Demeny model to predict the dynamic of modern high fertility/high mortality populations, and ancient demographers increasingly approach the Life Table with some skepticism.[68]

That being said, the Coale-Demeny Model Life Table remains useful as a rough rule of thumb, and as such below I round the specific estimates it makes. For example the Model West Life Table predicts that in a population of 100,000, 176.3 will be 17 year-old males. No ancient population estimate can withstand this level of specificity, as we do not know to what extent populations in Republican Rome matched those under-developed modern European populations compiled by Coale and Demeny. I will however, use the Model West Life Table as the basis of several rough assumptions. First, of any ancient population, approximately 1/3 will be adult males over the age of 17. Of these, one half will be in fighting prime, between the ages of 17-35, and about 70% will fall within the standard age range of military obligation in the ancient world, usually between 17-45. Thus, from an ancient population of 300,000, we expect approximately 100,000 adult males, 50,000 between the ages of 17-35, and fewer than 20,000 between the ages of 35-45.

Table 1.1: Distribution of ages for adult males, based on Coale and Demeny's Model West, Level 3:[69]

Age Range:	*% adult male population*
17-19:	9
20-24:	14
25-9:	13
30-34:	12
35-9:	11
40-5:	9
46-50:	8
50+	24

The modern demographer will immediately notice the rounding, employed here to avoid the perception of precision. Even this table should be seen as nothing more than a simple rule of thumb, imprecise but useful nonetheless.

In the chapters that follow, I discuss the military manpower of the five major powers. Each chapter is divided into three parts. In the first part, I provide evidence for the total number of soldiers fielded by each power. There are several metrics I use in this task. The most commonly reported number concerns the field army, the total number of troops concentrated in a single tactical space. This metric is relevant because it reflects the state's logistical and organizational

[68] Woods 2007 develops an alternative Life Table, which is increasingly used by Ancient demographers. Schiedel 2004: 118- 142 agrees with the convergence of the Coale Demeny model to Ulpian's Life Tables, although notes its inadequacies when matched to Egyptian census data. Following Scheidel, Hin 2013: 111-116 is skeptical that Coale and Demeny provide the best fit for antiquity, although the divergence between Coele and Demeny and other demographic models (i.e. Wood's Model South and Morogoro) occurs mostly for age groups too elderly for active military service. Still, the Coale and Demeny model remains a useful tool for many ancient demographers: see for example Holleran and Pudsey 2011: 13 and DeLigt 2012: 144.

[69] Coale and Demeny 1983.

capacities. Perhaps more telling, however, is the total strategic mobilization, the sum of all serving soldiers: aggregating field armies, mobilized reserves, and standing garrisons. In the second section, I discuss the varying manpower strategies these powers used to recruit and obtain soldiers. Finally, I discuss the unique aspects of military organization for each power, especially important given the critical role of tactical organization to military outcomes.

The goal of the chapters that follow is to test the proposition that quantitative metrics of military manpower ought to match the known outcomes of interstate warfare. To what extent does sheer numerical superiority correlate with victory? In order to simplify this discussion, I focus solely on land forces, although the size and scope of naval deployments are addressed in the chapters concerning finance. I do not mean to dismiss the importance of naval warfare during this period. There is, however, considerably more evidence for the size and composition of armies than for fleets, and consequentially more data points for comparative analysis.

Chapter 2: Roman Manpower

I. Power Effective

Thanks in large part to Livy, Roman manpower deployments are well attested from 218-167. A. Afzelius, after close source criticism corrected some of Livy's numbers, and his readings formed the basis for P.A. Brunt's estimates of the number of deployed legions. For the Second Punic War (218-201) I follow Brunt on the number of legions, and adhere closely, with minor modifications, to his estimates for their general strength. In a few instances I have rounded his figures to the nearest five thousand to keep the numbers round, in light of the uncertainty about the actual strength of any given legion. For my estimate of the allies, I assume a 3:2 ally to Roman ratio, based on the initial mobilization in 218, when Livy reports 44,400 Italians and 26,800 Roman infantry, a little over 3:2. In 216, the Romans levied allied and Roman infantry in equal numbers, in part because they were preparing an enormous field army, and Romans and Italians generally operated in parity in field armies, with additional allies serving garrison functions.[70] After Cannae, the loss of so many Italian communities would have significantly strained the availability of Italian manpower. The Latin colonies remained loyal, but were overburdened by Rome's increasingly onerous demands for troops. In 209, 12 colonies refused to send further detachments.[71] At the end of the war, the most plausible report of Scipio's expeditionary force in 204 describes an infantry strength of 16,000, implying two 4000 strong legions with equal allied wings.[72] Therefore, for the period from 215-201, I assume a Roman to ally ratio of 1:1.

For the period from 200-194, I assume the legions maintained a paper strength of 4200 infantry and 300 cavalry, and that the actual strength was kept close to the paper strengths through a program of annual reinforcements (*supplementa*). Even Flamininus' legions at Cynoscephalae, a major campaign by any account, contained only 16,000 Roman and Italian infantry, implying equal legions and *alae* roughly 4000 strong; one maneuver unit at the Battle of Aoi Stena pass was 4000 strong, and likely represented a detached legion.[73] After a decade of recovery from Hannibalic War, the figure of 5200 likely became standard. Acilius Glabrio's army in 191 consisted of 22,000 infantry, implying two legions 5200 strong and perhaps two allied wings 6000 strong (with more allies in theater as garrison troops).[74] While it is unclear exactly when the Romans transitioned to legions with 5200 infantry as the standard strength, for the purposes of my calculation I will tabulate all legions from 191 onwards at this strength. It is not impossible that smaller legions were still occasionally used in some of the less militarily active provinces, in which case my numbers would slightly overstate the deployed figure. I will assume that the legions were kept

[70] Polybius 3.107.11; Livy 22.36.4.
[71] Livy 27.9.1-6.
[72] Livy 29.25.1.
[73] Flamininus had 26,000 troops at Cynoscephalae (Plutarch Flamininus 7.3), of which 6400 were Aetolians, 1200 Athamanians and 800 were Cretans/Apollonians (Livy 33.3.9-10). This leaves c. 17,500 Romans and Italians, or which should reflect legions roughly 4000 strong.
[74] Appian *Syr.* 17.

near their paper strength; the attested *supplementa* reported by Livy suggest a consistent policy of keeping legions at or near strength.

Livy's fourth decade also provides a number of data points about the number of Italians mobilized alongside the legions, which is laid out below:

Table 2.1 Allies provided per freshly raised legion

	Infantry	Cavalry	Source
195:	7500	400	Livy 33.42.3
193	7500	250	Livy 34.56.6
192	7500	250	Livy 35.20.5, 20
192:	10,000	400	Livy 35.20.4
191	10,000	400	Livy 35.41.7
190	10,000	400	Livy 37.2.6
190	7500	300	Livy 37.2.6
188	7500	600	Livy 38.35.9
182:	7500	400	Livy 40.1.5
181:	7500	400	Livy 40.18.5
180	7500	400	Livy 40.36.6
180	6000	300	Livy 40.36.11
179	7500	400	Livy 40.44.3
177:	5000	300	Livy 41.14.10
177	6000	300	Livy 41.9.2
177	5000	250	Livy 41.9.4
176	5000	300	Livy 41.14.10
174	5000	300	Livy 41.21.4
173	5000	300	Livy 41
171:	8000	400	Livy 42.31.4
171	6000	300	Livy 42.31.4
171	3750	300	Livy 42.35.5
169	5000	300	Livy 42.12.6
169	4000	250	Livy 43.12.7

The above chart shows that while the senate displayed flexibility during wartime—for example increasing the size of Italian contingents in theaters of intensive warfare, on the whole during the 190s and 180s, for every legion there was a standard allotment of 7500 infantry and 250-600 cavalry, although more were dispatched during the major mobilization of the Syrian War. We should not overly concern ourselves about the exact ratio of allies: the Romans themselves seem more concerned with the size of the detachments. Around 180, the numbers drop, perhaps owing in large part to demographic problems in Italian communities, especially those afflicted by land confiscations in the South. By this point the standard compliment of allied troops was 5000-6000 per legion.

Afzelius made detailed calculations about the numbers of allies, which were in turn copied directly by Brunt in his calculations of men under arms.[75] I have deliberately made my estimates (which are of course heavily influenced by Brunt's) somewhat more impressionistic. For the period of 200-180, I have simply

[75] Brunt 1971: 416-426.

taken the number of legions and multiplied by 8000 to produce the number of allies, which implies the assumption of 7500 infantry and 500 cavalry raised per legion. For the period from 179-168, I take the number of legions and multiplied by 6000. The totals are founded to the nearest five thousandth. The order of magnitude of allied deployments from 200-168 comes very close to Afzelius' estimates, but without the same pretensions to exactitude.

Table 2.2: Estimated Deployments, 218-167

Year	Legions	Romans	Allies	Total
218	6	26,000	44,000	70,000
217	11	50,000	75,000	125,000
216	15	76,000	100,000	175,000
215	15	50,000	50,000	100,000
214	20	75,000	75,000	150,000
213	22	75,000	75,000	150,000
212	25	80,000	80,000	160,000
211	25	80,000	80,000	160,000
210	21	65,000	65,000	130,000
209	21	65,000	65,000	130,000
208	21	60,000	60,000	120,000
207	23	70,000	70,000	140,000
206	20	60,000	60,000	120,000
205	18	50,000	50,000	100,000
204	19	55,000	55,000	110,000
203	20	60,000	60,000	150,000
202	16	50,000	50,000	100,000
201	14	45,000	45,000	90,000
200	8	36,000	65,000	100,000
199	6	27,000	50,000	75,000
198	8	36,000	65,000	100,000
197	6	27,000	50,000	75,000
196	10	45,000	80,000	125,000
195	10	45,000	80,000	125,000
194	8	36,000	65,000	100,000
193	8	36,000	65,000	100,000
192	10	55,000	80,000	135,000
191	12	66,000	95,000	160,000
190	13	71,500	105,000	175,000
189	12	66,000	95,000	165,000
188	12	66,000	95,000	165,000
187	8	44,000	65,000	110,000
186	10	55,000	80,000	135,500
185	8	44,000	65,000	110,000
184	8	44,000	65,000	110,000
183	8	44,000	65,000	110,000
182	10	55,000	80,000	135,000
181	8	44,000	65,000	110,000

180	8	44,000	60,000	105,000
179	8	44,000	45,000	90,000
178	7	38,500	40,000	80,000
177	7	38,500	40,000	80,000
176	10	55,000	60,000	115,000
175	7	38,500	40,000	80,000
174	7	38,500	40,000	80,000
173	7	38,500	40,000	80,000
172	6	33,000	35,000	70,000
171	10	55,000	60,000	115,000
170	10	55,000	60,000	115,000
169	8	44,000	45,000	100,000
168	10	55,000	55,000	110,000

This is a very impressive rate of mobilization. From 215-211, despite massive casualties, the Romans managed to maintain over 150,000 active soldiers. The largest Roman mobilization likely came in 191 during the Syrian War with Antiochus the Great, with 13 legions at or near strength, perhaps 175,000 Romans and allies altogether, the largest strategic mobilization of any Mediterranean power during the period covered by this study. More importantly, the Romans were capable of maintaining a sizeable strategic deployment on what was essentially a permanent basis. During the 50-year period covered in this chart, the number of soldiers mobilized never dropped below 70,000. This *minimum* is far more than the maximum mobilization of Macedonia, and approaches the maximum mobilizations achieved by the Ptolemaic and Seleucid dynasties. Only Carthage proved briefly capable of matching Roman deployments during the period from 218-206, but even this configuration endured for only a decade. When it came to strategic manpower, Rome had an unquestionable advantage over rival powers.

Part II: Manpower Strategies

Our most complete listing of Italian manpower is provided by Polybius, describing the Roman preparations for an anticipated Gallic invasion, which involved a careful survey of available military manpower. The figures Polybius reports are rolled up below.

Table 2.3: Roman Mobilization and Reserves in 225

	Infantry	Cavalry	
Romans:	299,200	26,100	325,000
Mobilized:	49,200	3,100	
On the rolls	250,000	23,000	
Allies in armies	60,000	4,000	64,000

Etruscans and Sabines	50,000	4,000	
54,000			
Umbrians	20,000		
20,000			
Veneti/Cenomani	20,000		
20,000			
Latins	80,000	5000	85,000
Samnites	70,000	7000	77,000
Iapygians/Messapians	50,000	16,000	66,000
Lucanians	30,000	3000	33,000
"Abruzzi"	20,000	4000	24,000
Total	699,200	69,100	c.770,000

Polybius, or his source Fabius Pictor, adds up all the forces, both those on the rolls and those who are mobilized. Starting with Beloch, (and endorsed by Brunt), there has been the urge to subtract out mobilized soldiers. This would produce a total of 632,000 Italians, namely adding together men on the rolls (558,000) and then counting in the 74,000 mobilized Etruscans and Umbrians, on the assumption that these two peoples should be in the "reserves" column rather than "mobilized."[76] One of the primary justifications for accusing Polybius of such a gross error is that the last reported Roman census, that of 234, returned 270,212, much closer to the "corrected" assumption of 273,000 than Polybius' report of 325,000.

However, there is the risk of accusing a source, either Fabius Pictor, who wrote within a generation of the event, or Polybius, who ranks high on the scale of competence, of such blatant stupidity. The uncorrected figures have recently found a more vocal defense from Luuk De Ligt, who argues quite cogently that there is no reason to amend the figures downwards, and that while it would be naïve to accept the figures as 100% accurate, the basic figures are likely correct.[77]

Indeed, we can envision a procedure in which allied communities mobilized troops, and then conducted a census of those soldiers left behind, to let Rome know the exact number of men that could still be mustered. This would allow for the Roman government to enroll additional levies, if necessary, although it might also let the Senate know when certain communities had no men left over to defend their own territories. Thus we could imagine a Latin colony with a population of 3500 adult males dispatching a cohort 400 strong along with paperwork indicating there were another 3100 males capable of military service left behind; these lists may have been based on traditional local censuses, updated for the purposes of the emergency. The consuls at Rome could then add up these notices to produce the overall roll preserved by Pictor/Polybius.

[76] Brunt 1971: 44-45, Baronowski 1993: 183-185. Erdkamp 2008 emphasizes that the numbers are designed to impress a Greek audience, although this should not necessarily impugn their basic accuracy.

[77] DeLigt 2012: 40-78, whose conclusions are largely accepted here.

A similar procedure may have been employed in Rome. DeLigt is quite likely correct when he asserts that an extraordinary count of citizens was conducted in 225 in response to the looming Gallic threat; this may have been taken in conjunction with the levy of that year. A list of men not enrolled in the legions would have been particularly desirable in the crisis, as the consuls might need to enroll new legions in short notice in the event of a catastrophe.

DeLigt astutely notes that the procedure in 225 may have mirrored that in 169, when Livy reports intensive efforts were made to register men for the census. In this instance, citizen *iuniores* were required to swear an oath that they were not soldiers on furlough, and that they would report to the levy in Rome:[78]

> …the censors announced in a meeting of the Assembly that they should make it a rule in their assessment that in addition to the oath taken by all the citizens, the following questions must be answered: "Are you under 46 years of age? Have you come forward to be enrolled as required by the edict of the censors, C. Claudius and Tiberius Sempronius? As long as these censors are in office, will you, whenever troops are being raised, come forward to be enrolled if you have not already been made a soldier?"

We could imagine a procedure in 225, where first 52,900 citizens were drafted into the legions during the levy. Realizing that additional troops might needed, the consuls could have made an additional count of the people, perhaps requiring them to swear, as the censors did in 169 did, that they would report to any future levies. These numbers could have then been preserved on a second record, not the standard censors' roll (as the lustrum was completed by 227), but upon a special roll perhaps maintained by the consuls. De Ligt notes that a major group counted in this special assay may well have been *proletarii*, ordinarily severely undercounted in the census, but who might in emergencies be armed to serve as garrison troops.[79] In this instance, the figure Polybius reports is not the census of 229, but rather the new count of un-deployed citizens crafted in 225. As such, the roll up of c. 700,000 infantry and 70,000 is to be preferred to the emended versions.

If De Ligt is correct, then we also get a sense of the census undercount: if the census of 234 returned 270,212, it captured only 85% of the men counted in 225. Even the more thorough count of 225 was undoubtedly itself an undercount; DeLigt postulates that it still missed roughly 10% of the total male citizen population, putting the total male citizen body at around 340,000.

Polybius reports that the senate demanded a count of men ἐν ταῖς ἡλικίαις. This phrase is often taken to suggest that the figures for the allies refer only to men who were *iuniores*, between the ages of 17-45. As Elio Lo Cascio has pointed out, Polybius may be using the term to translate Latin *togati*, which would imply all men over the age of 17, essentially all adult males.[80] De Ligt notes that Polybius elsewhere uses the term to describe men as old as 60, and that in the instance of a *tumultus*, all males could prove military assets, even *seniores*, who might perform garrison duty.[81] There is therefore no reason to think that the returns from Italian communities are any different from the returns of the Roman

[78] Livy 43.14 (Roberts)
[79] e.g. Gellius 16.10.1, quoting Ennius.
[80] Lo Cascio 1991: 320-322.
[81] De Ligt 2012: 55-63.

census, listing all adult males, on the assumption that the vast majority, save the most elderly and disabled, were capable of some form of military service in a moment of crisis.

High Counters and Low Counters:

It is now virtually obligatory in discussions of Roman demographics to discuss the merits of the "low count" versus "the high count." The dispute between the two schools hinges on how to interpret the Augustan figures in the *Res Gestae,* which list over four million persons, and the census of 70, the only Republican census to count all Italians, which returned 910,000.[82] The *doktorvater* of the low count is Julius Beloch, who argued that the discrepancy can be explained by the fact that the Augustan census counted not just adult men, but also women and children, whereas the Republican census had only counted adult men. Tenney Frank argued that the Augustan figures counted just adult men, as the Republican census figures had, and suggested that they should reflect significant population growth.[83]

P.A. Brunt followed Beloch in his monumental *Italian Manpower*, and the low count view remains dominant today. The work of Elio Lo Cascio, has helped revive Frank's high-count hypothesis.[84] Applying his own demographic models of population growth, Lo Cascio argued that the Italian population, rather than remaining stagnant, or even slightly shrinking following Brunt's model, was actually growing dramatically throughout the Roman Republic. 4-plus million adult males in 28 would perhaps imply a total population of 12-15 million with women children and slaves factored in.

To account for this seemingly enormous population growth, Lo Cascio and other proponents of the high count have been forced to argue that previous census figures either severely undercounted (e.g. the census of 70 is held to be deeply flawed) or counted only men of military age. For example, Lo Cascio believes that the figures given by Polybius for 225 represented only men of military age, and that the total Roman population in 218 was closer to 514,000, rather than the estimate of 325,000 given by Brunt (or even the 340,000 suggested by De Ligt).[85]

Saskia Hin has recently introduced a third interpretation, which we might refer to as "the Middle Count."[86] Hin postulates that there were in fact two lists: census lists that only registered men who were *sui iuris* (without a living father and grandfather), while a military list was kept to track men capable of military service (the 273,000 Romans and Campanians reported by Polybius). Hin's suggestion is ingenious, but perhaps too much so. In particular, it is unclear how the second list would be generated: the count of 225 seems to have been an isolated incident driven by a military crisis. For the rest of the time, census data itself seems to have been the basis for determining military obligations (again, the assay of militarily eligible young men in 169 was conducted as part of the

[82] Brunt 1971:14. Phlegon (Jacoby 257), Fr. 12.6. Livy *Per.* 98 lists 900,000.

[83] Frank 1933: 314-15.

[84] Lo Cascio 1994.

[85] Lo Cascio 2001.

[86] Hin 2013.

census). Men *sui iuris* certainly would have sworn to the presence of children, including adult males *in poteste*, as Cicero attests.[87]

As the previous section has indicated, I count myself among the low counters. I find myself impressed by the cogent arguments of Luuk DeLigt, who presents what I would call an "optimistic low count" which assumes a lower order of magnitude for the Italian population, but still allows for modest population growth over the second century, whereas more pessimistic low counters, in particular P.A. Brunt, assumed that the free rural population of Italy had declined to the point of collapse by the time of the Gracchan crisis.

If the pool of Italian manpower was as large as the high count (or even Hin's medium count) suggest, it becomes difficult to see why Rome had problems at all recruiting manpower even in the darkest days of the Second Punic War, or why Rome would have felt compelled to stop fighting battles after Cannae, when high counters believe there were still over 450,000 adult citizen males ready for duty, even accounting for casualties from 218-216. For the high-count hypothesis to be correct, we must assume that Rome suffered from dismally low recruitment rates to explain attested manpower difficulties. While it is certainly agreed that the Roman levy was far less efficient than 20th century conscription, high counters will have to accept a 35% mobilization rate for adult male citizens even at the peak of the Second Punic War—which does not seem like a society that must recourse in desperation to slaves, debtors and adolescent boys.[88] The low count thus better fits with the ample evidence of Rome "scraping the bottom of the barrel" in the aftermath of Cannae.

Assidui and *Proletarii*

Thus, with many low-counters, I believe that the registered census population in the late third century was somewhere in the range of 270,000, with an actual adult male of upwards of 350,000 on the eve of the Second Punic War. How many of these were actually *assidui,* men with the requisite property qualifications for service in the legions? Brunt calculated that the total number of men who had ever served in the legions was 108,000 by the end of 215, assuming 58, 000 citizens in the legions (excluding the slave *volones*) and another 50,000 KIA.[89] According to Livy 24.18, at the levy for the next year it was found that only 2000 *assidui* had failed to either serve or obtain an exemption.[90] Brunt concluded that 110,000 men, including KIAs, men in the legions and shirkers, would account for all Roman *assidui*. Assuming 210,000 non-Campanian *iuniores*, this would imply that *assidui* accounted for only a little over 50% of the Roman population.

Brunt's 110,000 *assidui* is far too low, and has come under recent criticism from Nathan Rosenstein, who notes that Brunt's number of *assidui* cannot explain attested difficulties in naval recruitment if there were a good 100-140,000

[87] Cicero, *De Leg*. 3.7; Brunt 1971:15-16.
[88] Freed slaves: Livy 22.57; Valerius Maximus 7.6.1. See discussion in Hunt 1998: 209. Debtors: Livy 23.14.
[89] Brunt, 1971: 419. Brunt's KIA estimates are highly conservative; actual losses may have been higher.
[90] *nomina omnium ex iuniorum tabulis excerpserunt qui quadriennio non militassent, quibus neque uacatio iusta militiae neque morbus causa fuisset*

proletarii available to man the fleets.[91] While Brunt himself estimated only 20,000 Roman citizens serving in the fleets, Rome was obliged to impress slaves into the navy in order to meet this manpower requirement, suggesting a very modest pool of poor men available for naval service. Rosenstein further raises the question of why the senate and magistrates would set the property requirement so high in the first place if they were to exclude so many able bodied men. Rather, he believes the *proletarii* accounted for no more than 10% of Rome's total citizen population.[92] He estimates the number of non-Campanian *assidui* iuniores at 190,000.[93]

According to Rosenstein, Brunt is correct in calculating that only 108,000 men had ever served by 214. But he notes that excluded from the number were men who had been granted a *vacatio iusta militiae*. Brunt believed *vacationes* to be given out for a number of narrow reasons, mostly for men who had served for 16 years or who were physically incapacitated. Rosenstein, on the other hand, postulates that *vacationes* were routinely granted to older *iuniores* around the age of 30 who had young families to care for. [94] Given that most Roman men married late, few men aged 17-30 would have had young dependent families, while most men in their mid-thirties would be burdened by young children who could not yet earn their keep on the farm. The age-based legionary structure of *velites* (17-20) *hastati* (20-25) and *principes* (25-30) and *triarii* (30 plus) required fewer men over the age of 30, as *triarii* made only 15% of a standard legion (600 out of 4200 infantry).[95] Thus *vacationes* to older men could be freely given, without interfering excessively with recruitment. Indeed, one wonders if most consuls simply issued blanket exemptions in most years. It should be noted that in 105, the consul Rutilius Rufus banned men under the age of 35 from embarking on a boat, for fear that they would dodge service in the grim war against the Cimbri.[96] Augustus would later also punish men under the age of 35 for draft-dodging after the Kalkrisse disaster far more harshly then men over that age.[97]

However, it should be noted that even Brunt's figure of 108,000 need not be taken as gospel. Burnt himself based the figure on his own assumption that the casualties at Cannae were less than catastrophic, believing that some 15,000 Roman citizens died at Cannae. Polybius reports 70,000 KIA and 10,000 prisoners, or 40,000 Roman citizens lost. [98] Livy reports 48,000 killed and another 10,000 captured in the Roman camp, which would suggest total Roman losses of approximately 30,000.[99] Polybius here seems to exaggerate Hannibal's success, but Livy is likely correct: the Romans marched to Cannae with eight legions (44,000 Roman citizens) and were only able to cobble together two legions out the survivors (11,000 even at full strength). This would imply losses of at least 30,000 citizens killed or captured, and is in keeping with Livy's casualty figures. On this assumption, the total number served would be closer to 125,000.

---

[91] Rosenstein 2004: 170
[92] Rosenstein 2004: 171
[93] Rosenstein 2004: 171
[94] Rosenstein 2004: 90-91
[95] Rosenstein 2004: 85
[96] Granius Licinianus 33. 27.
[97] Dio Cassius 56.23.2.
[98] Polybius 3. 1172-7.
[99] Livy 22.49.

Following Rosenstein, the 108,000-125,000 men in 214 mostly would represent the exhausted pool of men aged 17-35. This corresponds relatively well with the number of men aged 18-30 that a model V life table would predict for a male population of c. 300,000, of which some 115,000 should be between the age of 17-30. Rosenstein further argues that the burst in legionary recruitment in 214 was caused by recruiting from the large pool of men who had previously been granted a *vacatio* for family care, or simply because they were beyond the optimal age for legionary service.

It must be remembered that Rome did not yet have a large urban population in 218; we cannot imagine hordes of urban *proletarii*, which is the only way to account for the 100,000 odd *proletarii* provided by Brunt's model, unless we envision a countryside over-run by dire poverty in an era when there are few hints of major agrarian unrest. Indeed, the 230s and 220s had seen significant colonization and major *viritim* distributions of agrarian land, which had likely raised a number of men to the status of *assidui.* Thus I would be surprised if only 50% of the Roman population were *assidui*, as Brunt supposes.[100]

Furthermore, if there were only 110,000 *assidui* of military age in Rome in 218, the cavalry infantry ratio becomes problematic.[101] There were 26,000 cavalry on the rolls in 225, some 20,000 or so *iuniores*. Cavalry would have formed almost 20% of the Roman *assidui* of military age. Yet Roman cavalry represented only 5% of a standard Roman legion (300 horse to 4200 infantry).[102] If we assume a figure of 200,000 *assidui*, men capable of serving as cavalry becomes only 9% of the Roman manpower pool, much closer to the orthodox ratio of 1:10 and more in line with the figures of cavalry actually fielded.

Indeed, one would imagine that the Roman class system was an approximate pyramid, with the 1st class containing more personnel than the *equites*, the 2nd more than the 1st, and so on. Many of these *equites* were likely members of the 1st class capable of serving as equites *cum equo suo,* and not necessarily the privileged members of the 18 equestrian centuries, who probably numbered no more than 1800. Even if every member of the 1st class was counted as equites, under Brunt's model of 110,000 *assidui iuniores*, it would mean that the 2-5th class would all have to be approximately the same size as the 1st class. Allowing roughly 250,000 *assidui* would facilitate a pyramidal social structure, without the odd prospect that every class might have an equal strength, which is what Brunt's model would mathematically require. Under this model, the only non-pyramidal class would be the *proletarii* themselves, only because the arbitrary census definition excluded all but a small percentage of individuals at the bottom.

Furthermore, a high proportion of *assidui* also makes the census rolls presented by Polybius via Fabius Pictor sensible as a testament to Rome's military power. Thus Rosenstein: "If instead more than half of Rome's *iuniores* were *proletarii*, and so exempt from bearing arms in the legions, we would have to convict Fabius of either deliberate mendacity or unbelievable foolishness."[103]

---

[100] Rosenstein 2002: 165.
[101] Rosenstein 2002: 165.
[102] Polybius 6.20.9.
[103] Rosenstein 2002: 178.

The number of *proletarii* seems to have declined sharply between the First Punic War and the second century. Polybius, reports that the Romans were unable to launch fleets in his day as large as those manned during the First Punic War, and while he never follows up on a promise to explain why, DeLigt is surely correct when he asserts that the most likely explanation is a reduction in the number of *proletarii* through land allotments, including *viritim* allotments in the *ager Gallicus* in the 230s, distributions to Scipionic veterans in the 190s, and an aggressive colonization program from 200-177.[104]

The maximum extent of Roman *proletarii* may be seen from the fact that in the First Punic War, the Romans could equip a fleet of 330 warships; Polybius reports that these were quinqueremes, requiring a crew of perhaps 400, and he reckons the total manpower requirement of such a fleet at 140,000.[105] The recent discovery, however, of a series of Roman rams from the Egadi Islands suggests that Polybius has overstated the size of Roman ships for much of the war. The rams of Roman warships, found in debris fields full of Tunisian amphora and North African ballast, must come from Roman warships captured at Drepanna in 249, and repurposed as Carthaginian supply vessels.[106] Suffice it to say, all seven rams discovered are quite small, and suggest that the Roman fleet during much of the war fielded small ships—perhaps not much bigger than biremes. 350 bireme-sized ships might need no more than 50,000 rowers to crew them—not the 140,000 that Polybius postulates, based on the crew of a contemporary Roman quinquereme. Assuming Romans provided half these crews, the total number of *proletarii* needed would only be 25,000. By the second century, even these numbers could not be found

In the count of 225, the number of Romans in the fields and on the rolls numbered 325,000, in contrast to the 273,000 registered in the last census. Assuming that most were *proletarii,* this might imply that at least 50,000 *proletarii* not counted. Assuming that some *proletarii* had been counted in the census, we again have an order of magnitude of 50-75,000. This would suggest that the *assidui* perhaps numbered 270,000-290,000 (presumably some *assidui*, especially those in the 5th Class, would not have been registered in the census). Of these, perhaps 200-225,000 were *iuniores.*

Thus in the third century, it seems that *proletarii* may have represented perhaps 20% of the total citizen population. Their numbers would have dropped somewhat when the property requirement was lowered, likely from 1100 liberal asses (equal to 5500 sextenal asses) to 4000 sextenal asses, a deduction of about 27% but one which would have brought a number of marginal farmers, perhaps farming around five *iugera*, into the 5th class.[107] Aggressive land distribution and colonization following the war would have further transformed *proletarii* into *assidui,* while returning soldiers would have also been able to use accumulated pay, booty and donatives to purchase additional land. Resources accumulated by Roman soldiers during military service may have been converted into expanded landholdings to allow sons to retain their status as *assidui* in the event of a split inheritance. By the 170s, freedmen were required to maintain 50 warships with a

[104] De Ligt 2012: 103.
[105] Polybius 1.26.7.
[106] AIA/APA Panel on the Egadi Rams, 2014; in particular the talk by William Murray.
[107] Rathbone 1990: 144-145.

two-thirds citizen compliment, that is 10,000 citizen rowers.[108] Freeborn p*roletarii* therefore probably only comprised less than 10% of the total population. The end of major colonization in the 170s (the last colony was founded in 177), and the steady growth in the city of Rome likely caused the number of *proletarii* to rise again.

Length of service:

From the Punic wars onwards, all able-bodied men citizens were liable for military service. But for how long? The text of Polybius is unclear. The manuscript tradition reads τοὺς δὲ πεζοὺς ἓξ καὶ δεῖ στρατείας τελεῖν κατ' ἀνάγκην ἐν τοῖς τετταράκονταὶ ἓξ ἔτεσιν ἀπὸ γενεᾶς.[109]

The manuscript therefore suggests six years of service was required, at least by the middle of the second century. However, there is also an extra καὶ. The widely accepted solution has been to amend the text to read ἓξ καὶ δέκα. This solution had the merit of lining up with the fact that Augustus originally required legionaries to serve for sixteen years, on the hypothesis that he was merely modifying Republican precedent.[110] I am not entirely sure that this emendation is correct.

From 200-167, the Romans required roughly 1.5 million man-years of service; assuming 200,000 *assidui*, it could draw from 6.6 million man-years of potential service from men aged 17-46. At this rate, each *assidui* would need to contribute 6.3 years of service. But some would have chosen to serve more, men like Spurius Ligustinus, who supposedly had served over twenty campaigns by the time he volunteered to serve yet again in the Third Macedonian War.[111] Ligustinus was, of course, a senior centurion, and few men may have served for as many continuous years as he did. A small semi-professional cadre of men like Ligustinus, however, would have been sufficient to allow the rest of the citizen body to serve their six years in the legions and then return to their farms. Again, following the model proposed by Rosenstein, for most citizens their six years of service were likely concentrated in their twenties, prior to marriage, and when they were still in their physical prime.

Citizens, Latin and Allies:

The ability to field this enormous strategic deployment was the result of both conscious policies and historical contingencies. The threat of various Italian tribes to the early Roman community had forced a series of political reforms (the poorly understood process is often referred to as the Struggle of the Orders) that dramatically increased the number of citizens who were capable of serving as infantrymen. These policies included the granting of land in the *ager Romanus*, colonization, legal reforms which mitigated the effects of debt on the peasantry, and increased political power to both the plebian nobility, yet also to the plebs themselves as a corporate body.[112] The last *sucessio* was reported in 287. Political and economic reform led to a virtuous cycle, as peasants were increasingly able

[108] Livy 42.35.
[109] Polybius 6.19.1-2.
[110] Dio Cassius 54.25.6.
[111] Livy 42.34.11.
[112] The contributions in Raaflaub 1986 remain the best treatment of the so-called "Struggle of the Orders."

to serve in the legions, while military success produced new economic resources, especially land, whose distribution (which the plebs could increasingly demand through either their noble plebeian spokesmen, or through direct action in the newly empowered *comitia tributa*) further augmented the number of peasants capable of military service.

Equally important was a series of decisions, initially likely ad hoc and often punitive, to absorb conquered peoples directly into the Roman citizen body. This first occurred with the Latin communities who rebelled in 338; the Sabines and Picentines were annexed during the Samnite Wars, and Campanian communities offered citizenship in 290. With the exception of the Latin communities, these grants were initially made *sine suffragio*. In some instances, particularly the case of the Campanians, the extension of citizenship may have been designed to indicate a particularly firm form of alliance, so that a *cives sine suffragio* was a privileged form of *socius*.[113] Yet it could also represent a punitive status that placed the burdens of citizenship, in particular military service and taxation, without the privilege of voting in elections or, for elites, holding office in Rome. Many of these communities were eventually granted the status of *optimo iure,* for example certain Sabine communities in 268.[114] Nonetheless a somewhat federal structure emerged, as citizen *municipia* maintained their own civic structures, conducted local politics and elected local magistrates.

The one great failure of this system was Capua, which revived its pretensions to regional hegemony during the Second Punic War, becoming the only community of Roman citizens to defect to Hannibal. The Roman response upon the victory was to annihilate those structures, and administer the region directly through prefects.

In many ways, Rome was not dissimilar to Greek states, which likewise developed a hierarchical set of civic statuses; for example the Spartans with their hierarchy of peers, sub-peer Spartans (*mothakes*, *neodamodei*s) and *perioikoi*, which might find analogy to *cives optimo iure,* those *sine suffragio* and the Latins. The Latin status has much in common with Hellenistic notion of *isopoliteia*, and indeed Dionysius often uses the term in discussion of Latin communities.[115] While the solution of organizing conquered territory through various political statuses was not unique to the Mediterranean world, the Romans do seem to have been unusual in the flexibility they allowed in the system. Communities *sine suffragio* were routinely promoted to full status, although the timing is unclear, and Henrik Mouristen has recently argued that the status may have endured until the Social War.[116] Likewise, both full citizens and non-citizen Italians might transition to Latin status through immigration to a Latin colony, but then migrate to Rome, register for the census and (re-) obtain Roman citizenship. The ability of Roman slaves (who prior to the mid-third century, would have almost all been Italian in origin) to obtain citizenship was especially unusual.

The flexibility of the Roman status system was one of its great strengths, not only creating a deep pool of manpower, but also integrating dispersed

[113] Mouritsen 2007: 151-154.
[114] Velleius 1.14.7.
[115] Mouritsen 2007: 155, n. 56.
[116] Mouritsen 2007.

populations into the Roman state, but also providing the aspiration that a given status might shift. The enslaved Italian might become a freedman, the freedman's sons a full citizen, the landless citizen might become a Latin landowner, etc. Rome's greatest cheerleader, the poet Ennius, emphasizes the process. Born in the Oscan community of Rudiae, he served as a *socius* during the Second Punic War. One surviving fragment celebrates the enfranchisement of the Capuans, probably in the epic narration of the Samnite Wars: *cives romani tunc facti sunt campani.*[117] Ennius seems to have been most proud, however, of his own transition from a *socius* to *civis.* In 184, he was enrolled as a member of the citizen colony at Pisaurum. [118] His boast *nos sumus Romani qui fuimus ante Rudini* reflects the satisfaction of at least one Italian with the flexible spectrum of status in Roman Italy. [119]

The flexibility in the status owed not to a far-reaching policy, but ironically to the low status of citizens in the fifth and fourth centuries. After-all, prior to the abolishment of *nexum*, a citizen might easily been enslaved or even executed by his creditors; likewise many early Roman colonies more likely reflected schisms as disaffected groups left Rome to found their own community. A great deal of horizontal mobility existed in archaic Italian communities, which saw frequent lateral migrations of both elite families as well as wider populations. As the Roman state developed and expanded in this environment, the flexibility of status remained.

As we saw in 225 the lowest interpretations of the muster suggest at least 300,000 adult male citizens, with DeLigt arguing for as high as 340,000. How many were *cives sine suffragio*? We learn that the Capuans, one of the largest groups of *cives sine suffragio* are said the number 30,000 infantry and 4000 cavalry in 214.[120] This figure may be rounded from an official census roll-up (although following Scheidel we should already be suspicious of the round number beginning with a "3.")

In 203, an especially thorough census was conducted which returned only 214,000 adult male citizens. This figure was low in part due to the demographic impact of war casualties, but also because of this disenfranchisement of the Capuan population. The census of 188, the first to include the re-enfranchised Capuans, counted 258,000, an increase of 44,000. Some of this increase must have included the recovery of the Roman population, but the figure does seem to suggest that even if the 34,000 reported by Livy was rounded into neat numbers, the basic order of magnitude seems to be correct.

Thus in 225, of 325,000 registered citizens, 25-40,000 were Capuans, and perhaps another 10,000 or so belonged to Campanian communities that later remained loyal to Rome. Lo Cascio estimates another 10,000 Volsci, and perhaps 20,000 Etruscans with the status.[121] These are certainly impressionistic estimates, but it does not seem unfair to posit that roughly 50-75,000 adult males, or 15-25% of registered males, were citizens *sine suffragio* in 225.

---

[117] Ennius 5.157 (Skurtch).
[118] Cicero *Brut.* 79.
[119] Cicero *De Oratore* 3.42. For the role of Italians in Roman armies, see Pfeilschifter 2007.
[120] Livy 23.5.5.
[121] Lo Cascio 1999: 168.

It is unclear when the status of *sine suffragio* was phased out with the final promotion to *optimus ius*. We hear that in 188 three Volscian communities, Formiae, Fundi and Arpinum, were promoted through a tribunician law. [122] In 180, the *municipium* of Cumae petitioned the senate to conduct official business in Latin, rather than Oscan, a move that is likely connected with pending promotion to *optimo iure.*[123] Many of the promotions might have been of single towns, acts too small to catch the attention in Livy; it is equally possible that many occurred after the narrative of Livy's fourth decade breaks off. The fact that Polybius, writing in the 150s, does not mention how *cives sine suffragio* were assigned to the legions may be an indication that by the time he wrote almost all the *cives sine suffragio* had been promoted and assigned to tribes.[124]

The set of rights embodied in the Latin status initially reflected compacts of inter-mobility between various Latin communities, which was in turn appropriated in the third and second centuries to articulate the status of Romans emigrating, under controlled circumstances, to new colonies abroad.[125] Overall, Latin communities seem quite happy with their status, which included all of the privileges of citizenship, including the possibility of voting in Roman elections, without the necessity of paying *tributum,* aside from local taxes to fund local activities and pay the military contingents sent to serve with Rome. [126]

By 225, according to Afzelius, there were perhaps 35 Latin towns. The standard Latin colony of this period contained around 3500 infantry and 300 cavalry, which if averaged would produce 133,000 adult male Latins. The count in 225 returned only 85,000 Latins, but DeLigt notes Latins represent roughly 20% of all of the listed allies, and if they contributed 20% of the 64,000 allies in the consular armies, then this would put the count at roughly 100,000. DeLigt notes that if one assumes a 20% undercount, the figure moves closer to 120,000, or roughly 3500 men per Latin community.[127] Of course Latin communities may have been better able to track their citizens given their small size; I am more inclined to believe that the Latin censuses were in fact far more accurate than the Roman, and that the average size of a Latin community was perhaps closer to 3000. We know that Latin colonies themselves could suffer from manpower problems, largely because Latin colonies were situated based on their strategic importance, not necessarily their economic viability. 100,000 is therefore perhaps a low estimate of Latin manpower in 225, although their numbers did not likely exceed 125,000. Perhaps another 35,000 Latins (a mix of excess Roman population, as well as selected allies) were settled in Latin colonies between 200 and 177. Some of these colonies suffered from economic and demographic problems, but even so the number of adult male Latins by 177 was likely between 125-150,000.

Thus in 225, there were roughly 425,000 adult males counted in the roll up who were citizens or Latins. It was this manpower base loyal to Rome, largely thanks to the fluid but still meaningful set of political and economic privileges,

---

[122] Livy 38.36.
[123] Livy 40. 42.13.
[124] DeLigt, 2012: 95. Festus 117 L confirms *cives sine suffragio* served in *legione*.
[125] Erdkamp 2011 emphasizes the military nature of the Latin colony, organized as a military unit as well as a community, and consisting primarily of veterans.
[126] Latins voting in Roman elections: Livy 25.3.17.
[127] De Ligt 2012: 69.

which allowed Rome to triumph in the Second Punic war despite the defection or potential defection of so many Italian allies.

Part III: Military Organization[128]

Early Rome developed a military system based upon Greek style panoply, in particular the large round hoplite shield (*clipeus*). In the debate about the archaic hoplite it is increasingly unclear if this implied tactics based around a tightly organized phalanx, or a more fluid battle order. I personally am of the opinion that the large round shield was most useful in close-order formations, as Schwartz has recently forcefully asserted against the once heretical views of Van Wees, which are increasingly becoming the dominant paradigm of hoplite warfare.[129]

Regardless, we can say for certain that the Romans over the course of the fourth century moved away from using Greek-style hoplite equipment (and quite likely the close-order tactics associated with it) and developed and adopted new equipment and tactical form. The process is poorly documented, but was heavily influenced by military contacts with other Italian peoples. The *Ineditum Vaticanum* probably written in the first century, does not necessarily give the precise details, but its emphasis on the Roman willingness to coopt military technologies is probably correct:

"in war, we agree with our enemies to fight on their terms, and in foreign skills we surpass those who have practiced them for a long time. For instance, the Etruscans made war upon us with bronze shields and in phalanx formations, not fighting in maniples. And we, changing our armor and equipping ourselves with theirs, drew ourselves in formation against them, and contending thus we defeated men who had long been accustomed to phalanx warfare. Similarly, the Samnite rectangular shield was not among our traditional weapons, nor did we use javelins, but instead we fought with round shields and spears. And neither were we strong in cavalry warfare, all or nearly all of Rome's strength laying in infantry. But when engaging with the Samnites in war, we equipped ourselves with their shields and javelins, and fought against them with cavalry, and by emulating the use of foreign weaponry we became masters of those who thought such a great deal about themselves."[130]

The *Ineditum Vaticanum* mentions only two influences, Etruscan and Samnite. The author has certainly omitted perhaps the most important influence on the material culture of Roman warfare: the Celts. The most distinctive element of Celtic armor to enter into the Roman arsenal was the Montefortino helmet, a Cis-Alpine design that soon became common across Italy.[131] Mail armor, another military development in Celtic Central Europe, was by the second century the standard armor of wealthy Roman infantryman.[132] Furthermore, the Latin word

[128] An up-to-date scholarly monograph study of the Republican army is currently lacking. Potter 2004 and the contributions in Erdkamp 2007 provide "Companion" treatment of the topic. Sekunda 1996, while designed for a popular audience, provides a useful overview.
[129] Van Wees 2004. Schwartz 2009 successfully reasserts the relationship between hoplite equipment and a close order tactical array.
[130] BNJ 839 F1, for text, translation and commentary.
[131] Burns 2003.
[132] Polybius 6.23.16. Feugère 2002: 89-92.

gladius is likely a Celtic loan word, derived from the Proto-Celtic *kladiwo (and indeed, a cognate of William Wallace's "claymore").[133] That said, despite the loan word, Romans seem to have continued using a Greek model sword (as evidenced from *as signatum* issued during the Pyrrhic Wars), until the Second Punic War, when the Romans deliberately adopted a Celtiberian style sword, the so-called *gladius hispaniensis*.[134]

The changes in the Roman army must also have been driven by new recruitment patterns, as by the late fourth century Plebian success in the struggle of the orders meant that a wider swath of citizens were capable of serving in the legions. The inability of many of these citizens to afford a complete hoplite panoply likely contributed to the "medium-heavy" nature of Roman infantry. While members of the 1st class in Polybius' time were expected to provide themselves with a chain mail cuirass, the historian claims that most soldiers fought lightly armored, wearing only a small chest plate (*kardiophylax*).[135] Roman soldiers in the third century were likely more lightly armored than classical Greek-style phalangites, relying for defensive purposes on a large curved oval shield (*scutum*).

Indeed, this large, oblong body shield, roughly two feet by four feet, defined the new tactics that emerged by the early third century.[136] Unlike Greek-style shields, which attached to the elbow via a secondary band (porpax), the *scutum* was held by a single horizontal grip midway through the shield. The result was that the shield, while heavy, had a wider range of motion; its lower rim could also be rested upon the ground when the soldier was not actively engaged, and it could also be lifted above the head to ward off missile weapons. It was also large enough to shield much of the body, even if the soldier was not covered on the left and right by the shield of his fellows.

At the small unit level, the *scutum* made it possible for Roman soldiers to fight effectively in a more open tactical order. Thus Polybius noted that Roman soldiers needed to control roughly six square feet of tactical space. As I have argued elsewhere, this must include the space that the Roman soldier himself physically occupied.[137] This gave the legionary sufficient room to both throw his javelins, and more importantly, to wield his sword. The *gladius hispaniensis*, in use from the middle of the Second Punic war onwards, was for an ancient Mediterranean infantry sword quite long, with a blade length of 60-65cm. It was therefore appropriate for the looser tactical array of Roman soldiers, and for infantry tactics that emphasized individual hand-to-hand combat.

The evolution of the new manipular legion remains obscure, as we lack a decent military narrative for the fourth century. A manipular army of some sort, based around multiple lines of infantry, seems to have been functioning by the late fourth century, to judge from Livy's rather garbled description of a battle formation from his narrative of the Latin Wars.[138] By this point we see the three lines of infantry (the *hastati*, *principes*, and *triarii*), the characteristic gaps between

---

[133] Diffusion of Montefortino helmet: Burns 2003. *Gladius* as a Celtic loan word: Matasovic 2009, s.v. *kladiwo.*
[134] Quesada Sanz 1997.
[135] Polybius 6.23. 14.
[136] On the Roman *scutum*, see Eichberg 1987; Feugère 2002: 92-96.
[137] Taylor 2014:
[138] Livy 8.8.

the maniples, and the screen of light troops. It is possible that certain elements of the old style phalanx remained. Dionysius of Halicarnassus suggests that the *principes*, the second line of heavy infantry, still carried thrusting spears into the Pyrrhic Wars, even though by the Punic Wars the *principes*, like the *hastati*, were armed with javelins (*pila*).[139] Dionysius may simply be wrong, as he refers to the *principes* as τὰ πολλὰ κατορθοῦντας ἐν ταῖς μάχαις, and this description seems to belong to the *triarii*, given the Latin phrase "it has come to the *triarii*" (*ad triarios redisse*). Dionysius may therefore simply be confused, and we may already have a recognizable manipular legion by the Pyrrhic Wars.[140]

It was by Eastern Mediterranean standards an unorthodox manner of fighting, although as Fernando Quesada Sanz has shown, fluid styles of infantry combat with swords and javelins seems to have been relatively common in the Western Mediterranean.[141] The manipular legion had likely developed in large part as a practical mechanism to deal with the rough terrain of the Apennine highlands during the Samnite Wars. Here I disagree with Jon Lendon's suggestion that the Roman maniple developed primarily as a mechanism to facilitate a peculiar Roman tendency for heroic combat.

Despite the tactical flexibility both of the checkerboard of maniples, as well as their open order array, Roman units were not clouds of men, or worse, mobs, as Lendon suggests.[142] Rather, maniples were structured entities capable of quickly collapsing into close order formations with locked shields (*densatis scutis*), or expanding into an offensive open order formation for swordplay. The mechanism was likely to have every other soldier in the close order formation take a step forward or backwards as needed, so that in open order Roman soldiers were arranged in a checkerboard matrix, a fact reflected in several pieces of visual representation of soldier pairs.[143] Roman generals were themselves closely concerned about the good order of their formations: for example, Scipio Africanus paused his advance at Zama amidst concerns that his forces suffered disorder (*alogia*) as a result of battlefield detritus.[144]

The Roman infantry line was ordered, but quite thin.[145] Whereas a Classical Greek phalanx was roughly eight men deep, and a Macedonian style phalanx was 16 deep---and in some cases could be deployed 32 deep--- all of our evidence suggests that Roman maniples were relatively shallow, perhaps no more than 3-4 men in a close order formations which could in terms expand into an open order formation 6-8 deep, with the file likely corresponding to the size of a tent party (*contubernium*). The evidence for formation depth is laid out below:

---

[139] Dionysius 20.11.2.
[140] Rosenstein 2010: 303 has suggested that arming the *principes* with pikes was simply a temporary expedient to counter the bristle of Pyrrhus' *sarissai*. Dionysius describes the *principes'* spears as "cavalry spears held with both hands," a description that does not match the *hasta longa* used by Roman *triarii*, an infantry spear short enough to be wielded with one hand (described by Polybius as a *doru*, the traditional term for a one-handed hoplite spear). This would recall a similar expedient tactic later attested by Polybius, in which the *hastati* at the battle of Telamon were issued the thrusting spears of the *triarii* in order to blunt the Gallic charge (Polybius 2. 33.1-4).
[141] Quesada Sanz, 2006
[142] Lendon 2005: 178-191.
[143] Taylor 2014c.
[144] Polybius 15.14.1-2.
[145] Taylor 2014a.

Table 2.4: Depth of Roman infantry formations

Source:	Depth	Formation Type	Date of Action
Republican Period			
Cato, *de re militari*	4	Unknown	n/a
Livy 44.9.6	4	*Testudo*	169
Frontinus 2.3.22	10	Combat	48
Plutarch, *Antony* 45.2	3	*Testudo*	36
Imperial Period (AD)			
Josephus *BJ* 2.172	3	Riot Control Cordon	26-36
Josephus *BJ* 5.131	3	Defensive Perimeter	70
Josephus *BJ* 3.124	6	Marching Column	60s
Trajan's Column	4	*Testudo*	100s
Arrian *Ectaxis*, 16-17	8	Phalanx	135
Column of M. Aurelius	3	Testudo	170s
Vegetius 1.26	4	Training	n/a
Vegetius 3.14-15	3,6,9	Combat	n/a

Furthermore, the gaps between the maniples were retained in between combat, and could be used to stretch the frontage of the legion. In reconstructing the "geometry of war" it is clear that a Roman legion could match a very large number of opposing troops. For example, we learn that a single legion, 6000 strong, was capable of taking on a 10,000 strong Macedonian phalanx at the Battle of Pydna. The 10,240 men in the Macedonian phalanx (assuming ten chiliarchies), arrayed 16 deep and with a per man frontage of two Greek cubits (.9 meters) would have a frontage of around 575 meters. The 6000 men of Paullus' legion could match this in part because of the open order formation of the individual infantrymen, and in part because the gaps between the maniples, which I have argued ran roughly between 10-20 meters) could expand or contract in order to allow the Romans to match the frontage of an opposing force.[146]

This one feature must explain the curious disconnect between the enormous manpower reserves of the Romans, and the fact that at so many key battles they were badly outnumbered by the opposing force: the Romans could tactically match opponents with fewer men thanks to the accordion nature of the Roman legion. Any ancient expeditionary force was under enormous logistical constraints; the fact that the Romans could fight and win in tactical situations with fewer men than their opponents was therefore an enormous strategic advantage

Conclusion:

The enormous strengths of the Roman political system manifested in military manpower. By both quantitative and qualitative manpower metrics, the

[146] Taylor 2014a.

Romans excelled. They had the largest citizen body of any contemporary political entity, with as many as 350,000 adult male citizens. While the Roman political system was not as empowering as the radical democracy of fifth century Athens, Roman citizens were given significant chances to influence the conditions of their military service, electing not just the consuls and praetors who would serve as generals, but also the military tribunes and even the centurions who officered the legions.[147] The result was a body of citizens who were part of a broader consensus about the objectives of the Roman state and its military apparatus.

It was a large army. With allies, for whom there were significant incentives to serve, the Romans managed to field upwards of 175,000 men in 190. Not only this, but the Romans managed to maintained high levels of mobilization over the entire period. In most years, the routine mobilization of the state, roughly 80,000-100,000 men, exceeded the maximum mobilizations of either the Seleucid or the Ptolemaic kingdoms.

While technically an amateur citizens' militia, the Roman army acquired and maintained extraordinary institutional knowledge that transcended the lack of professionalism of peasant recruits and elected officers. The knowledge was diffuse, as almost every able bodied male citizen had served in the legions at some point, with six years likely being the standard period of service expected from the young Roman man between when he came of age at 17 and aged out around 35. This institutional knowledge allowed the Romans to engage in complex military activities: building fortified camps, forming a complex tactical array on the battlefield, and keeping itself supplied while on the move, despite the absence of professional structures.

[147] I hope to publish on the "democratic" dynamics of the Roman army soon.

Chapter 3: Carthaginian Manpower

Introduction:

Carthage was a very powerful state. Prior to the Roman legions crossing the straights of Messenia, Carthage had been the pre-eminent power in the Western Mediterranean. It was the only one of the powers in this study to seriously challenge Roman hegemony not only in the Western Mediterranean, but even in Italy itself. Unlike Rome's relatively quick and decisive wars with Hellenistic powers, none of which lasted longer than four years, Rome's confrontations with Carthage were grinding wars of attrition: the First Punic War spanned twenty-three years, while the Second Punic War lasted nearly eighteen.

Polybius has two basic explanations for Rome's victory, and both hinge on manpower. The first is quantitative: the Romans had more men, as Polybius notes that Hannibal arrived in Italy with only 26,000 men, when the Romans had some 770,000 men on their rolls.[148] The fallacy here is clear enough: there is no reason to compare the size of a field army with a list of un-mobilized reservists. Second, Polybius makes a qualitative argument, one tinged with his "moral vision," arguing that Rome's citizen soldiers were superior in patriotism and dedication to Carthage's feckless mercenaries.[149] As we will see, Carthage was in fact able to muster large numbers of high quality troops, and this was one of the main reasons she proved such a ferocious competitor in the period.

Part I: Power Effective

During the third and second centuries, Carthage routinely deployed large field armies, a testimony to the administrative, fiscal, and logistical sophistication of the Carthaginian state. The chart below produces a sample of field armies from 264-202:

Table 3.1: Carthaginian Field Armies, 255-202

Year	Location	Source	Infantry	Cavalry
255	Tunis	Polybius 1.32.9	12,000	4000
241	Libya	Polybius 1.75.2	10,000	--
237	Spain	Diodorus 25.12.1	50,000	6000
218	Pyrenees	Polybius 3.35.7	50,000	9000
218	Cisalpine Gaul	Polybius 3.56.4	20,000	6000
218	Trebia[150]	Polybius 3.71.9-72.8	29,000	11,000
216	Cannae	Polybius 3.114.5	40,000	10,000

[148] Polybius 2.24.14-17.
[149] Polybius 6.52.1-8; see also Eckstein 1982: 129.
[150] Hannibal deployed some 8000 pike-men and slingers ahead of his main line (Pol. 3.72.7), which consisted of 20,000 infantry and 10,000 cavalry (3.72.10). In addition, he had pre-positioned a picked force of 1000 cavalry and 1000 infantry in the river-bed (3.79.9).

206	Ilipa[151]	Polybius 11.20.2	70,000	4000
202	Zama[152]	Appian *Pun*. 40-1	46,000	4000

In addition to these sizable field armies, Carthage could also field multiple field armies in separate theaters, a capability best documented during the Second Punic War. Indeed, Polybius informs us that in 219/18 BC, Hannibal set off with an army of 90,000 infantry and 12,000 cavalry, after detaching 15,200 to his brother Hasdrubal to secure Spain and another 19,920 to garrison Africa.[153] If we are to believe Polybius, the total Carthaginian mobilization for 219/18 was therefore around 140,000 men.[154] However, this figure seems rather high; Hoyos has suggested that some of the 102,000 might have included, by a double count, some of those detached troops, perhaps the 15,200 in Spain; this would mean the total Carthaginian deployment was a lower, but still very impressive, 125,000.[155]

The size of this mobilization declined once the campaign began, due to furloughs, desertions, and combat losses. After heavy fighting north of the Ebro, Polybius reports that Hannibal detached 10,000 infantry and 1000 cavalry to serve as a cadre for an occupation force in Northern Spain. Another 10,000 were discharged. Accounting for battle casualties and desertions, Polybius reports that Hannibal crossed the Pyrenees with 50,000 infantry and 9000 cavalry.[156] In that same year, Rome mobilized a mere six legions, approximately 70,000 troops; the Carthaginians therefore deployed more than twice as many men as the Romans in the first year of the Second Punic War.[157] In 215, the next year for which we have information, the Carthaginians conducted simultaneous operations in Central Italy, Sardinia, and across the Iberian Peninsula. Even in 203, with the tide of the war turned badly against them, they were still able to field an army in Southern Italy, another in Northern Italy, as well as a sizable defense force in Africa itself:

Table 3.2: Carthaginian Military Deployments, Second Punic War

	218	**218/7**	**215/4**	**204**	**203**	**202**
Spain:	26,000	{26,000}[158]	60,000[159]	--	--	--

[151] Livy 28.12 puts Carthaginian strength at Ilipa at 50,000 infantry and 4000 cavalry. Lazenby 1978: 145 argues for the higher number, arguing that Scipio's battle tactics would not be necessary if his infantry equaled that of his opponent, and Polybius is therefore to be preferred.
[152][152] Appian reports 50,000 (Pun. 40) soldiers all together, with 4000 cavalry (Pun. 41).
[153] Polybius 3.35.1; Spanish deployments: 3.33.14-16. African garrison: 3.33.9-13.
[154] Polybius is here likely using a pro-Carthaginian source, perhaps either Sosylus or Sosibus, who perhaps had motive to inflate overall Carthaginian resources. Hoyos 2003: 227 cautions the possibility that the detachments should be included in the figures for Hannibal's army. Nonetheless, I find it quite plausible that total Carthaginian forces well exceeded 100,000 men in 218 BC.
[155] Hoyos 2003: 227.
[156] Polybius 3.35.7.
[157] Brunt 1971: 418, with Rome fielding six legions in 218.
[158] Assumes the continued presence of the garrison, although there was likely additional recruitment
[159] Livy 23.14.

Gaul (trans and cis):	59,000	--	--	20,800[160]	20,800	--
Sardinia:	--	--	19,000[161]	--	--	--
Italy:	--	40,000[162]	67,000[163]	15,000(?)[164]	15,000(?)	--
Africa:	19,000[165]	{19,000}	{19,000}	93,000[166]	30,000[167]	50,000[168]
Total:	104,000	85,000	165,000	128,800	65,000	50,000
Comparanda:						
Rome:[169] (legions)	6	6	15	19	20	16
(men)	70,000	70,000	100,000	110,000	150,000	100,000
Carthage as % of Rome	150%	120%	165%	115%	45%	50%

As the table above indicates, Carthage was entirely capable of fielding sizable strategic deployments. During the opening phases of the Second Punic War, at the peak of Carthaginian military power, the city was able to field land forces of between 85-165,000 men. Not only are they objectively large, but they match and even exceed the high mobilizations achieved by Rome during the war. In short, for many of the early years of the Second Punic War, Rome did not enjoy a strategic manpower advantage over Carthage. On the contrary, in 218, 217 and 215, Carthage fielded more men than Rome did. Roman victories in Spain finally eliminated the critical font of Carthaginian military manpower. Roman offensive strategy during the war targeted the primary sources of Carthaginian manpower, first by offensive operations in Spain from 218-206, and then by working to detach Syphax's Numidian kingdom, leaving Carthage with only a limited Libyan manpower base.

Casualties:

[160] Mago set off for Cis-alpine Gaul in 205 BC with 12,000 infantry and 2000 cavalry (Livy 28.46); he was subsequently reinforced by 6000 infantry and 800 cavalry in 204 BC.
[161] Livy 23.32 claims that a force similar to the 12,000 infantry and 1500 cavalry sent to Spain in 215 was deployed to Sardinia. Livy 23.40 provides combined Sardinian and Carthaginian battle casualties of 15,000 killed, 3700 prisoner in two engagements.
[162] Hannibal's strength at the River Trebia.
[163] Livy 24.15.2 reports an army commanded by Hanno with some 18,200. Hannibal meanwhile had deployed 50,000 soldiers at Cannae, lost 5700, and then been reinforced by 4000 by Bomilcar (Livy 23.13.7; with some delay, according to 23.14.1-2).
[164] An estimate. Hannibal's veterans comprised the third line of infantry at Zama, therefore roughly equal in numbers to the 12,000 mercenaries deployed in the first rank.
[165] Polybius 3.33. 13,850 Spanish infantry, 1200 Spanish cavalry, 870 Balearics and 4000 Magatonian infantry. The continued presence of this garrison is assumed in following years.
[166] Polybius 14.1.14. 33,000 Carthaginian forces under Hasdrubal, and 60,000 Numidians under Syphax.
[167] Hasdrubal Gesco's army at the Great Plains, Polybius 14.7.9.
[168] Hannibal's army at Zama, App. *Pun*. 40.
[169] For these figures, see my chapter on Roman Manpower.

The Roman ability to absorb casualties is often cited as a leading factor for the unusual success of Roman imperialism, and it was certainly a critical component of Roman victory in both the First and Second Punic Wars. The ability to recover from seemingly crippling losses, however, was not unique to Rome. As illustrated below, the Carthaginians, too, suffered appalling casualties yet continued to fight:

Table 3.3 Carthaginian Casualties, Second Punic War

Event	Year	Source	Casualties
Crossing the Alps:	218	Polybius 3.35/3.56	33,000 KIA/MIA[170]
Battle of Cissa	218:	Livy 21.60.7	6000 KIA, 2000 POW
Battle of Trasimene	217	Livy 22.7.3	2500 KIA
Battle of Cannae	216	Polybius 3.117.6-7.	5700 KIA[171]
Seige of Cumae	215	Livy 23.37.6	1300 KIA
Battle of Grumentum	215:	Livy 23.37.11	2000 KIA
Sardinian Campaign:	215:	Livy 23.40.12	12,000 KIA, 3700 POW
Battle of Dertosa	215:	Livy 23.49.13	13,000 KIA
Battle of Beneventum:	214	Livy 24.16.4	16,000 KIA[172]
Siege of Salapia:	214	Livy 27.1.2	3000 KIA
Siege of New Carthage	210	Polybius 10.8.4/10.15.7	1000 POW
Battle of Baecula	208:	Polybius 10.40.1	12,000 POW[173]
Battle of Metaurus	207:	Polybius 11.3.3	10,000 KIA[174]
Battle of Ilipa:	206:	n/a	Heavy
Battle of Croton	204:	Livy 29.36.9	4000 KIA, 300 POW
Burning of the camps	203:	Livy 30.6.7	40,000 KIA, 5000 POW[175]

[170] Hannibal started with his journey from Spain with 59,000 and ended with 26,000.
[171] Livy 22.52.6 puts Hannibal's losses at 8000.
[172] Livy only notes that there 2000 survivors from an army of 18,200. The totality of Carthaginian defeat is likely exaggerated.
[173] Also Livy 27.19.
[174] 10,000: Livy 27.49 cites losses at 56,000, but this is preposterously high.
[175] Polybius implies the Carthaginians and Numidians had some 90,000 soldiers were in the two camps, and he claims only 2500 escaped. Appian Lib. 23 reports only 2400 prisoners. All of these figures are undoubtedly exaggerated. (Lazenby 1978: 208) . Nonetheless, we should accept that both a Carthaginian and Numidian army were both finished as fighting forces after Scipio's raid.

Battle of Great Plains	203:	Polybius 14.8	4,000 KIA[176]
Battle of Insubria	203:	Livy 30.18.13	5000 KIA[177]
Battle of Zama	202:	Polybius 15.14.9	20,000 KIA, 20,000 POW[178]

Admittedly, many of these figures, especially those derived from Roman reports, may be exaggerated, some no doubt wildly so. To partially compensate for Roman exaggeration, I have listed above the lowest reported figure for any engagement. Yet even accounting for exaggeration and annalistic fabrication, it is fair to say that Carthaginian casualties during the Second Punic War were on the same order of magnitude as those suffered by Roman and Italian troops.

Furthermore, even if we seriously question the accuracy of these casualty figures, it is clear that Carthage endured devastating tactical losses during the last years of war. One must only look at the series of defeats which failed to dampen Carthage's determination: in 209 Scipio re-captured New Carthage; the next year he defeated Hasdrubal at Baecula; in 207 Hasdrubal had brushed off this setback, invaded Italy, and been killed in hard fighting at the River Metaurus, a dispiriting defeat and a personal tragedy for Hannibal; in 206 Scipio destroyed the last Carthaginian army at Ilipa; in 204 he ambushed and massacred combined Carthaginian and Numidian forces in their camps, supposedly annihilating both forces. To this devastating setback, which imperiled the city itself, the Carthaginians responded by raising another army, which Scipio in turn massacred at the Great Plains. While the Carthaginians temporarily sued for peace, they immediately restarted hostilities with the return of Hannibal and his veteran army to Africa.

After seven years of almost continuous military disaster, first in Spain and then in Africa, the Carthaginians were still willing to risk everything in one last great battle. This pattern of resilience matches the Roman ability to bounce back from the pattern of defeat and disaster at Ticinus, Trebia, Trasimene and Cannae; one reason for this resilience must be that Carthaginian policy makers felt confident in their ability to replenish their human resources and fight on. The Carthaginian response to the crisis of 204-202 so resembled Rome's tenacity that even Livy admitted that Carthaginian policy "was Roman in its steadfastness in the face of adversity" *Romanae in aduersis rebus constantiae erat*.[179] Even after the catastrophe at Zama, new units of Numidian cavalrymen streamed into the city and Carthaginian politicians resolved to continue; it took some extra-parliamentary persuasion from Hannibal himself before the Carthaginian senate agreed to a conditional surrender.[180]

II: Manpower strategies

[176] Polybius records the near total annihilation of 4000 Celtiberan mercenaries (see also Livy 30.8) Actual casualties may have been higher.
[177] Livy 30.18.
[178] Polybius 15.14
[179] Livy 30.7.7.
[180] Polybius 15.19.2-8.

Africa:

A single line in Polybius provides the best information about the organization of Carthaginian Africa. It comes from the treaty with Philip V in 215, which was translated into both Punic and Greek, and thus was legible to Polybius, who had likely seen the original document, the copy captured by the Romans. Listing those bound by the treaty, it denotes the Carthaginians as well as: τοὺς Καρχηδονίων ὑπάρχους, ὅσοι τοῖς αὐτοῖς νόμοις χρῶνται, καὶ Ἰτυκαίους, καὶ ὅσαι πόλεις καὶ ἔθνη Καρχηδονίων ὑπήκοα "all under the dominion of Carthage who live under the same laws; likewise the people of Utica and all cities and peoples that are subject to Carthage."[181]

At the top of this hierarchy were Carthaginian citizens, able to take part in the political life of the city voting for magistrates and in the assemblies that mediated public policy. Beneath these were those who had equal rights under Carthaginian law; this may refer to the people otherwise known as the Libyphoenicians, Punic speakers from nearby towns, who lived in their own political communities but enjoyed the protections of Carthaginian law.[182] Cautious comparison may be made with Roman *cives sine suffragio*. Diodorus notes that Libyphoenicians also enjoyed the right of intermarriage with Carthaginian citizens, similar to the Roman right of *conubium*.[183] The Carthaginian-Macedonian treaty specifically lists Utica as a separate community subject to Carthaginian dominion, though it seems to have been exempt from direct tribute to Carthage and likely held the status of a technically free allied city, even as it fell into the gravitational well of Carthaginian hegemony. The remaining cities and peoples, in Libya and beyond, were subject peoples lacking specific political or judicial rights.

Carthage was notable among all the major powers for making limited use of citizen manpower. Polybius occasionally mentions the use of citizen troops during the third century, but his accounts of army strength tend to blur citizen, Libyan, and mercenary elements. Half of the heavy infantry at the Battle of Tunis in 255 was comprised of what he refers to as the "Carthaginian phalanx "(τὴν δὲ φάλαγγα τῶν Καρχηδονίων), with a strength of roughly 5000 men.[184] This was, however, not a strictly citizen body, but a mix of citizens, Libyphoenicians, and Libyans, and they may be the same 5000 infantry brought by Hamilcar from Heraclea, which could possibly make them predominately non-citizen troops, most likely Libyan.[185]

Citizens were by necessity mobilized during the Truceless War, but again not in great number. Polybius does report that the general Hanno armed citizens of military age (καθώπλιζον δὲ τοὺς ἐν ταῖς ἡλικίαις τῶν πολιτῶν) and drilled the civic cavalry (ἐγύμναζον δὲ καὶ συνέταττον τοὺς πολιτικοὺς ἱππεῖς).[186] Hamilcar assumed command of a force of 10,000 infantry and cavalry, which included citizens along with deserters from the enemy, as well as freshly hired

[181] Polybius 7.9.5 (Paton).
[182] Libyphoenecians: Livy 21.22.3; Diodorus 17.113.3; 20.55.4. Pliny *NH* 5.24 defines them as the result of intermarriage between Carthaginians and Libyans. See Hoyos 2010: 17; Lancel 1995: 288; Ameling 2011: 47.
[183] Intermarriage: Pliny *NH* 5.24.
[184] Polybius 1.33.6.
[185] Polybius 1.30.1.
[186] Polybius 1.73.1-2.

mercenaries. Polybius does not give a breakdown of this figure, but the implication was that the citizen phalanx and cavalry together consisted of only a few thousand men.[187]

Some Carthaginian citizens comprised Hannibal's second line at Zama, which consisted of a mix of Libyans and Carthaginians, according to Polybius.[188] The exact strength of this line is not known, but was likely between 10—15,000 troops, roughly equivalent to the first line of 12,000 mercenaries. [189] Still, factoring in Libyans and Libyphoenicians, citizen infantry would have comprised no more than a few thousand troops. At Zama, Carthaginian cavalry did play a key role, with perhaps 2000 citizen cavalry filling out Hannibal's right wing.[190]

Carthage's neglect of citizen troops in the third century stands in stark contrast to the state's imperial activities of the fifth and fourth centuries. Still, the Carthaginian infantry corps seems to have been quite modest. 10,000 Carthaginian citizens deployed against Timoleon in 340.[191] The core of this force was the sacred band, some 2500 soldiers, seemingly modeled on Greek professional citizen units.[192]

Yet by the third century, Carthage shifted away from the deployment of citizen troops. The sacred band is last attested in 310, in the war against Agathocles, and is conspicuously absent from the narratives of the Punic Wars.[193] Carthage struggled to mobilize a few thousand troops during emergencies in the third century; Hamilcar's forces during the Truceless War numbered only 10,000, including mercenaries as well as citizen infantry and cavalry. It is clear that something had changed between the 340s and the 240s.[194]

The most probable explanation may be that as Carthage was able to field larger and larger armies, the citizen component became less and less essential, to the point that little effort was made to maintain any substantial citizen infantry force. The 10,000 citizens fighting against Timoleon in the 340s were only a small fraction of an army of 70,000. It was no great leap to simply transition into an entirely mercenary force.

Changes in the nature of Carthaginian imperialism in the fourth century may also explain the transition. As C.R. Whittaker has noted, by the early third century, Carthage transitioned from supporting joint Punic endeavors abroad to carving out a territorial, agrarian empire of her own in Libya.[195] Even if Whittaker's categorization of the phases of Carthaginian imperialism is overly schematic and heavily influenced by late 20th century Marxism, it does seem that by the First Punic War, Carthage was in control of the Libyan hinterland (or at

[187] Polybius 10.73.3.
[188] Polybius 15.11.2; Appian *Pun.* 40.
[189] Polybius 15.11.1.
[190] Polybius 115.11.3 refers to Carthaginian cavalry on the right; Appian *Pun.* 40 gives Hannibal 4000 horse altogether. If all the "Carthaginians were citizens, this would suggest around 2,000 in all.
[191] Plutarch *Timoleon* 27.4-5.
[192] Diodorus 16.80.4.
[193] Last mention of the sacred band: Diodorus 20.10.6.
[194] Polybius1.75.2.
[195] Whittaker 1978.

least seemed to be in control, before these illusions were firmly dispelled by the Truceless War).

The rise of a territorial empire in Libya had several implications. Firstly, with the pacification of the Libyan countryside, citizen-soldiers were no longer needed to maintain the same level of readiness and preparation; Polybius reports that by 241, despite 20 years of warfare with the Romans, Carthaginian citizens were no longer preparing for warfare, and as a result were forced to hastily rearm and retrain.[196] Furthermore, Carthaginian domination over Libya led to the incorporation of Libyan troops into Carthaginian forces, which in turn displaced citizen troops, who may in turn have been happy to be relieved of the burden of military service.

Substituting the military service of subjects from the imperial periphery for that of the more privileged groups from the imperial core is not an uncommon phenomenon in pre-modern empires. A similar process occurred, albeit on a different time scale, to Rome itself during the imperial period, eventually producing the "barbarized" army of the fourth and fifth centuries AD. Perhaps more analogous to the city state of Carthage was Sparta's trajectory in the fourth century, during which the vast majority of Spartan expeditionary forces to Asia Minor consisted of *perioikoi* and mercenaries, officered by Spartiates, just as Carthaginian armies in the third century consisted Carthaginian senior officers overseeing a mix of Libyans, foreign subjects and mercenaries.

Soldiers from Sparta's subjected hinterlands rose to prominence because of the shrinking size of Sparta's citizen body, and therefore we should inquire if the limited participation of Carthage's citizen troops might point to a restricted citizen population. Strabo reports that the population of Carthage in the 150s stood at 700,000,[197] yet this number remains a puzzle to historians. It is inconceivable that the male adult citizen population was 700,000, as this would imply a total citizen population of over two million (well over twice that of Rome!). Dexter Hoyos has suggested that the 700,000 should refer to men, women and children, which would posit an adult male citizen population of perhaps 160-180,000- roughly half the male citizen population of Rome, but still larger than any Greek *polis*.[198] I am inclined to discard this figure altogether. It is unclear what source Strabo could have taken it from, and the high number has the whiff of a wild invention rather than of any sort of number derived from official records. Unmoored from any reliable ancient source, estimates of Carthage's population vary widely:

Table 3.4: Modern Estimates of Carthaginian citizen population

Beloch 1889: 467	200-300,000
Kahrstedt 1913:23-4	125-130,000

[196] Polybius 1.71.1.
[197] Strabo 17.3.15.
[198] Hoyos 2003: 28-29.

Warmington 1964: 150	400,000
Huss 1985: 51	700,000
Ameling 1993: 205-6	90-225,000
Hoyos 2003: 226	700-800,000

Based on reports of citizen manpower, however, the overall citizen population was much lower than 700,000, even counting women and children. Plutarch reports that the death of 3,000 Carthaginian citizens at the Battle of the River Crimessus in 340 was "a grave misfortune for the city" μέγα τῇ πόλει πένθος, a misfortune that must have been demographic, rather than simply emotional. The loss of 3000 men would not prove devastating to a city with a citizen population of 700,000. Plutarch's statement makes more sense if the citizen population of Carthage was significantly smaller.

If one asked whether Carthage more closely resembled Athens (perhaps 100-150,000 citizens (men, women and children), with a citizen hoplite levy of c. 9,000 in addition to a large fleet) or Rome in population (1 million citizens, with a legionary muster of 20,000-80,000 in addition to a large fleet), the answer is certainly Athens, whose citizen body peaked in the fifth century at 60,000 adult males.[199] The Carthaginian citizen levy was only 10,000 in the fifth and fourth centuries, before it slipped to negligible levels in the third. Carthage was able to man a large fleet of 50-100 warships into the Second Punic War, although we do not know the extent of the citizen component of the fleet. Livy makes several references to subjects and what he dubs *socii navales* manning Carthaginian fleets.[200] Duilius could brag of capturing "freeborn Carthaginians," but these may have been a small number of men who officered the ships, rather than the bulk of rowers and marines. In short, Carthage placed limited emphasis on citizen soldiers simply because they were in comparatively short supply. If the citizen phalanx of 10,000 in the fifth and fourth centuries represents the full call-up of the Carthaginian levy, say 80 percent of males aged 18-35, then we would expect of total adult male population of at most 50,000, and perhaps a total population of 100-120,000.

With citizens in short supply, most of Carthage's African manpower was drawn from subject Libyan communities. In 218, there were 4000 Metagonian troops deployed in Carthage, and 12,300 Libyan and Libyphoenician forces in Spain. This was in addition to the troops in Hannibal's army. 12,000 Africans survived the Alps, out of 20,000 infantry; if we assume the original army consisted of 50,000 infantry, and that the losses among Africans were proportional, then this would imply a starting figure of 30,000 Africans. Thus, in total, there were about 45,000 Africans deployed in 219/18.

A muster of 45,000 when combined with sailors recruited from the coastal Libyphoenician cities (perhaps another 20-30,000 men), would represent a

[199] On the population of Athens, see discussion in Hansen 1988, who suggests Athens had a adult male citizen population of 60,000 in the age of Pericles, and 30,000 for much of the fourth century.
[200] Livy 21.50.4; 23.41.9; 26.20.9; Rawlings 2010: 270-271.

significant military mobilization if the total African population recorded in Carthaginian tax and muster rolls stood at Strabo's 700,000 men, women and children. Even if Strabo's figure is thrown out entirely, the order of magnitude for the total population of Carthage's African dominions was likely somewhat under one million, based on this military mobilization.

A single line of Livy suggests that the African levy was decentralized. Following Scipio's devastating raid on the camps, which wiped out much of both the Carthaginian levy and their Numidian allies, Hasdrubal Gesco, in conjunction with the Carthaginian senate, ordered "a levy in the city and agricultural hinterland--"*dilectus in urbe agrisque*.[201] We cannot rule out that Livy is imposing a Latin formula on his material, but we learn later that recruiting sergeants (*conquistores*) were spreading false rumors about the size of the reinforcement of Celtiberian mercenaries, in order to hearten recruits into thinking that they were not being impressed into a hopelessly lost cause. If Livy is correct, we can imagine a levy in the city, possibly to enroll citizens (and levies of contingents in the Libyphoenician cities), with officials then sent into the countryside to recruit Libyans from Carthage's territorial domain.

Mercenaries

The citizen population was a slim manpower base upon which to ground an imperial project. By the fourth century, Carthage realized that large numbers of mercenaries were necessary to supplement the citizen levy, even though the flashing white shields of the citizen phalanx made the greatest impression on Greek opponents in Sicily.

The armies of Carthage are often referred to as mercenary armies. While this is an overstatement, there is truth to this assertion.[202] With the decline of the citizen army, Carthaginian expeditionary forces during the time of the First Punic War are primarily mercenary in nature, drawing heavily on Gallic and Italian soldiers. Indeed, the Romans might have created ideal conditions for Carthage to recruit Italian mercenaries: disruptive conquests in both northern and southern Italy likely drove many South Italian and Gallic soldiers from defeated communities into Carthaginian service. Roman hegemony over the Italian peninsula limited opportunities for inter-state warfare between conquered Italian states and tribes, and members of the warrior elite may have increasingly turned to mercenary service abroad. The mercenary captain Spendius, an escaped Roman slave and one of the generals of the mercenary revolt in 241, represented at least one Italian mercenary driven into Carthaginian service to escape the Roman order.[203] The recent discovery of the wrecked Carthaginian fleet off the Egadi Islands has also revealed one way in which Italian mercenaries made their mark on the Carthaginian army of the period. Every helmet pulled off the sea floor (save one badly mangled piece) is a Roman-style Montefortino helmet.[204] This is puzzling, given that the battle was a clear Roman success. While a few Roman marines and their helmets certainly fell overboard in the fighting,

[201] Livy 30.7.8.
[202] See for example Taulbee 1998, who notes the generally high quality of Carthaginian mercenary soldiers, despite Polybius' critiques.
[203] Polybius 1.69.4-5.
[204] Tusa and Royal 2012.

the overall preponderance of Montefortino helmets, found in a debris field laden with Tunisian ballast stone and African produced amphora, indicates that Carthaginian forces in the middle third century were also using the Montefortino-model helmet. The helmet design, Gallic in origin, had already spread across Italy by the early third century; Italian mercenaries, it seems, had brought the design to Carthaginian armies in Sicily.[205]

Gauls, Ligurians and Italians:
The treaty with Philip V explicitly mentions "cities and peoples in Italy, Gaul, and Liguria, with whom we are in alliance or with whomsoever in this country we may hereafter enter into alliance," indicating that by 215 the Carthaginians considered these peoples firmly within the Carthaginian imperial orbit.[206] It is notable that the parts of Italy claimed as under the new Carthaginian hegemony were regions of traditional mercenary recruitment. It could be argued that Hannibal's grand strategy during the Second Punic War was to bring peoples in the outer sphere of Carthaginian influence firmly into the constellation of Carthaginian imperial control. Mercenaries already within the Carthaginian army likely proved an important source of diplomatic intelligence to aid the process. In particular, Hannibal was well informed about political conditions in Gaul, and invaded Italy on the premise that Gallic tribes in the Po Valley, reeling under the impact of Roman colonization in the region, would eagerly take up arms against Rome. The most likely source for this information was Gallic mercenaries serving with him in Spain. Thus, the mercenary recruitment networks developed during the First Punic War helped to determine the alliance pattern of the Second.

Iberia:
The defeat in the First Punic War, coupled with the near catastrophe of the Truceless War, led Hamilcar to seek a new territorial power base in Spain, a source of silver and, more important, competent and militarized young men. Just as imperial control over Libya allowed Carthage to reduce its reliance on its citizen troops, the acquisition of a territorial empire in Spain allowed Carthage to wean herself from mercenaries. Mercenary troops, were still used, but they increasingly proved a mere supplement to the new font of Iberian manpower.

Most Iberian forces were recruited through compulsion, the most basic mechanism of which was the collection of hostages, both male and female. These hostages, and the loyalty they mandated from home communities, made them the prime target of Scipio's daring raid on New Carthage in 209. The "continent" courtesy he displayed afterwards when the hostages fell into his politically astute hands was itself part of a larger strategy to reduce Carthage's manpower pool in Spain.[207] Recruiting was likely mostly facilitated through demands on Iberian communities for contingents, although Livy also reports the direct use of recruiting sergeants (*conquistores*).[208]

---

[205] Spread of the Montefortino in Italy Burns 2003: 73-75, 83. I am grateful to Jonathan Prag for pointing out the puzzle of the Montefortino helmets on the Egadi seafloor.
[206] Polybius 7.9.6.
[207] Polybius 10.18.
[208] Livy 21.11.13. It is interesting that the only usage of this word in Livy occurs in a Carthaginian context.

Spanish manpower was the lynchpin of Carthage's efforts in the Second Punic War. Prior to 206, there were upwards of 50,000 Iberian soldiers serving under Carthaginian commanders in Spain. Some 19,000 Iberian troops provided the garrison for Carthage, and Hannibal had approximately 8000 Iberians with him in Italy in 216, although their numbers declined through casualties and wastage.[209] The numbers of deployed Iberians fluctuated because Carthaginian commanders in Spain mustered, furloughed, and discharged Iberian warriors as needed, but the maximum mobilization of Iberian warriors was approximately 75,000. Prior to 206, therefore, Iberians likely made up roughly half of all military soldiers serving in Carthaginian armies.[210]

Numidia:

On occasion, Carthage had attempted to exert its hegemony over the Numidian tribes on its western frontier, but such control was fragile at best, and usually an illusion. While certain Numidian groups were from time to time compelled to provide tribute, their service in Carthaginian armies is best described as that of semi-independent allies (although many individuals certainly served as mercenaries). Take, for example, the Numidian chieftain Naravas, who provided a much-needed brigade of 2000 cavalry during the Truceless War. Naravas' motives, according to Polybius (1.78.1-2) were that "he had always possessed the ancestral attachment to the Carthaginians customary in his house, which was strengthened through his admiration of general Hamilcar" οὗτος ἀεὶ μὲν οἰκείως διέκειτο πρὸς τοὺς Καρχηδονίους πατρικὴν ἔχων σύστασιν, τότε δὲ μᾶλλον παρωρμήθη διὰ τὴν Ἀμίλκου τοῦ στρατηγοῦ καταξίωσιν. Hardly an obedient subject fulfilling mandatory levy, but rather a self-confident aristocrat responding to horizontal ties with the Carthaginian elite, even as the power of the Carthaginian state waned.[211] The marriage connection between Syphax and Hasdrubal Gesco, mediated through the doomed beauty Sophonisba, was perhaps the most prominent illustration of this dynamic.

Peeling the Onion

Roman offensive strategy during the Second Punic War therefore targeted the two fonts of external manpower: Even as Hannibal trounced Roman armies in Italy, the consul Publius Scipio joined his brother Gnaeus in Spain, initiating a twelve year campaign, which his son completed after the death of his father and uncle.

Even as the fighting in Spain continued, Scipio Africanus grasped the importance of splitting the Numidian groups away from traditional diplomatic links with Carthage, and he went so far as to make a dangerous voyage to Africa in order to meet with the chieftain Syphax.[212] Given the central importance of Numidian manpower to Carthage, the trip was well worth the risk, even if Syphax ultimately fell back into Carthage's orbit.[213] To have split Syphax from Carthage would have meant turning tens of thousands of soldiers from the

[209] 19,000 Iberians sent to Spain: Livy 21.21.12. 800o in Hannibal's army in 216: Polybius 3.56.4.
[210] For additional discussion on Carthage's Iberian soldiery, Ameling 1993: 212-13.
[211] Ameling 2011: 48.
[212] Livy 28.17-18.
[213] Scullard 1970: 97.

Carthaginian to the Roman side. The Carthaginians understood this well, hence the diplomatic counter-offer of marriage to the daughter of the leading Carthaginian general in Spain, Hasdrubal Gesco.

After invading Africa in 205, Scipio focused on the destruction of Numidian and Carthaginian field armies; the decisive campaign came in 203, when his legate Gaius Laelius defeated and overthrew Syphax, whose troops constituted the last major reserve of Carthaginian manpower outside Libya proper.[214]

The success of this long-term Scipionic strategy validates in part Polybius' fundamental criticism that Carthage's over-reliance on foreign troops proved detrimental to the success of her imperial project. Polybius argued that Carthaginian mercenaries would be less patriotic than citizen troops, though his own narrative provides ample evidence against this claim: the Celtiberian mercenaries at the Battle of Great Plains fought to the death, even as the remainder of the Carthaginian force fled. At Zama it was Hannibal's veterans (mostly Spanish, Gauls and Italians) who persisted as the line of citizen and Libyan infantry collapsed.

But the use of foreign troops posed a greater problem: the manpower core of Carthage's empire was hollow. Rome only had to detach periphery after periphery (Sicily, Spain, Sardinia, Numidia etc.) in order to strip away Carthage's enormous reserves of manpower. Hannibal had likewise tried to peel the onion of Rome's subject populations, with some success, given the rebellion of Southern Italy and the shocking defection of Capua.[215] But even so, Rome still had a quarter of a million adult male citizens, a bulwark that was able to sustain the fight.

Still, Carthage endured massive losses that would bring a modern nation state to its knees, and was certainly able to deploy more troops than any other Mediterranean state, excepting Rome. It is unclear if the "cloud in the West" referenced by an Aetolian diplomat referred to Rome or Carthage, but third century Carthage was the only other imperial power of the period with the potential to achieve Mediterranean hegemony.[216]

III. Military Organization:

The fourth century Carthaginian army was organized around a 10,000-strong citizen phalanx, with citizen troops fighting in the style of Greek hoplites, with large round shields and body armor.[217] The elite Sacred Band formed a battalion within the greater phalanx, and mercenary and allied units were deployed around the citizen troops.

The near elimination of the citizen cadre by the end of the fourth century likely meant that field forces continued to be organized around phalanxes of Libyan/Libyphoenician troops. Carthaginian armies during the third century were highly heterogeneous, given the changing composition of subjects,

[214] On the final campaign against Syphax in 203, see Scullard 1970: 131-33; this action was anti-climatic, if decisive. It is true that Syphax's son Vermina arrived in Carthage with some Numidian cavalry still loyal to him, but this prove too little, too late, and this vestigial force was swept aside by Scipio's vanguard.
[215] On Hannibal's strategy against Rome, Fronda 2010: 38-39.
[216] Polybius 5.104.
[217] Plutarch *Timoleon* 28.1.

mercenaries, and allies within any given force. By the Second Punic War, Carthage essentially had three armies: 1) An essentially standing army under Hannibal, in the field continuously for sixteen years by 202, and likely more loyal to its general than to the Carthaginian state. This force initially consisted of a African cadre and a large number of Iberian forces; it was heavily supplemented by Gauls from Northern Italy during the first part of the invasion, but later in the war was composed predominantly of South Italian peoples recruited over the years to replaced African and Iberian troops lost in action or wasted by disease. 2) In the Iberian Peninsula, there were three modest armies, each organized around a shrinking Libyphoenician cadre, and a small number of Balearic slingers and Numidian cavalrymen, but consisting mostly of endless drafts of Iberian subjects. Finally, the defense of Africa was entrusted to a garrison of Iberians, Libyphoenician units, and sizable numbers of Numidian allies. The consolidation of Syphax's kingdom, an indirect result of the war, meant that the Carthaginian state recruited Numidians in larger numbers than ever before. Previous recruitment involved men like Navaras, a local chieftain, bringing with him a troop of followers and clients. With the creation of two competing proto-kingdoms under Syphax and Massinissa, Carthage now had to play a delicate diplomatic game to ensure that at least one kingdom was willing to provide troops, while avoiding attacks from the other.

The last great Carthaginian army, commanded by Hannibal at Zama in 202, represents a curious amalgam of Carthaginian manpower strategies. 12,000 mercenaries formed the first of three infantry lines; Libyans and Carthaginian citizens formed the second; while Hannibal's veterans formed the third. Hannibal's cavalry was supplemented by the 2000 strong force provided by the chieftain Tychaeus--another example, in the mold of Navaras, of horizontal links between semi-autonomous Numidian barons and Carthaginian commanders.[218]

The diverse manpower sources of the Carthaginian army also meant equivalent diversity in arms, equipment, and fighting styles. Carthaginian citizens fought in the manner of Greek hoplites, with body armor, large round shields, and thrusting spears; the Libyans seem to have fought in a similar manner. Hannibal's second battle-line at Zama, consisting of African recruits both citizen and Libyan, formed an impenetrable hedge with its spears, implying massed ranks in a manner similar to a Greek-style hoplite phalanx.[219]

Iberian warriors fought primarily with javelins and swords. Fernando Quesada-Sanz has argued that the fighting styles of many Iberian warriors were little different from those employed by Roman and Italian forces (which may explain Roman enthusiasm for Spanish swords). [220]

We are told that Hannibal rearmed his polyglot forces with Roman equipment captured from his various victories; the increased recruitment from southern Italian populations late in the war also gave his forces an increased Italian character in terms of equipment and fighting styles. Hannibal seems to have adopted at least one element of Roman tactics at Zama: the division of his

[218] Polybius 15.13.4-5.
[219] Polybius 15.13.10.
[220] Iberian javelins: Livy 28.2. Similarities between Iberian warriors and Roman infantrymen, Quesada-Sanz 2006. On the adoption of the Spanish sword by the Romans, Quesada-Sanz 1997.

forces into three lines, although there is no evidence that he adopted manipular sub-division of his forces, which fought as solid phalanxes.[221]

Conclusion:

Carthage achieved a maximum mobilization of more than 170,000 during the Second Punic War, a figure that matched and may have exceeded total Roman mobilization during the conflict. The scope of such strategic mobilization allowed Carthage to wage war against Rome on multiple fronts and to sustain enormous casualties. Had Carthage won the war, the ability to muster forces on such a grand scale would have been a primary reason for victory.

But Carthage did not win. Was Roman manpower in some ways qualitatively superior? On the tactical level, the answer would be an emphatic "no," especially given how Hannibal's experienced and well-commanded army repeatedly smashed Rome's amateurish forces. Yet on the strategic level, we see liabilities in Carthage's manpower strategies. Taking a cue from Wallerstein, we can divide the Carthaginian state into a "core" which consisted only of her small citizen body, an inner periphery in Libya, and an outer periphery that included Numidia, Spain, Sicily, Sardinia and Corsica, and mercenary hiring grounds in Italy and Gaul.[222] Carthage mobilized large numbers of high quality troops from peripheral regions, but her core was hollow: the citizen body was at once less militarized than the Romans, but it was also substantially smaller. While the troops mobilized on the periphery performed well on the battlefield, they were also easier for opponents to detach. Peeling away Carthage's "onion" was the key to Roman victory during the war. While Hannibal adopted a similar strategy in Italy, he made only limited in-roads on the Roman periphery and proved unable to crack the sizable core of citizen manpower. Meanwhile, the Romans peeled off periphery after periphery, until by 202 there were little left of the center.

[221] Polybius 15.11.1-3.

[222] Wallerstein 1974. On the application of the "core-periphery" model to ancient empires, see Woolf 1990, who suggests its applicability to the Roman Empire.

Chapter 4: Macedonian Manpower

The Macedonian state literally created the Hellenistic world. The death throes of Alexander's transient empire nearly destroyed the Macedonian state. For a brief period in the 280s, Macedonia ceased to exist as a political entity, partitioned between two warlords, Pyrrhus and Lysimachus. The ascent of Antigonus Gonatas, who had been a bit player in the bloody wars of the successors, restored the Macedonian kingdom, although one ravaged by wars, emigration, and the horrors of the recent Gallic invasion. Under the Antigonids, Macedonia was reconstituted as a formidable regional power. Nonetheless, it became the first major Hellenistic kingdom eliminated by the Romans.

I: Power Effective:

We get our first significant information about Macedonian military strength in the third century in Polybius' report of the Battle of Sellasia in 222, which represents the first Macedonian army assayed in detail by any source since the Age of the Successors:[223]

Table 4.1: The Macedonian Army at Sellasia, 222

Macedonians:		
Phalangites:		10,000
Peltasts:		3000
Cavalry:		300
Subjects:		
Gauls:		1000
Agrianians:		1000
Mercenaries:		
Greek infantry:		3000
Greek cavalry		300
Allies:		
Epriots:	infantry	1000
	cavalry	50
Achaeans:	infantry	3000
	cavalry	300
Acarnanians:	infantry	1000
	cavalry	50
Boeotians:	infantry	2000
	cavalry	200
Illyrians:		1600

Total: 27,600 infantry, 1200 cavalry

[223] Polybius 2.65.1-5. Polybius, in adding up the contingents, rounds the infantry figure up to 28,000.

The army of Antigonus Doson was an expeditionary force. The future of the Macedonian state was not in jeopardy at Sellasia, and so we do not see a maximum mobilization of Macedonian or allied manpower for this battle.

A similar expeditionary force sallied forth less than two years later, under the command of the new king, Philip V, who marched to the Peloponnese with 10,000 heavy infantry, 5000 peltasts, and 800 cavalry.[224] With the addition of the Epirote levy, probably similar to the 1000 infantry and 200 cavalry employed at Sellasia, and 300 Achaean slinger and 500 Cretan archers, Philip commanded a force of roughly 20,000 soldiers, somewhat smaller to Doson's army at Sellasia, but still a substantial force, comparable in size to a Roman consular army. [225] In addition, an independent allied Achaean army of 5000 infantry and 500 cavalry brought the total forces deployed against the Aetolians during the Social War to over 25,000.[226]

Philip's second expeditionary force in 218 was significantly smaller. Now Philip brought a mere 3000 heavy phalangites, 2000 peltasts, 400 cavalry and 300 Cretan mercenaries, relying on his allies to provide the remaining manpower.[227]

K. Rosen, in an unpublished dissertation, has argued that this alternative mobilization perhaps represents the cycle of how kings mobilized the Macedonian citizen's militia.[228] Postulating that the standard mobilization of the citizen's militia was roughly 3000-4000 men from each of the four regional divisions, Rosen suggested that a Macedonian king under normal circumstances did not mobilize the manpower of a single district for more than one year; therefore in 220/219, he mobilized three districts (10,000 heavy phalangites); the next year he mobilized only one. In 217, we know he mobilized three districts: Upper Macedonia, Bottia and Amphaxitis, which under this theory were the recruiting grounds that had been "rested" the year before. If each district provided 3000 to 4000 men, this might suggest a total mobilization of 10,000-12,000 men. [229]

Rosen's unpublished model, embraced and disseminated by Miltiades Haztopoulos, does elegantly explain the surprising shifts in Macedonian mobilization apparent in Polybius' narrative. This form of mobilization only seems to apply to external, offensive operations, however, the "wars of choice" undertaken by the Macedonian king. Repelling direct threats to Macedonian territory, such as the Roman invasions of 200 and 171, required a near complete utilization of Macedon's internal resources. In 200, to meet the initial Roman invasion, Philip mustered a force of 20,000 infantry and 2000 cavalry, although this required him to strip down the garrisons that guarded the passes with Illyria.[230]

---

[224] Polybius 4.37.5
[225] Slingers and Cretans: Polybius 4.61.2
[226] Polybius 4.15.3.
[227] Polybius 4.67.5.
[228] The argument in K. Rosen's unpublished 1970 dissertation (n.v.) is reiterated by Hatzopoulos 1996: 454-55.
[229] Polybius 5.97.3. Hatzopoulos 1996: 455.
[230] Livy 31.34.7.

For the final showdown at Cynoscephalae, Philip put together an even larger army, although this required him to recruit boys as young as 16 years of age and old men:[231]

Table 4.2: The Macedonian Army at Cynoscephalae

Macedonian Phalangites:	16,000
Macedonian Peltasts:	2000
Cavalry:	2000
Thracian Peltasts:	2000
Illyrian Peltasts:	2000
Mercenaries:	1500

Total: 23,500 infantry, 2000 cavalry

In addition, Philip was obliged to maintain multiple powerful garrisons, which severely detracted from the strength of his field force. Livy provides details of two of these garrisons during the Second Macedonian War.

Table 4.3: Macedonian Deployments, 197

Asia Minor	
Macedonians:	500[232]
Troops drawn from garrisons:	c. 2600
Total:	3100[233]
Corinth	
Macedonians:	1500
Illyrians:	1200
Thracians and Cretans:	800
Various Nationalities:	800
Boeotians, Acarnanians, Thessalians:	1000
Corinthians:	700
Total:	6000[234]

To the 9100 soldiers in garrisons where troop strength is attested, Hammond and Walbank estimate the garrison of the other "fetters," Chalcis and Demetrias, at roughly 5000 apiece, similar to the attested garrison at Acro-Corinth. Macedonia's total garrison strength during the Second Macedonian War was therefore likely in the neighborhood of 20,000.[235]

---

[231] Strength at Cynoscephalae: Livy 33.4.4-6. Recruitment of youths and old men: Livy 33.3.2-4. *ita et tirones ab sedecim annis milites scribebat, et emeritis quidam stipendiis, quibus modo quicquam reliqui roboris erat, ad signa reuocabantur.* The so-called description Diagramma confirms Livy's report, on which see Chrysafis 2014.
[232] Livy 33.18.9.
[233] Livy 33.18.13. Livy only lists the 500 Macedonians, but notes that the total strength was roughly 3000 infantry and 100 cavalry.
[234] Livy 33.14.1-6.
[235] Hammond and Walbank 1988: 431

Thus in 197, Phillip was able to muster approximately 45,000 troops, with roughly half stuck in garrison duty. 24,000 of these troops are identified in the sources as "Macedonians," which here should probably imply ethnic Macedonian citizen forces. This is an impressive figure, all the more so because the Romans were only able to send a two-legion consular army to Macedonia, and each of these legions seems to have been only 4200 strong, given that Roman manpower was still exhausted by the losses and deployments of the Second Punic War.[236] It is doubtful that Roman forces, counting allies and garrisons, exceeded 35,000 men. Philip therefore enjoyed a theater-level advantage in manpower during much of the conflict.

Phillip's losses at Cynoscephalae were heavy. 8000 Macedonians perished, and another 5000 were captured.[237] This was well over 50% of his main field army and perhaps a third of his mobilized manpower. At around the same time, the garrison at Corinth was defeated by the Achaeans with a reported loss of 1500 killed and 300 prisoners,[238] while the Rhodians and Achaeans badly thrashed the Macedonian garrison in Asia Minor.[239] Despite heavy losses, Phillip was still able to disengage himself and turn north to successfully repel a Dardanian invasion, in command of a small force of 6000 infantry and 500 cavalry.[240]

An entire generation passed between the disaster of Cynoscephalae and the end of the Macedonian monarchy. Both Phillip V and his successor Perseus worked hard to regenerate and reorganize Macedonia's internal resources.[241] According to Livy (42.15), Perseus raised the following force to meet the Roman invasion in 171:

Table 4.4: Macedonian Army at Pydna, 168

Macedonians:	
Macedonian Phalangites:	21,000
Macedonian Peltasts:	5000
Macedonian cavalry:	3000
Subjects:	
Paeonians and Agrianians:	3000
Gauls:	2000
Mercenaries:	
Aetolians and Boeotians:	500
Cretans:	3000
"Free" Thracians:	3000
Odrysian Thracians:	2000

[236] For the strength of the Macedonian legions, see Taylor 2014a: 313.
[237] Polybius 18.27.6; Livy, 33.10.10 discounts the inflated casualties of other annalists in favor of those reported by Polybius.
[238] Livy 33.15.16.
[239] Livy 33.18.
[240] Livy 33.19.3
[241] On this "internal balancing," see Eckstein 2008: 358-59.

Livy reports a total of 39,000 infantry and 4000 cavalry, claiming this is the largest Macedonian army ever assembled since the time of Alexander.[242]

One major cause of the increase in the size of the field army was the reduced need for garrisons following the settlement that ended the Second Macedonian War. Note, for example, the increased number of mercenaries in the army: Philip V had only 4500 mercenaries in his field army at Cynoscephalae (assuming the Thracian and Illyrian peltasts were hired troops, in addition to the 1500 Greek mercenaries); although he likely had another 15,000 or so mercenaries stuck in his garrisons. Perseus deployed 8500 mercenaries in his field army, likely a product of his reduced garrison requirements.[243] The loss of the super-garrisons at the "fetters" of Acro-Corinth and Chalcis would alone free approximately 6000-10,000 men in times of war, and perhaps 1500-2000 full time soldiers in times of peace (Philip V had been allowed to re-garrison Demetrias after the war with Antiochus III). The reduction of Macedonian imperial holdings had freed both mercenaries and Macedonians for homeland defense, allowing Perseus to muster a field army larger than any of his predecessors had been capable of fielding, and which almost certainly outnumbered the consular army sent by Rome.

The number of ethnic Macedonians in Perseus' army also increased substantially. Livy reports significant population increases in the generation from Cynoscephalae and Pydna, although this may simply reflect paranoid Roman propaganda about the dangerous state of Perseus' kingdom.[244] Some population growth does seem plausible: Philip was only able to field 25,000 Macedonian infantry and cavalry through the recruitment of boys and old men into his forces, whereas Perseus mustered 29,000 without recourse to similar desperate measures.

In all, Perseus had 43,000 in his field army. Some additional troops may have served as garrison forces, although many of the large-scale garrisons encountered by the Romans seem to have been detachments from the field force. For example, 2000 peltasts at Thessalonica and the 5000 Macedonian in Pytho and Petra in 168, which presumably were recalled back into the field army as Perseus fell back towards Pydna.[245] Perseus was quick to consolidate his garrisons into his field army as needed, especially as the Romans threatened the Macedonian heartland.[246] Other garrisons seem to have been standing, for example the 2000 Thracians still at Eumathia.[247] As such, we should round up our estimates of the maximum mobilization up, and assume Perseus had at least 45,000 troops under arms in 168. It is not impossible that his strength exceeded approached 50,000.

A particularly important supplement for Perseus' own forces came through an alliance forged with Genthius, the king of the Ardean Illyrians, a pact sealed with a promised payment of 300 talents. Genthius was able to field a force

[242] Livy 42.51. Hammond and Walbank 1988: 515.
[243] Both Macedonian wars took place in a saturated market for mercenary hires, thanks to the Fifth Syrian War (203-198) and Sixth Syrian War (171-168), which would have drawn off much of the mercenary labor force in the Eastern Mediterranean.
[244] Livy 39.24.3-5.
[245] Livy 44.32.
[246] Livy 44.6. 17.
[247] Livy 44.44.

of some 15,000, sufficient to occupy a praetorian army at a time when the Romans themselves were pinched for manpower, a force that otherwise would have been free to operate concurrently in Macedonia. While Genthius was ultimately defeated, his forces kept a two legion (c. 25,000) Roman army busy in Illyria, troops which otherwise might have been deployed against Perseus.[248]

Perseus also sought to hire mercenaries from one Clondicus, a chieftain of the Danubian Basternae. Supposedly Clondicus offered the support of 20,000 mercenaries, a number much exaggerated in the telling. Whatever the size of the horde, Perseus balked at the price demanded, and proved leery of admitting such a force of barbarians into the kingdom.[249] Ancient sources tended to turn this incident into a parable against Perseus' supposed cheapness, although Perseus' policy here was likely more nuanced. [250] The admission of so many warriors into the kingdom (even if the numbers in the sources are inflated) amounted to a small-scale *völkerwanderung.* Both Philip and Perseus had proven open to seeding under populated regions with immigrant populations; nonetheless, admitting such a large armed group of barbarians while the Macedonian army was fixed shadowboxing the Romans hardly amounted to prudent policy.

The final defeat at the battle of Pydna inflicted terrible carnage upon the Macedonians, who suffered as many as 20,000 killed, and a further 11,000 captured.[251] Even if these numbers are exaggerated, given the late-annalistic tint Erdkamp detects in the narrative (one of the hallmarks of which is unrealistically high casualty figures) there is every reason to believe that the massacre at Pydna was a demographic catastrophe, resulting in the death of a significant portion of Macedonian males.[252] Macedonia could not recover from these losses, and Perseus surrendered shortly afterwards, ending the Antigonid dynasty.

The disasters of Cynoscephalae and Pydna suggest that the kingdom of Macedonia was essentially one battle away from defeat. Antigonus Doson and Philip V had both limited the number of Macedonian troops deployed to the Peloponnese to fight the Cleomenic and Social Wars, in part a demographic strategy to minimize the potential impact of defeat. A maximum mobilization proved necessary to protect the homeland from Roman invasion, escalating the consequences of a tactical defeat. The kings of Macedonia, particularly Phillip V and Perseus, were well aware of their weaknesses in manpower, even before the disastrous confrontations with the Romans. In a set of letters to the Thessalian city of Larissa, in 215 Phillip V exhorted the city to expand its citizen body by promoting resident Greeks and Thessalians to full citizenship, explicitly citing the example of Rome. Although his knowledge of Roman institutions was imperfect, he was aware that slaves in Rome can obtain citizenship (although he wrongly believes they might hold office), and he admiringly cited Roman

[248] Hammond and Walbank 1988: 537-537
[249] Hammond and Walbank 1988: 535-6.
[250] Plutarch *Aemilius* 12.6.
[251] Livy 44.42.7. Erdkamp 2006: 545 has noted that these high casualty figures bear the marks of an annalistic account, and notes other "late annalistic" features in both Livy's and Polybius account (i.e. mention of the Italians, and references to numbered legions). Even if this figure is exaggerated, there is no reason to think that Macedonian casualties were anything but devastating, and with demographic significance to the small kingdom.
[252] On the importance of the massacre of defeated opponents in Roman warfare, Sabin, 2000: 5,9.

colonization policy (although he incorrectly numbered Roman colonies at 70, double the actual figure).[253] The letter nonetheless attests to the fact that Philip was capable of thinking about the impact of demography on the military power of his kingdom. Philips seems to have matched his words with deeds: Perhaps in emulation of Roman colonial enterprises, he furthermore settled a large number of Thracians in Macedon, 3000 of whom from Heraclea Sintice are perhaps present in the ranks of Perseus' army.[254] Pannonians and Illyrians were also settled within the boundaries of Macedon; these may represent either settled mercenaries or the forced relocation of troublesome tribes.

Population: These military mobilizations represent our best evidence of the population of Macedon. Even under Alexander the Great, there were never more than 30,000 Macedonians on active service, while we have seen how under the Antigonids 29,000 seems to have been the maximum mobilization under emergency conditions.[255] This suggests a small total population of Macedonian citizens, perhaps no more than 300,000 citizen men, women and children, and certainly less than half a million. Richard Billows has suggested a higher figure, arguing for a population from 1-1.5 million in the late fourth century, with some undetermined drop following the Gallic invasions. This is based on his rough estimate of Macedonia's carrying capacity (or, more accurately, on his application of P.A. Brunt's estimate of the carrying capacity of Italy to the surface area of Macedonia).[256] There are, however, reasons to believe that Macedonia's carrying capacity was in fact significantly lower than Italy's, in part due to heavy forestation and lower rates of agricultural reclamation.[257] To account for the small size of Macedonian military mobilizations, Billows postulates the presence of an enormous number of slaves and serfs, who were incapable of military service, suggesting a situation similar to the *penestai* of Thessaly and the helots a Sparta.[258] We should be cautious in imagining an enormous class of subjected peoples, especially given that our information about Macedonia is relatively good,. No underclass is mentioned in the ample literary sources. More tellingly there is no record of such a population in the epigraphic record. Furthermore, Philip's recommendations to the city of Larissa, admiring the Roman habit of giving citizenship to free slaves, would have been ludicrous had there been a sizable population of disenfranchised Macedonian underclass that was unable to serve in the army (although Philip may well have had the Thessalian *penestai* in mind in his pointed hints at the Thessalians). There was certainly a servile population in Macedonia, but in all most of the population of the region seems to have been comprised of free citizens, the *Makedones*. The great problem for the Antigonid dynasty was that there were simply not enough of them; it is doubtful that even in 171, when the kingdom was by all accounts flourishing, there were more than 100,000 adult citizen males, and perhaps no more than 35,000 of military age.

---

[253] IG 9.2.517/Syll.^{3} 543.
[254] Livy 39.24,
[255] Hammond 1989: 68, for a reconstruction of Macedonians deployed 334-323 BC.
[256] Billows 1995: 202-204.
[257] For a physical overview of the Macedonian kingdom, see Thomas 2011.
[258] Billows 1995: 201.

II. Military Organization:

Citizen Soldiers

The core of the Macedonian army was the citizen phalanx. These were amateur soldiers who served part-time stints; as discussed above, it seems that under normal circumstances they served for only one year and were then furloughed the next, no doubt to minimize the impact of military service on the Macedonian peasantry. In many instances, they might not even serve the entire year under arms, but might be furloughed for the winter, saving the king the cost of pay and provisions, and allowing the men to tend to their holdings.[259]

Politically, the Macedonian citizen played only a marginal role in royal politics. The army assembly had enjoyed a ceremonial role in the acclamation of new kings and in roaring their assent to guilty verdicts at royal trials, although the role of the assembly in these events was as an enthusiastic and obedient audience rather than independently minded electorate; in this sense there was a wide gap between the Macedonian and Roman citizen soldier. [260]

A passage of Curtius, however, suggests that the citizen troops of the Macedonian in at least one instance did play a role in the election of chiliarchs. As with much of the vulgate aspect of Quintus Curtius, the reliability of the report is open for debate. Nonetheless, Curtius reports:

ingens militum turba convenerat egregio interfutura certamini, testis eadem cuiusque factorum et de iudicibus latura sententiam: quippe verone an falso honos cuique haberetur, ignorari non poterat.[261]

A large body of soldiers convened to have a share in the glorious contest, as a witness to the deeds of each candidate and a source of advice to the judges. They could not be ignorant whether the office went to any man justly or falsely.

Hatzopoulos argues that while Curtius treats this as a one-time contest invented by Alexander to keep his soldiers motivated, it likely reflects an ongoing practice of the Macedonian citizen's militia, akin to the election of centurions in the Roman army. [262] Plutarch notes that during the Wars of the Successors, the Macedonian army became "a mob riven by demagoguery so as to elect its generals, as in democracies" δημαγωγούμενον ἐφ' αἱρέσει στρατηγῶν ὄχλον, ὥσπερ ἐν ταῖς δημοκρατίαις. Plutarch attributes this incident to the breakdown of discipline in the Macedonian ranks following the death of Alexander. These two reports, however, may suggest an entrenched underlying practice. Many of these elections were no doubt acclamations of royal appointees, but the ability of soldiers to cheer or stay sullenly silent nonetheless would have caused a king to think twice about putting forward a less than competent official, even if there was no constitutional question of the soldiers overriding the will of the king. The freedom of speech of Macedonian citizens was on display during a courtly struggle early in Philip V's reign, when the peltasts petitioned the king to delay the trial of their commander Leontius until they might be present as a unit—certainly on the hope that the king would hesitate to condemn him to the boos of the assembled troops. While Philip

[259] Polybius 4.87.13.
[260] On the relatively impotent nature of Macedonian assemblies, see Anson 1985.
[261] Quintus Curtius 5.2.4.
[262] Hatzopoulos 1996: 458-59.

instead ordered the immediate execution of the hapless Leontius, Polybius notes that "with such freedom did the Macedonians always address their kings."[263] The participation of Macedonian soldiers in such ceremonies of approbation, along with the rare acclamation of the new king and occasional treason trial, set them apart from the mercenaries and other foreign troops in the Macedonian army.

Polybius is keen to note that Macedonian citizen soldiers were among the best soldiers in the Mediterranean:

> they are not only most intrepid in regular battles on land, but very ready to undertake temporary service at sea, and also industrious in digging trenches, just as Hesiod represents the sons of Achaeus to be "joying in war as if it were a feast.[264]

As Arthur Eckstein notes, "Polybius never says anything like this concerning Roman soldiers."[265] Likewise, Flamininus, following the failure of the siege of Atrax, in which sarissa armed Macedonians drove his legionaries out of the breach in the town wall, suspended operations, with the consul *minime aequo animo comparationem militum generisque armorum fieri patiebatur* "hesitant to suffer comparison between the quality of soldiers and armaments." One likewise thinks of Aemilius Paullus' claim that μηδὲ ἑωρακέναι φοβερώτερον καὶ δεινότερον φάλαγγος Μακεδονικῆς, καίτοι γε πολλοὺς οὐ μόνον θεασάμενος ἀλλὰ καὶ χειρισάμενος ἀγῶνας, εἰ καί τις ἄλλος "he had never seen anything as terrifying and awful as the Macedonian phalanx, and he had seen and commanded as many battles as anyone else."[266]The excellence of the Macedonian citizen militia owed to constant deployments, producing a militarized citizen body that readily adapted to military service.

The militia muster was territorially based, and there is good evidence that units were drawn directly from communities. In a letter to Philip V discussing the formation of a religious association of soldiers, servicemen list themselves as *Euiestai*, hailing from the same geographic region of Euia.[267] Livy describes a muster after the battle of Cynoscephalae conducted *per urbes*.[268] The organization of citizen soldiers along geographic lines does not surprise. If the Euia inscription is any indication, citizen units retained their identity in peacetime, so that it was possible to quickly mobilize them without the trouble of organizing units afresh, as the Roman did.

Subjects:

The territorial boundaries of Macedonia, particularly in the upland areas, contained some populations of non-Macedonian peoples, who fell under the direct rule of Macedonian kings, without being considered *Makedones.* After the Second Macedonian War, Philip settled some Thracians within Macedonian borders, perhaps in emulation for the Roman colonial program he referenced in his letter to Larissa.[269] Thus some (although certainly not all) of the Agrianians,

---

[263] Polybius 5.27.6 (Paton). πολέμῳ κεχαρηότας ἠΰτε δαιτί.
[264] Polybius 5.2.5-6. Paton.
[265] Eckstein 2006: 202-3
[266] Polybius 29.17.1.
[267] Hatzopoulos 1996, 95-99 and 455-56.
[268] Livy 33.19.1
[269] Livy 42.51.

Gauls, Thracians and Illyrians in Macedonian armies should be viewed as subjects rather than mercenaries.

We have, for example, the figure Onomastos, ἐπὶ Θράκης τεταγμένος. Didas the Paeonian, a member of the Macedonian court (trusted enough to be given the delicate task of murdering Demetrius) was also the *praetor regiis* in Paeonia, and commanded the Paeonian contingents in Peresus' army. [270] After the Second Macedonian war, Philip sent an official Livy dubs a *praefectus* to govern the Dolphians. The Gallic brigade at Pydna was commanded by a frontier aristocrat Asclepiodotus of Heraclea Sintica, and its soldiers may be identical with the Gallic settlers who Livy refers to as "enthusiastic farmers."[271] Thus the Thracians, Gauls, and Paeonians in Perseus' army should be seen as subjects, rather than foreign mercenaries. [272]

In the fourth century, one of the most important subject populations had been the Thessalians, who while not incorporated into Macedonia proper, were without question subjects to the Macedonian king, who held the concurrent and hereditary position as the *tagos* of Thessaly.[273] The society of Thessaly was staggeringly unequal, divided between a relatively small aristocracy and a mass of serf-like *penestai*. As a result, the main military resource of Thessaly was cavalry, a branch for which the Thessalian nobility was quite famous.[274] Some 2000 Thessalian cavalrymen had served with Alexander the Great in 332. Such a mobilization of Thessalian cavalry is never attested under the Antigonids, although they did form part of the royal cavalry corps. Philip V in defeat dispatched some 400 Thessalian cavalry to join the coalition against Nabis of Sparta.[275] Nonetheless, Thessalian cavalry do not seem to have played the same role in Antigonid armies as they did in the glory days of Alexander the Great.

The shortage of Thessalian cavalry may perhaps be linked to Philip's famous letter to Larissa, demanding the reinstitution of exiled citizens, and threatening to personally inspect the citizen rolls.[276] The fact that we hear of virtually no Thessalians serving in infantry units Rather, Philip was likely concerned with a closing of the Thessalian aristocracy, likely through the petty process of civic feuds and the resulting exiles, which had dramatically reduced the number of Thessalian riders available for duty.

A small number of Thessalian infantry turn up among the mercenaries staffing the Acro-Corinth, amongst the mercenaries. It may be that for those free Thessalian peasants that wanted to serve, or those *penestai* who escaped their lot, the easiest path towards a military career was mercenary service, with the Macedonian king being the closest and most convenient employer. Flamininus severed Philip's control of Thessaly, and while the Romans acquiesced to the return of Macedonian hegemony over the region after the Syrian War, no

[270] Livy 40.21.9 (as a praetor, presumably implying the duties of a provincial governor); elsewhere he refers to Didas as a *Paeoniae praefectus*, which in Late Republican/Early Imperial usage would also imply supervision of subject population.
[271] Livy 45.30.6.
[272] Plutarch, *Aemilius*, 18.6 lists the Thracians and Paeonians separately from the mercenaries.
[273] For an overview of the relationship between Thessaly and Macedonia, see Graninger 2010.
[274] On Thessalian cavalry in the time of Alexander, see Strootman 2012.
[275] Livy 34.26.
[276] Syll.^{3} 543; IG IX 2.517. Translation in Austin 2006: no. 75.

Thessalians are attested amongst Perseus troops at Pydna, likely attesting to the further demilitarization of the Thessalian nobility.

Mercenaries:

Foreign mercenaries formed a modest aspect of Antigonid field armies. At Sellasia, mercenaries (5000 infantry and 300 cavalry) accounted for roughly 20% of the total force. In 218, Philip's 1200 mercenaries accounted for roughly 16% of his total army of 7200. Some 8500 mercenaries in Perseus' field army during the Third Macedonian War constituted around 19% of the total force. In Macedonian field armies, therefore, we find mercenaries mostly supplementing the citizen troops, and generally providing 15-20% of the total strength of the field army; they are never the mainstay.

Mercenaries, however, were central to Macedon's imperial project as garrison soldiers. Under Rosen's postulate, kings hesitated to deploy citizen troops for more than a campaign season, which made long term occupation of strategic garrisons virtually impossible with citizen troops. Livy's description of Macedonian garrisons in 197 lists 9,100 garrison troops in Corinth and Asia Minor. 2,000 of these are Macedonian, many of them, in my opinion, the missing 3000 "other peltasts" who were not present at the Battle of Cynoscephalae. Another 700 are local levies of Corinthians impressed to defend stronghold. The remaining 6400 hundred are mercenary troops: Greeks (especially Cretans), Carians, Gauls, Illyrians etc.

The presence of Macedonian soldiers at the Acro-Corinth and in Asia Minor was likely a wartime measure designed to augment strategic garrisons with heavy infantry. It is doubtful that these Macedonians were a regular presence during times of peace. When Aratus captured the Acro-Corinth in 245, he captured only 400 Syrian mercenaries (who themselves may have been refugees from the chaos of the Third Syrian War).[277]

From the point of view of a Macedonian king, mercenaries were ideal for garrison service, but there were diminishing returns to adding more mercenaries to a field army. On one hand, mercenaries were professionals in a way Macedonian citizens were not: soldiers who needed to be sent home for the winter are not ideal for long term occupation duties. Most mercenaries seem to have been equipped as light infantry, and Macedonian kings needed only so much light infantry in their field armies, especially given that light infantry was also provided by both allied contingents as well as by Illyrians, Thracians and Paeonians recruited from within Macedonia's borders. Professional light infantry, was, however ideal for garrison duties. This no doubt explains why even in the face of Roman invasions, when Macedonian kings had no shortage of cash, mercenaries never comprised more than a fifth of Macedonian field armies. Of course, there were limits to the number of mercenaries available for service; it should be noted that during the both the Second and Third Macedonian Wars, the mercenary labor supply was strained by additional demand generated by simultaneous wars between the Ptolemies and Seleucids.

III. Military Organization

[277] Plutarch *Aratus* 24.1.

The Citizen Phalanx

By the death of Philip II, the Macedonian state had developed a new tactical system, the pike phalanx. It was a variation of the traditional Greek hoplite phalanx, with the main difference in weaponry being the substitution of a 16-20 foot Macedonian pike, the *sarissa*, for the standard hoplite spear. The length of the pike allowed for a deeper formation, as more men in the rear ranks could project their shafts beyond the formation. As a result, the standard depth of the Macedonian phalanx was sixteen ranks, rather than the eight of the traditional phalanx. To increase the density of the formation, and to make it easier for the soldiers to hold their pikes with both hands, a new rimless shield was introduced in the early third century, around 75 cm wide.[278] Such density and depth gave the formation physical and psychological momentum on the attack, and made it an impenetrable mass of pikes on the defensive. As a result, the pike phalanx was the dominant method of heavy infantry combat in the Eastern Mediterranean for 175 years following the death of Alexander.

The citizen soldiers Antigonid field armies were divided into two wings: the Bronze Shields (*chalkaspides*) and the White Shields (*leukaspides*). These divisions are first reported by Polybius at the Battle of Sellasia. Neither Polybius nor Livy differentiates between the wings of the phalanx at Cynoscephalae, although there were certainly two wings 8000 strong, quite likely the Bronze and White Shields. At the Battle of Pydna, the two wings of the phalanx were explicitly *chalkaspides* and *leukaspides*, and Diodorus reports that some 1200 wagons full of white Shields and 1200 wagons of bronze shields were displayed in Aemilius Paullus' triumph.[279]

Nicolas Sekunda has, however, recently challenged this conventional view of a phalanx divided between *chalkaspides* and *leukaspides*. [280] Sekunda argues that the entire Macedonian phalanx was comprised of the *chalkaspides,* and that the *leukaspides* were not Macedonian phalangites at all, but rather foreign *thureophoroi* infantry, fighting with white oval shields.

Sekunda's justifications for this bold new assertion, however, are quite thin. Admittedly, it does not help that the *leukaspides* are only mentioned twice in battle: by Plutarch at Sellasia and Livy at Pydna. First off, Plutarch reports that Cleomenes equipped some newly enfranchised helots to fight as heavy phalangites, and did so because he had intelligence that Antigonus Doson was bringing his *leukaspides*. Sekunda argues that this should mean that Cleomenes thought that Antigonus was bringing some extra light *thureophoroi* infantry, and so he armed some extra heavy infantry to outclass them. This is rather dubious: it makes much more sense if the *leukaspides* were in fact heavy phalangite infantry, and that Cleomenes, hearing that Antiognus Doson was mobilizing an extra element of his phalanx, responded by raising additional heavy infantry for himself.

At the Battle of Pydna, one legion (without the aid of its allied wing) is reported fighting against the entire phalanx of the *chalkaspides*.[281] If we take the traditional view, this would mean the legion, 6000 strong, faced off against

[278] Markle 1999; also Anderson 1976.
[279] Diodorus 31.8.10.
[280] Sekunda 2013: 108-127.
[281] Livy 44.41.1-2.

roughly 10,000 *chalkaspides*, a not impossible feat given the dense nature of the Macedonian phalanx and the loose fighting order of the manipular legion.[282] But if we accept Sekunda's position, then the legion of 6000 beat over 20,000 heavy phalangites! The *leukaspides* are themselves described as the center of the Macedonian line, not where we would expect auxiliary light infantry, but perfectly logical if they did indeed fight as heavy phalangites. Finally, after Livy describes the 2nd Legion at Pydna defeating the *leukaspides*, he launches into a digression about the strengths and weaknesses of the phalanx, which would be nonsensical if the l*eukaspides* had instead been auxiliary light infantry, as Sekunda claims, armed with oval shields just like the Roman legionaries themselves. Despite Sekunda's novel arguments, the traditional view is likely correct.

The Professional Cadre:

Under Alexander the Great, elite troops, with various levels of professionalism, had variously born the title of hypaspists and Silver Shields. By the time of the Antigonid dynasty, the elite infantry held the title of peltasts (*peltastai*; Livy translates to *caetrati*). Their name derived from a smaller version of the Macedonian shield, around 65 cm wide, making them more maneuverable than the standard Macedonian phalangite. The two most common strengths of the peltasts are 5000 and 2000; there were 5000 with Philip in 219, and again at Pydna in 168. 2000 are attested with Philip's army in 218, and again at the Battle of Cynoscephalae in 197.

Pierre Juhel and Nicholas Sekunda note epigraphic evidence for an infantry *agema* in Antigonid Macedonia (an elite "column," usually a subset of an elite unit).[283] The most logical solution, with parallels for Alexander the Great and the Seleucid kingdom, is that the *agema* of 2000 was an elite subset of the total five thousand *peltastai*.[284] Livy's description of Perseus' army in 171 refers to the *agema*, 2000 strong, and 3000 *certi caetrati*, "other peltasts."

There is every reason to believe that the peltasts were a full time unit, maintained at a steady strength. Who staffed the peltasts is unclear. The *agema*, by definition, would have been an elite unit. Interestingly enough, the Conscription Diagramma indicates that 35 was the age limit for service as a peltast, but moves the age limit for service in the *agema* upwards from 42 to 50. Sekunda suggests cogently that the *agema* may have been staffed in part by men of proven political loyalty, even as they aged out of their physical prime.[285] Yet the older men in the agema may have been exceptions (perhaps mostly officers). Livy describes the *agema* as selected *uiribus et robore aetatis ex omni caetratorum*.[286]

The Conscription Diagramma of Philip V suggests less of a meritocracy: men who were *euporōteroi* were to be recruited into the *agema* and peltasts, while poorer men (*aporōtatoi*) were to serve as ordinary infantry.[287] The exact distinction between the rich and poor was not made. The distinction was perhaps important

[282] Taylor 2014a.
[283] Juhel and Sekunda 2009.
[284] Sekunda 2013: 93-95.
[285] Sekunda 2013: 94.
[286] Livy 42.51.4.
[287] Hatzolpoulos 2006: 103-105. Sekunda 2013:104.

given the professional (or semi-professional) nature of service in the *agema* and peltasts, requiring recruits who could afford to be mobilized on a permanent or semi-permanent basis, and thus spend most of their time away from their farms and families.

The limitation of Philip's army to 5000 after the Second Macedonian war (a limitation soon lifted, owing to Philip's cooperation against Antiochus the Great), may reflect the right to maintain a full time defense force comprised of his peltast regiments.

Macedonian kings also maintained a variety of cavalry regiments. Polybius refers to 400 ἱππεῖς τοὺς περὶ τὴν αὐλὴν on campaign with Philip V.[288] These may be the same as the *regii equites* mentioned by Livy during the Third Macedonian War.[289] There was also a cavalry *agema* that served as a mounted body guard for the king.[290] These two units correspond closely with the *hippeis basilikoi* and *agema*, the two royal regiments in the Seleucid army. Finally, Livy refers to a number of "sacred squadrons" (*sacrae alae*).[291] The exact size and organization of these units is unclear, but they were certainly elite, and like the elite infantry units, were probably professional or semi-professional units.

The Cavalry Wing

Macedonian cavalry had proven a critical wing in the armies of Philip II and Alexander the Great. Cavalry, however, did not have the same prominence in Antigonid armies. Philip's 2000 cavalry at Cynoscephalae seem to have slightly outnumbered the 1200-1500 Roman cavalry and 400 Aetolian horse at the battle. In Polybius' narrative, cavalry are involved only in the initial skirmish proceeding the main clash, but the infantry fight is described as decisive. Perseus likely enjoyed a significant advantage in cavalry at the Battle of Pynda, with 3000 Macedonians and 1000 Thracians certainly outnumbered the approximately 1200 Romans and 1000 Attalid horsemen with Aemilius Paullus. In both instances, Antigonid kings failed to capitalize on their advantage in cavalry. The rugged terrain at Cynoscephalae may explain why Philip's cavalry failed to play a role in the main clash. Likewise, the hills (*lophoi*) at Pydna may have prevented Perseus from deploying his horse, although as the battle rapidly developed, Perseus simply lacked the time (or poise) to commit his cavalry in a decisive manner. Large numbers of horse are reported with Perseus in the rear during the battle, and joining him in the retreat.[292] Macedonian and Thracian cavalry did prove their worth in the victorious cavalry action against the Romans at Callinicus in 171.[293] This particular success was part of an independent cavalry action; it may be that by the late third century Macedonian kings had fallen out of practice in coordinating infantry and cavalry in combined arms action, in the manner that had been critical to the success of Philip II and Alexander. This may reflect a loss of institutional knowledge on the part of the Macedonian military apparatus.

---

[288] Polybius 4.67.6.
[289] Livy 42.58.6-9.
[290] Livy 42.58.9.
[291] Livy 42.66.5, 44.42.2-3.
[292] Plut. *Aem.* 23.1; Livy 44.42.2, although bridles are listed as items in Paullus' triumph (Plutarch *Aemelius* 32.6.)
[293] Livy 42.58-9.

Conclusion:

Antigonid Macedonia was a state that "punched above its weight," playing a prominent role in Mediterranean geopolitics despite modest manpower resources, owing to an effective military organization that was at once broadly based and deeply rooted in the citizen body. The disorganized and weak Macedonian kingdom that appears in the narratives of Herodotus and Thucydides was the "default setting" of the Macedonian state. The reforms instituted by Philip II and inherited by Alexander magnified through effective military organization the resources of the region, allowing the Macedonian army to improbably conquer the Persian Empire. The chaos following the death of Alexander reverted Macedonia to its default setting; weak, divided and internationally useless. Antigonus Gonatas, picking up the pieces, managed to restore the "artificial" power of Macedonia, maintaining an effective citizen's army. However, the Antigonids never managed to regenerate the expeditionary capabilities of Alexander the Great: even modest campaigns into the Peloponnese strained citizen manpower, and thus we see great fluctuations in the strength of available Macedonian forces. The modest successes of Philip's campaigns in the 200s laid bare a deficiency in seaborne logistical capacity: Philip at one point was forced to trade a captured city for a supply of figs.[294] Philip also seemed to lack enough forces to truly make the same sort of progress against Ptolemaic holdings as his counterpart and temporary ally Antiochus III made with more extensive manpower resources.

Therefore, Macedonia was offensively feeble, only able to conduct regional operations. On the defensive, however, Macedonia was a potent and dangerous adversary, as kings were able to mobilize and concentrate their citizen soldiers into disciplined, effective and dangerous field forces, which Roman commanders hesitated to engage head-on. Even the catastrophes at Cynoscephalae and Pydna were close things; in both instances the Macedonian army enjoyed initial successes, before the Romans managed to rebound through a combination of the tactical flexibility of the legions, the initiative of subordinate officers, and a great deal of dumb luck. Nonetheless, Macedonian resources, even concentrated for homeland defense, were sufficiently modest that a single setback might end the war. The relative weakness of Macedonian manpower was the primary reason why the Antigonid dynasty was the first of the five great powers eliminated.

[294] Polybius 16.24.5.

Chapter 5: Ptolemaic Manpower

In 217, the Ptolemaic army confronted Seleucid invaders at Raphia, with the details preserved by Polybius. It was the largest set-piece battle since the Battle of Ipsus and involved nearly 150,000 combatants. The Ptolemaic army triumphed in this massive confrontation. In fact, the overall record of the Ptolemaic army was excellent. With the exception of the defeat of Panion, the Ptolemies consistently bested their Seleucid rivals in the Syrian Wars. In the Third Syrian War, the Ptolemaic army overran Seleucid defenses and marched as far as Babylon, a campaign that echoed the anabasis of Alexander the Great. In this chapter, I explore the composition and strength of this successful military institution, and also explain why the Ptolemaic dynasty struggled to achieve hegemonic success despite their large and capable field army.[295]

I: Power Effective:

The most detailed portrait of a Ptolemaic army comes from Polybius' description of the tactical array at Raphia (5.65):[296]

> All the men I have mentioned held commands suited to their particular attainments. Eurylochus of Magnesia commanded a body of about three thousand men known as the Royal Guard, Socrates the Boeotian had under him two thousand peltasts, Phoxidas the Achaean, Ptolemy the son of Thraseas, and Andromachus of Aspendus exercised together in one body the phalanx and the Greek mercenaries, the phalanx twenty-five thousand strong being under the command of Andromachus and Ptolemy and the mercenaries, numbering eight thousand, under that of Phoxidas. Polycrates undertook the training of the cavalry of the guard, about seven hundred strong, and the Libyan and native Egyptian horse; all of whom, numbering about three thousand, were under his command. It was Echecrates the Thessalian who trained most admirably the cavalry from Greece and all the mercenary cavalry, and thus rendered most signal service in the battle itself, and Cnopias of Allaria too was second to none in the attention he paid to the force under him composed of three thousand Cretans, one thousand being Neocretans whom he placed under the command of Philo of Cnossus. They also armed in the Macedonian fashion three thousand Libyans under the command of Ammonius of Barce. The total native Egyptian force consisted of about twenty thousand heavy-armed men, and was commanded by Sosibius, and they had also collected a force of Thracians and Gauls, about four thousand of them from among settlers in Egypt and their descendants, and two thousand lately raised elsewhere. These were commanded by Dionysius the Thracian. (Trans. W.R. Paton).

The total here is 70,000 infantry and 5000 cavalry. 56,000 were heavily-armed troops: 8000 mercenaries; 25,000 in the main phalanx; 20,000 Egyptian phalangites, and 3000 Libyans armed in the Macedonian fashion. Together these

[295] Monograph treatments of the Ptolemaic armed forces include Lesquier 1911, who provided one of the first comprehensive treatments of the papyrological evidence related to the institution. Launey 1949 is now badly dated by the author's insistence that "Semitic" infiltration reduced the military efficiency of the descendant's of Alexander's Macedonians. Fortunately, the most recent treatment of the topic is Fischer-Bovet 2014, which approaches both the literary and papyrus evidence with a "war and society" methodology, and this chapter is profoundly indebted to her excellent study. Sekunda 1994 and 2001 provides a persuasive argument for Ptolemaic infantry reforms in the second century; he has also been unique in using visual evidence, including Sekunda 2012.

[296] On the battle itself, Galili 1978 (focusing on topographic aspects), Bar Kochva 1976: 127-141, Grainger 2010: 206-216.

contingents provided crushing superiority in heavy infantry over the 35,000 heavy troops of Antiochus III.

However, the Ptolemaic numerical superiority in heavy infantry, and even the modest overall superiority in total forces, has been called into question by textual critics, including J.P. Mahaffy, G.T. Griffith, and Frank Walbank, who argue that the Ptolemaic figures for Raphia represent a colossal double-count.[297] They suggest that rather than two phalanxes (one 25,000 phalanx of cleruchs and a 20,000 phalanx of native Egyptians), there was a single unit of 25,000 men, composed of both cleruchs and Egyptians. The text itself does not support the conclusion: even though the two unmixed phalanxes did deploy side by side, Polybius clearly states that the two were separate units: the cleruch phalanx commanded jointly by Andormachos and Ptolemy, and the Egyptian phalanx commanded by Sosibus, the king's *epi ton pragmaton*. When referring to the tactical operation of these troops, Polybius refers to a single phalanx commanded by both Andromachus and Sosibus, but this must reflect the deployment of the two phalanxes side by side: 45,000 when taken together.

Furthermore, a combined phalanx of only 25,000 would make Ptolemy IV's victory at Raphia all the more exceptional in the face of 35,000 Seleucid heavy infantry. As Bar Kochva has emphasized, the nature of the battle suggests that a significant Ptolemaic advantage in infantry, since it was the advance of the Ptolemaic phalanx that made quick work (βραχύν τινα χρόνον) of the Seleucid battle line.[298] The easiest tactical explanation for this victory is numerical superiority of troops, one that translated into greater formation depth and increased the forward momentum of the decisive charge.

If the hypothesis of one combined phalanx is adopted, it is inconceivable that the Ptolemies could have quashed the later revolt in the Thebaid region (supposedly centered on the 20,000 Egyptian phalangites!) if only 5000 non-Egyptian heavy infantry were available.[299] Indeed, if there were four Egyptians phalangites for every cleruch, the rebels would likely have annihilated the dynasty altogether. For these reasons, I use the numbers reported by Polybius.[300]

In preparation for battle, the Ptolemies had recalled 8000 mercenaries serving in garrisons from across Ptolemaic holdings (συνήθροιζον εἰς τὴν Ἀλεξάνδρειαν τοὺς μισθοφόρους τοὺς ἐν ταῖς ἔξω πόλεσιν ὑπ' αὐτῶν μισθοδοτουμένους). This likely represents the total number of the Ptolemaic mercenary garrison (minus a few skeleton crews) outside Koile Syria.[301] The number of deployed mercenaries was higher prior to Antiochus' successful campaigns in Koile Syria, as some mercenaries were killed or captured, and others defected- most notably the detachment under the *strategos* Theodotus the

[297] Mahaffy 1898. Griffith 1935: 118; Walbank 1957: 590. Bar Kochva 1976: 138-141 provides a cogent response.
[298] Polybius 5.85.9-10.
[299] Egyptian phalangites involved in the revolt: Polybius 5.107.1-3. Fischer-Bovet 2014: 91 suggests that the revolt of 216 may have been closer to an army mutiny than a true native uprising (although as with the case of the Sepoy revolt of 1857, an army mutiny and native uprising may have overlapped).
[300] Polybius 5.85.10; Bar Kochva 1976: 135 and Fischer Bovet 2014: accept the figure reported by Polybius; Bar Kochva suggests, rightly, that this explains why Ptolemy IV won the battle.
[301] Polybius 5.63.8-9. ἀνεκαλοῦντοδὲ καὶ συνήθροιζον εἰς τὴν Ἀλεξάνδρειαν τοὺς μισθοφόρους τοὺς ἐν ταῖς ἔξω πόλεσιν ὑπ' αὐτῶν μισθοδοτου μένους.

Aetolian.[302] Even if the garrison in Koile Syria constituted half of the dynasty's standing garrison force, the total number of standing peacetime mercenaries likely did not number more than 15,000.

There were 2300 cavalry in the army at Raphia from Libya or Egypt (τοὺς ἀπὸ Λιβύης, ἔτι δὲ καὶ τοὺς ἐγχωρίους). Given the 3000 Libyan infantry, Libyans perhaps provided a proportional contingent of 300 cavalry, leaving approximately 2000 ἐγχωρίοι. This matches the papyrological evidence for the organization of the cleruch cavalry into five hipparchies, each with 400 riders.[303] It is also likely that most of the remaining 2000 "mercenary cavalry" were also settlers, and not recently hired foreign mercenaries. Polybius distinguishes between "the cavalry from Greece" (τούς γε μὴν ἀπὸ τῆς Ἑλλάδος) and "the mass of mercenary cavalry (τὸ τῶν μισθοφόρων ἱππέων πλῆθος). It is possible that Polybius is not entirely familiar with Ptolemaic military classifications. The phrase *misthophoroi hippeis* "mercenary cavalry" appears in third century papyrus records to describe land grant holders in Egypt, and describes ex-mercenaries who settled as cleruchs.[304] Polybius' use of the terminology may reflect his use of a Ptolemaic source for the Battle of Raphia.[305] There were five attested hipparchies of ethnic *hippeis*: the Thessalians and Greeks, Persians, Macedonians, Thracians, and Mysians.[306] With a paper strength of 400, these hipparchies amount to 2000, the strength of Polybius' *misthophoroi hippeis* at Raphia. The "Greek cavalry" mentioned by Polybius may be the hipparchy of Thessalians and Greeks, rather than newly recruited Greek cavalry, although it is possible that a small number of Greek mercenary cavalry supplemented understrength units at Raphia. If this is the case, then most of the cavalry at Raphia consisted of mobilized settlers, rather than foreign hires.

The Ptolemies hired mercenaries from abroad, yet operated in a labor market saturated by demand: the Second Punic War then raging in the western Mediterranean and the Social War absorbed the bulk of mercenary labor in Greece and Aegean. Many of the Aetolian mercenaries who normally filled out Ptolemaic ranks would have instead been drafted in the Aetolian federal levy. Ptolemy's rival Antiochus III was also a fierce competitor for mercenary labor. Ptolemy did indeed dispatch recruiters (*xenologoi*) abroad, although their success was not as great as in times of relative peace.[307]

In total, Ptolemy deployed 8000 Greek mercenaries, 2000 Gauls and Thracians, 2000 Cretans and 1000 Neo-Cretans, or 13,000 foreign troops all

[302] Defection of Theodotus the Aetolian: Polybius 5.61.3-6; defection 400 Thessalian cavalry: Polybius 5.70.11.
[303] Fischer-Bovet 2014: 124, although she puts the default strength of a hipparchy at 500.
[304] Fischer-Bovet 2014: 122.
[305] Pro- Ptolemaic source for Raphia: Momigliano 1929: 189, who thinks it may be Zeno of Rhodes. This is accepted by Bar Kochva 1976: 128-9, although he rejects Zeno as a candidate, given Polybius' harsh criticism of Zeno elsewhere. Brown 1961: 193 likewise notes that despite heavy use of a Seleucid courtly source he identifies as the physician Apollophanes in Book 5, the emphasis on Ptolemaic preparations at Raphia implies that Polybius has picked up a Ptolemaic courtly source.
[306] Fischer-Bovet 2014: 126-127.
[307] Polybius 5.63.9.

together. Mercenaries, those drawn from garrisons and newly hired to meet the emergency, represented roughly 17% of the total force.[308]

While a few thousand soldiers likely held down posts abroad, the 75,000 soldiers at Raphia represent the maximum mobilization of the Ptolemaic dynasty. Armies during previous wars (the invasion force of the Third Syrian War, for example) were likely somewhat smaller since they lacked the Egyptian phalanx and called up fewer cleruchs. Nonetheless, throughout much of the third century, the Ptolemies mustered as necessary around 15-20,000 in the phalanx, 5000 peltasts, thousands of supplemental mercenaries, and several thousand cavalry, producing field armies of approximately 35,000-40,000 men for a major conflict.

Table 5.1: Ptolemaic Field Army at Raphia

Elite Forces:	
Aegma:	3000
Peltasts:	2000
Household Cavalry:	700
Cleruchs:	
Thracians and Gallic settlers:	4000
Phalangites:	25,000
Cavalry	c. 2000
"Mercenary Cavalry"	c. 2000
Subjects:	
Egyptian Phalangites:	20,000
Libyan infantry:	3000
Libyan cavalry	c. 300
Mercenaries	
Thracians and Gauls:	2000
Mercenaries (from garrisons):	8000
Cretans	2000
Neo-Cretans:	1000

With the exception of the Battle of Raphia, other reports of Ptolemaic military strength disappoint when subjected to source criticism, primarily due to concerns of reliability. One of the earliest descriptions of a Ptolemaic army after the Wars of the Successors comes from Athenaeus (drawing from Callixenus of Rhodes) in the second Century AD. He describes the Dionysian procession of

[308] For various opinions on the Neo Cretans, see Spyridakis 1977, who argues that it reflects divisions within Cretan communities between citizens who could claim descent from the Doric tribes and more recently enfranchised free inhabitants; the dominant view, following Tarn, is that it describes some form of equipment; see Tarn 1930: 145 and Griffith 1935: 144. It is quite possible here that the distinction is between Cretans already in Ptolemaic service, who have been recalled from garrisons, and a fresh brigade of new recruits from the island.

Ptolemy II in Alexandria, which took place at some point in the 270s, and reportedly included 57,600 infantry and 23,200 cavalry.[309]

The 23,200 cavalry reported by Callixenus are far removed from the 5000 cavalrymen mustered at Raphia. If accurate, this is nearly twice the muster of Antiochus III at Magnesia (12,000).[310] This must surely be an exaggerated count. Similarly, the 57,000 infantry is almost twice that of non-Egyptian infantry present at Raphia. Between the boasts of Ptolemy II, the recapitulation of Callixenus, and Athenaeus' own propensity for the grandiose, these accounts are either gross exaggeration or blatant fabrication.

We must also discount the numbers Appian cites at the beginning of his history, a gargantuan Ptolemaic army of 200,000 infantry and 40,000 cavalry.[311] If this were the case, the Ptolemaic mobilization would be larger than the maximum Roman mobilization of the Second Punic War, and would rival the 25 legion army inherited by Tiberius in 14 AD, (an army of 300,000 legionaries and auxiliaries).[312] It is highly doubtful that any Ptolemaic king commanded an army that approached this magnitude. Appian's estimates of cavalry are particularly preposterous: if the Ptolemaic king had 40,000 cavalry at his disposal, why only 5000 at Raphia? This estimate exceeds the cavalry muster of Antiochus III in 190 three times over, and the Seleucid king controlled the entire Iranian plateau, territory rich in horses and skilled riders. We must also dismiss Jerome's reports that Ptolemy Philadelphus commanded an army of 200,000 infantry and 20,000 cavalry (although in this case Jerome may have relied on Appian).[313]

II. Manpower strategies:

Cleruchs

At the core of the Ptolemaic army were military settlers who owed military service to the state in exchange for possession of agricultural land. The cleruch system offered numerous advantages for the Ptolemaic state: it reduced military costs by keeping soldiers as settled reservists, without the expense of maintaining a large and politically unpredictable standing army. In the face of fierce competition for mercenary hires, settling discharged mercenaries onto plots of land effectively locked them into Ptolemaic service, preventing them from drifting into Antigonid or Seleucid ranks.[314] Cleruchs were often given deserted or reclaimed land, and contributed to the tax base of the state in times of peace. Scattered on their plots, they served as dispersed agents of coercion and control over the native population.

As Fischer-Bovet notes, there were also significant disadvantages to the cleruch system.[315] The diffusion of cleruchs within the Egyptian countryside slowed mobilization, although it was still faster to mobilize cleruchs than to send recruiting agents abroad for mercenaries. More important, transforming full-time

[309] Athenaeus 5.203A. Rice 1983: 123-126, 138-150, who accepts the figures without significant criticism. For the procession, see also Walbank 1996.
[310] Livy 37.37.9.
[311] Appian, Pro. 10.
[312] Tacitus *Ann.* 4.5.
[313] Jerome *Commentary on Daniel* 11.5.
[314] On the origins of Ptolemaic cleruchs, many of whom were descended from foreign mercenaries, see Bagnall 1984, with additional discussion in Stefanou 2013.
[315] Fischer-Bovet 2014:199.

soldiers into estate holders risked a reduction in military readiness. While the Roman example illustrates that frequent mobilization of citizen soldiers could maintain a high state of military readiness, the Ptolemies mobilized their cleruchs only exceptionally: it is possible that the cleruch population went un-mobilized between the end of the Third Syrian War in 241 and the Battle of Raphia in 217. An entire generation of young men came of age on their *kleros* without any significant training or military experience. However, this disadvantage was clearly overcome: it took only three months of training and organization to produce the fighting force that triumphed at Raphia.[316] The Macedonian-style infantry phalanx was an effective formation in large part because it did not require significant training. The inexperienced Ptolemaic infantry prevailed at Raphia over Seleucid forces that were by all accounts more experienced, given the recent fighting against the usurper Molon. Even with the stagnation of the cleruch system by the 220s, mobilization of a large and effective force was still possible.

How many cleruchs were there? The forces deployed at Raphia suggest 25,000 in the main phalanx, 5000 peltasts, 700 horsemen royal guard, 4000 cavalry, and 4000 Gauls and Thracians. In total, 40,000 cleruchs capable of active military service. If we assume that Ptolemy IV managed a 90% mobilization rate of adult male cleruchs under the age of 45 during the crisis of 217, this implies a total of c. 65,000 adult male cleruchs. Accounting for families, this translates to a total cleruch population of approximately 200,000, assuming that adult males were one third or so of the total population.

Dominic Rathbone, relying on a Roman-era document suggesting 6500 *katoikoi* in the Arsinoite nome, calculates approximately 130,000 adult male settlers in all of Egypt, on the basis that the Fayum comprised one-twentieth of the land in Egypt, and a proportional number of cleruchs.[317] But if there were 130,000 adult male cleruchs, and perhaps 85,000 under the age of 45, why did the Ptolemies struggle to field 40,000 cleruchs at Raphia? We cannot rule out the possibility that the Ptolemies suffered from abysmally low mobilization rates, but this would be odd for a state with such intensive administration and reliable recordkeeping of its people.[318]

Fischer-Bovet has criticized Rathbone's estimate as too high, one that ignores the unusual density of cleruchs in the reclaimed lands of the Fayum. She notes that land records of the Edfu nome indicate a much lower density of settlers, perhaps no more than 40 adult Greek males, or .2 percent of the total population. Assuming a diffusion curve between the two nomes, Fischer-Bovet estimates an average Greek population percentage of 4.6 percent. Placing the total Egyptian population at four million, she argues that there were 63,500 adult Greek males, for a total of 184,000 Greek settlers in Egypt.[319] Fischer-Bovet's estimate concords with the mobilization at Raphia, even if it assumes that both the Fayum and Edfu were outliers on opposite ends of the population density spectrum.

---

[316] Polybius 5.64.3, one of the few references to a top-down training regime in the ancient world.
[317] Rathbone 1990: 104
[318] e.g. Clarysse and Thompson 2009.
[319] Fischer-Bovat 2011; Fischer-Bovet 2014 rounds off her estimates of total cleruchic population to 200,000, representing 5% of the population. Given the uncertainties of such an estimate, such round numbers are preferable.

Native Egyptians:

In addition to the small pool of Greek settlers, the Ptolemies could also recruit from the entire population of Egypt. But how large was this source? Diodorus Siculus provides a report of the population of Roman Egypt: τοῦ δὲ σύμπαντος λαοῦ τὸ μὲν παλαιόν φασι γεγονέναι περὶ ἑπτακοσίας μυριάδας, καὶ καθ' ἡμᾶς δὲ οὐκ ἐλάττους εἶναι τριακοσίων. "They say that all together the people numbered seven million back in the day, but in our times, not fewer than three million."[320]

Almost every manuscript of Diodorus reports the current (late Hellenistic) population at 3 million, with the seven million referring to some hazy moment "back in the day" (παλαιόν). Yet the manuscript tradition has often emended τούτων for τριακοσίων, implying that seven million was the correct figure for both pre-Roman times and Diodorus' own.[321] Dominic Rathbone has suggested that three million ought to be retained as the basic order of magnitude for Egyptian population in the late Ptolemaic period, but that it might have been as high as four million as economic conditions proved more favorable during the third century.[322] Walter Scheidel estimates Egypt's ancient population at 5-7 million before the Antonine plague, based on late 19th and early 20th century census records from Egypt (a time when the country was beginning to feel the effects of modernization, but falls back on an estimate of 4 million for the Ptolemaic and early Roman periods.[323]

Polybius is under the impression that the mobilization of 20,000 Egyptians as heavy phalangites was a novelty. Fischer-Bovet, however, has argued that this was not a unique occurrence, as armed Egyptians had served the Ptolemies since the dynasty's inception.[324] Egyptian manpower supplemented Ptolemy Soter's armies during the Wars of the Successors, and served at the Battle of Gaza in 312.[325] Egyptians also performed various paramilitary tasks, including manning garrisons and conducting police patrols. Indeed, it is quite likely that some of the Egyptians in the Raphia phalanx were not merely peasants given hasty training, but rather existing police forces already in Ptolemaic service retooled as heavy infantry.

Yet Polybius is probably correct that the Ptolemies prior to Raphia were wary about arming large numbers of native Egyptians within Egypt. Egyptian manpower was less dangerous when deployed outside of Egypt, in particular in naval contexts. Thus, Ptolemy II landed Egyptian *nautai* (marines or armed sailors) in Attica during the Chremonidean War.[326] Egyptian *machimoi* are also attested as an aspect in the external garrison at Thera.[327] Yet, even accounting for

---

[320] Diodorus 1.31.8.
[321] This correction was inspired by part by the reference by Josephus *BJ* 2.385 who puts the population of the Egyptian chora at 7.5 million, although the plausibility to Josephus' figures are famously mixed.
[322] Rathbone 1990: 104. Also Clarysse and Thompson 2006: 102
[323] Scheidel 2001: 246-47.
[324] Fischer-Bovet 2014: 161-166.
[325] Diodorus 19.80.4. Αἰγυπτίων δὲ πλῆθος, τὸ μὲν κομίζον βέλη καὶ τὴν ἄλλην παρασκευήν, τὸ δὲ καθωπλισμένον καὶ πρὸς μάχην χρήσιμον.
[326] Pausanias 3.6.5. Fischer-Bovet 2014, 41.
[327] Bagnall 1976: 130.

Egyptian policemen and sailors, it is somewhat surprising that the Ptolemies dramatically underutilized Egyptian manpower. Even if they hesitated to use them within Egypt, such troops would have proved useful for expeditionary armies outside of Egypt against their Antigonid and Seleucid rivals. One must only compare the Egyptian role within Achaemenid armies (the thousands that fought for Artaxerxes at the Battle of Cunaxa, for example) to glimpse potential consequences of greater use.[328]

Yet there was another reason why the Ptolemies did not use Egyptian manpower in great numbers until the second century: every Egyptian employed as a soldier meant the loss of a taxpayer. Let us assume approximately 3.6 million Egyptians, or 1.2 million adult males, of which 800,000 or so were in physical prime as laborers. A muster of 20,000 Egyptians of military age represented a double loss: a reduction of the labor pool by approximately 2.5%. With this calculus in mind, there is a clear comparative advantage to hiring an outside mercenary: the king gained a soldier without losing a taxpayer.

Mercenaries:

Mercenaries provided two basic strategic functions for Ptolemaic kings: they manned internal and external garrisons and provided supplementary forces during wartime. Mercenaries in garrisons were more heavily concentrated in the overseas holdings, in part because cleruchs served stints of garrison duty in Egypt proper. Prior to the battle of Raphia, Polybius reports that the Ptolemaic government assembled in Alexandria all of the mercenaries currently in their employ, and that these totaled 8000. This figure does not include garrisons that had capitulated (or defected) to Antiochus III, perhaps another 10,000 or so, and presumably several thousand mercenaries were overseas as skeleton crews, with others left to secure Alexandria.

Polybius implies that many thousands of mercenaries were stationed in Alexandria.[329] In 221, their numbers included 3000 Peloponnesians and 1000 Cretans, along with an undisclosed number of Carians and Syrians (presumably from Koile Syria).[330] This implies a total garrison in Alexandria of 8000, although this may represent a temporary surge in garrison strength, due to the current dynastic transition: the prime minster Sosibus was said to be especially afraid of τοὺς ξένους καὶ μισθοφόρους. The fact that there are so many Peloponnesians, presumably veterans of the Cleomenic wars since turned to mercenary service, is further evidence of a temporary spike in mercenary numbers, when the regime needed "neutral" foreigners to quell internal dissent. We do know that during another turbulent dynastic transition in 203, the regent Agathocles dispatched the mercenary general Scopas to his native Aetolia to recruit fresh mercenaries, in a failed attempt to replace those Macedonians currently on duty in Alexandria. The passage suggests that many of the palace troops were foreign mercenaries, as Agathocles hoped to place many of the Aetolians in τὴν θεραπείαν καὶ τὰ περὶ τὴν αὐλὴν φυλακεῖα "the staff and the palace guard." The regent also planned to send foreign hires to the τὰ κατὰ τὴν χώραν φρούρια καὶ τὰς κατοικίας "the forts and settlements of the *chora*," which suggests that foreign

[328] E.g. Xenophon *Anabasis* 1.8.9
[329] Polybius 5.35.11.
[330] Polybius 5.35.4-6.

mercenaries (in additional to cleruchs on active duty) helped man rural garrisons. [331]

III: Military Organization

Professional forces

Like other Hellenistic armies, the Ptolemaic army had a small elite cadre, organized in standing units, unlike the cleruch phalanx, which was only mobilized during times of emergency. At Raphia, the elite cadre consisted of the 700 cavalrymen who formed the household guard (ἱππεῖς τοὺς μὲν περὶ τὴν αὐλήν).[332] Similar to the Antigonids and Seleucids, the peltast force consisted of the 3000 strong *agema*, as well as 2000 "other peltasts," with a combined force of 5000 men. This is nearly identical to the Macedonian system; the only difference is the ratio of the *agema* and other peltasts (it is 3:2 for the Ptolemies, and 2:3 for the Antigonids). These units were full time troops, and presumably the "Macedonians" (οἱ Μακεδόνες) who in 204/3 were in a military camp (σκηνάς) in Alexandria were members of the household cavalry and peltasts.[333] There is evidence that these active duty troops were also absentee landlords over *kleroi*: a papyrus lists a series of hundred *aroura* men, some of whom are listed as *en tei basilikei ilei*.[334]

700, the end-strength given for the royal cavalry at Raphia, is an odd number for a Hellenistic cavalry unit, since the cavalry was based around an *ile* of 200, with two *ile* grouped into a *hipparchia* of 400. We would expect a unit of 800, and Fischer-Bovet has hypothesized that one *ile* is missing from the battle. Yet it is unclear why any part of the royal guard would be absent from a battle personally commanded by the king, other than perhaps a few palace guards.[335] I hypothesize that the organization of royal cavalry in the Ptolemaic army followed the old Macedonian institution of *somatophylakes* (bodyguards), of which there were traditionally seven.[336] If each *somatophylax* paired with a *lochos* of 100 cavalrymen, this matches the unit of 700 present in full force at Raphia.

Cleruch phalanx:

Military settlers were organized into standing reserve units to facilitate rapid mobilization. These units likely atrophied in the long peace between the Third and Fourth Syrian Wars. As Fischer-Bovet and Wiley Clarysse have argued, Polybius notes that the preparations prior to the Battle of Raphia involved the reorganization of traditional units, and the papyrus evidence indicates the appearance of new eponymous officers (units were named after the commanding officer, rather than having a numerical designation). This was the

---

[331] Polybius 15.25.19.

[332] For additional discussion of this regiment, see Sekunda 2012, who primarily focuses on dress, equipment and visual representation of members of the unit.

[333] Polybius15.27-29; Walbank 1967: 448, Griffith 1935: 129, Sekunda 2012. Fischer-Bovet cautions about usage of the term "Macedonian," given the increasingly fluid ethnic identities of the period; but surely we are dealing with men organized into Macedonian-style units, either elite troops or even, as I suggest, the regular phalanx.

[334] Sekunda 2012: 97; P. Milan Inv. 69.65.

[335] Fischer-Bovet 2014: 149, fig. 4.12.

[336] Ptolemaic *somatophylakes*: Polybius 15.27.6; 15.32.6. Compare to a special task force of 700 involving Alexander's *somatophylakes*, Arrian *Anabasis* 4.30.3.

result of unit reorganization, or unfit commanders were simply relieved in anticipation of the coming war.[337]

The phalanx itself arrayed for battle along quite conventional lines. Polybius (5.85.9) implies its troops fought at Raphia armed with *sarissai*, and papyrus evidence suggests organization into chiliarchies.[338] Presumably there were twenty-four chiliarchies each with a paper strength of 1024, (giving the overall phalanx a paper strength of 24,576, which Polybius rounds up to 25,000) in keeping with standard Macedonian-style military organization.

Present at Raphia were the descendants of former Gallic and Thracian mercenaries, who continued to fight as ethnic units. These were certainly not the first ethnic mercenaries settled in Egypt, but most settled mercenaries, whatever their initial ethnic affiliation, were absorbed culturally as members of the Greek elite, and militarily into the organization and tactics of the Macedonian phalanx. The Gauls, however, likely settled after the Third Syrian War, maintained their ethnic distinctiveness. This may reflect royal interest in preserving their capacity to fight as light infantry, although the desire of these cleruchs to preserve their own native marital traditions cannot be discounted.[339] The organization of cleruch cavalry into five numbered hipparchies and five mercenary hipparchies has already been discussed.

Second Century Reforms:

The Battle of Raphia represents our best vision of the third century Ptolemaic army. Nicholas Sekunda has argued that the Ptolemaic army underwent dramatic reforms in the mid-second century, transforming itself from a force based on heavy Macedonian-style infantry into one re-tooled along Roman lines, built around infantry armed with ovular shields (the *thureos*, reminiscent of the Roman *scutum*) and armored in mail cuirasses.[340] I am largely convinced by Sekunda's argument. It is not surprising that Hellenistic armies re-equipped themselves to reflect the dominant military system of the day, just as Greek states in the late third and early second centuries adopted the weapons, equipment, and tactics of the Macedonian style phalanx.[341] Yet a degree of caution is appropriate: Gallic *thureophoroi* were already an aspect of third century Ptolemaic armies (likely including the Gallic-Thracian contingents at Raphia). The second century reform may have simply made the *thureos* standard across a wider array of units. Finally, Sekunda argues that the Ptolemies might have also introduced a new level of unit organization to match the Roman century: a 100 strong *hekatontarchiai* commanded by *hekatonarches*, literally translating the Latin centurion. While influenced by the Romans, it is important to note that this is not exact mimicry. For example, the Ptolemaic *hekatontarchiai* actually contained 100 men (perhaps subdivided later into platoons of 50 men), whereas the Roman *centuria* in fact was staffed by only 60-80 soldiers.

Furthermore, there is no evidence that the Ptolemies actively tried to replicate Roman manipular tactics, perhaps with the intention of defeating the

[337] Clarysse and Fischer-Bovet 2012.
[338] Fischer-Bovet 2014: 134; Lesquier 1911: 92-97.
[339] See Fischer Bovet 2014: 142 for a discussion of sub-heavy infantry.
[340] Sekunda 2001.
[341] E.g. Plutarch *Philopoemen* 9.2.

Seleucid phalanx.[342] The one great clash of Seleucid and Ptolemaic reformed armies, at the Battle of Oinoparas, near Antioch in 145, is so poorly preserved in the sources that we cannot say how these forced arrayed themselves.

But Roman style kit might have produced infantrymen particularly well suited for the guerilla style fighting that had characterized the great revolt, described by Polybius as ὃς χωρὶς τῆς εἰς ἀλλήλους ὠμότητος καὶ παρανομίας οὔτε παράταξιν οὔτε ναυμαχίαν οὔτε πολιορκίαν οὔθ' ἕτερον οὐδὲν ἔσχε μνήμης ἄξιον "a war which, apart from the mutual savagery and lawlessness of the combatants, contained nothing worthy of note, no pitched battle, no sea-fight, no siege."[343] For this type of warfare, heavy infantry armed with twenty-foot sarissai proved increasingly clumsy—evidenced by Polybius' discussion in Book 18 concerning the Roman legionary's ability to fight on his own, whereas the phalangite was successful only as part of a larger unit in set-piece battle.[344] The asymmetric nature of the Egyptian revolts may have prompted the adoption of Roman style kit, transforming Ptolemaic soldiers into more flexible and self-reliant fighters able to operate in the fluid environment of counterinsurgency.

Conclusion:

A paradox emerges when considering the strength of Ptolemaic military power and the long-term failure of the Ptolemaic state as a hegemonic power. The manpower potential of the Ptolemaic army was substantial, as the 75,000 strong field army at Raphia attests. This field army is on the same order of magnitude as the 72,000 Seleucid force at Magnesia, the 74,000 Carthaginian force at Ilipa, and the 86,000 strong Roman force at Cannae.

The Ptolemaic army was highly successful in the field. The Ptolemies prevailed in four of the first five Syrian wars: the First Syrian War was a victory in the sense that Seleucid aspirations against Koile Syria were frustrated. The Second involved sufficient triumph to enforce an advantageous dynastic settlement, setting up Ptolemy II's grandson as the next Seleucid king. The Third Syrian War showcased the stellar expeditionary capacity of the army, landing in Seleucia, marching not only to Antioch (perhaps on the invitation of the government then controlled by Berenice), but advancing as far as Babylon.[345] The scale and speed of conquest evoked the specter of Alexander the Great. At Raphia, in the Fourth Syrian War, the cleruch muster, reinforced by hastily trained Egyptians and newly hired mercenaries, triumphed in what was perhaps the largest land battle of the Hellenistic world.

Yet Ptolemaic kings used this large and effective army primarily for defensive purposes. The sole exception is the Third Syrian War, and here it should be noted that the army was hastily withdrawn after a spectacular campaign due to unrest in Egypt. The reason behind this quick retreat lies at the heart of what limited the expansionary potential of the Ptolemies' otherwise impressive manpower pool.[346]

---

[342] On Roman manipular infantry tactics in the mid-Republic, see Taylor 2014a.
[343] Polybius 14.12.4 (Paton).
[344] Polybius 18.32.7-13.
[345] Ptolemy III's Mesopotamian campaign: Appian, Syr. 65; BCHP 11.2
[346] Egyptian unrest: Justin 27.9.

In many ways, the Ptolemies suffered from a "Spartan problem." The Classical Spartan military system depended on the subjugation of the Messenian helots, but Spartan expeditionary aspirations were constrained by the constant need to keep watch over their own subjects. A similar dynamic prevailed in Ptolemaic Egypt. A small class of military settlers (although much larger than the miniscule pool of Spartan *homoioi*) dominated the demilitarized but economically productive Egyptian peasants. While the cleruchs could be mustered into a powerful field army, the need to maintain constant guard over the subjugated population precluded their deployment abroad. Ptolemaic kings were hesitant to become entangled in military conflicts abroad. While they were willing to utilize their ample wealth to subsidize allies and proxies, Ptolemaic kings seldom committed ground troops.

The Third Syrian war proved the exception. The rewards of this foreign adventure were exceptional, as it promised to alter the dynastic balance between the Ptolemies and Seleucids permanently. Nor should we discount the emotional urgency given the lethal court dynamics that menaced the king's sister and nephew, and ultimately claimed them. The risks of deploying the army outside of Egypt, however, quickly materialized. While Ptolemy III could have stayed and tried to incorporate parts of Syria and Mesopotamia into his realm, he hastened his forces back to Egypt.

The same dynamic must explain why Ptolemy IV did not realize Antiochus III's greatest fear after the Battle of Raphia: an invasion of Syria before Seleucid defenses could be properly organized.[347] Both Polybius and Justin present a neat, moralized tale of Ptolemy IV's sloth and indolence as preventing him from following up on the victory.[348] Whatever the nature of Ptolemy IV's character, he was likely unwilling to risk domestic strife by marching the bulk of his coercive resources out of the country. The fact that a modest rebellion did indeed flare up in southern Egypt in 217/6 suggests he was wise in not doing so.

This structural dynamic meant that the Ptolemaic dynasty could never be a serious contender for Mediterranean hegemony, even if this had been the explicit goal of aggressive Ptolemaic kings such as Ptolemy II, III and VI. Ptolemy IV seems to have had a more realistic grasp of his own strategic limitations, although he could have also been a lazy alcoholic, as Polybius suggests.[349] The slender base of settlers, while replenished at intervals through the settlement of discharged mercenaries, was sufficient to maintain control over the tributary resources in Egypt and the immediate environs of the Aegean. It was not, however, suitable for a program of conquest.

---

[347] Polybius 5.87.1.
[348] Polybius 5.87.1, Justin 30.1.4-7.
[349] Polybius 5.87.4. The competitive drinking culture central to Hellenistic court life likely would have made many Hellenistic kings clinical alcoholics according to the modern definition. To my knowledge, the only attempt at a post-facto diagnosis has been, predictively, Alexander the Great, on which see O'Brien 1992.

Chapter 6: Seleucid Manpower

I. Power Effective:

Our understanding of Seleucid manpower largely rests upon three literary descriptions of the Seleucid army in full array, two from Polybius and a third from Livy (which is clearly based on Polybian materials). Before Polybius, who used the Seleucid prince Demetrius I as an informant, our knowledge of Seleucid forces is extremely limited, although there is no reason to think that Seleucid armies before the age of Antiochus the Great were substantially different in either their basic magnitude or composition.

The first detailed breakdown of a Seleucid army is Polybius' description of Antiochus the Great's army deployed at the Battle of Raphia in 217, an enormous force, levied from across the empire, so that Polybius' description has echoes, perhaps self-conscious, of Xerxes' multi-ethnic horde in Herodotus:[350]

Table 6.1: Seleucid Order of Battle at Raphia, 217

Professional Cadre:	
Silver Shield Phalanx:	10,000
Royal Cavalry (probable):	2,000[351]
Citizen-Soldiers:	
Main Phalanx:	20,000
Cavalry:	4000
Subject Levies:	
Medes, Cissians, Cardusians, Carmanians:	5000
Persians and Argianians:	2000
Thracians:	1000[352]
Kardakes:	1000
Lydians:	500
Dahae, Camerians, Cicilians:	5000[353]
Allies:	
Arabs:	10,000
Mercenaries:	
Greek Mercenaries:	5000
Cretans and Neo-Cretans:	2500[354]

[350] Polybius 5.79, Bar Kochva 1976: 128-142

[351] Polybius lumps the entire cavalry force into a single Brigade of 6000 horse; I am assuming that the two regiments, the Royal Companions and the Agema, each 1000 strong, were also present at Raphia, just as they are attested at Magnesia.

[352] Bar Kochva suggests that the Thracians represent military settlers in Persia, which explains why they are commanded by the same Iranian officer as the Persians and Argianians, although Aperghis 2004: 190, note 3 does not accept this theory.

[353] These are curiously referred to as light troops in Polybius 5.79.3 (εἰς τὸν τῶν εὐζώνων τρόπον καθωπλισμένοι), but then described three chapters later (5.82.10) as "armed in the Macedonian manner" (εἰς τὸν Μακεδονικὸν τρόπον καθωπλισμένων). It is possible Polybius (or his source) has simply made an error, but it may also be that Antiochus finally got wind of the enormous phalanx Ptolemy was fielding, and decided to arm some of his own subjects in the Macedonian manner to compensate.

[354] See discussion above.

These contingents add up to 62,000 infantry, and 6000 cavalry. The 30,000 phalangites in the citizen phalanx and the Silver Shields (*argyaspides*), combined with the 5000 subject troops "fighting in a Macedonian manner" provided a total of 35,000 heavily armed infantry, which constitutes roughly 50% of the total force. This figure is all the more impressive when one considers that some 6000 soldiers from Cyrrhus were unavailable due to a mutiny, and that the army of Achaeus (at least another 6500 soldiers, and possibly more), was in a state of open rebellion.[355] The 68,000 at Raphia did not therefore represent the maximum mobilization potential of the kingdom.

Despite his defeat at Raphia, Antiochus III embarked on a successful career to reestablish failing Seleucid control over both Asia Minor and the East.[356] As a result, the Seleucid kingdom by 190 reached perhaps its largest territorial extent. Antiochus' reign also represents the apogee of Seleucid military power, and the field army at Magnesia certainly represents the largest reliably attested Seleucid force. The breakdown survives in Livy, and the similarity to is here certainly using a lost section of Polybius.[357]

Table 6.2: Seleucid Order of Battle at Magnesia, 190.

Professional Cadre:	
Argyaspides:	{10,000}[358]
Royal Cavalry (Syrians, Phrygians, Lydians):	1000
Agema Cavalry:	1000
Citizen Soldiers:	
Main Phalanx:	16,000
Subject Levies:	
Cataphract cavalry:	6000
Pisidians, Pamphylians and Lydians:	4000
Mysian Bowman:	2500
Cyrtian and Elymean slingers:	unknown quantity
Miscellaneous force (*mixti*):	2700
Mercenaries:	
Gallo-Graeci (Galatian) Infantry:	3000
Galatian cavalry:	2500
Dahae archers:	1200
Cretans and Thalles:	5500
Carians and Cicilians:	1500
Tarentines:	500 (?)[359]

[355] 6000 mutineers from Cyrrhus: Polybius 5.50.8. 6000 infantry, 500 cavalry with Achaeus: Polybius 5.72.3.
[356] On the campaigns and career of Antiochus III, see Schmitt 1965, Sherwin-White and Kuhrt 1993: 188-216 and Tayor 2013.
[357] Livy 37.40, Bar Kochva 1976: 163-173. Livy's detailed breakdown of the Seleucid Army has a very Polybius feel; compare to Polybius description of the armies at Raphia (above) and Sellasia (2.65).
[358] Livy does not provide total figures for the phalanx of the *argyraspides*, but this seems to be a standard royal unit with a set strength of 10,000.This was explicitly reached at Raphia (above), and the Silver Shields are likely the 10,000 peltasts who fight beside the king in Bactria (Polybius 10.49.3). The addition of 10,000 infantry would go a long way towards making Livy's figures add up to c. 60,000 infantry. (Bar Kochva 1976: 168)

Allies:
Arab Archers: unknown quantity
Cappadocians: 2000

Livy reports the total strength at 60,000 infantry and 12,000 cavalry.[360] The excessive number of cavalry, and the ratio of 1-5 horse to foot is potentially suspicious, but not necessarily damning, especially given the traditional link between the Iranian plateau and mounted warfare. Livy's figures, at least in broad terms, should probably be accepted.[361] Some 26,000 are heavy phalangite infantry, the citizen phalanx and the (presumed) 10,000 in the Silver Shields. This is inferior to the 35,000 heavy infantry Antiochus had fielded at Raphia nearly thirty years earlier, and may reflect losses at Thermopylae (nearly 10,000 infantry caught in the Roman trap.)[362] Still, his heavy forces far outnumbered the Roman heavy infantry (*hastati*, *principes* and *triarii*), which in a two-legion consular army probably numbered around 15,000.[363] Notable at Magnesia is the reliance on troops recruited from Anatolia, which is not surprising given that this was the focus of the Roman invasion. The Pisidians, Pamphylians, Lydians, Carians, Cicilians, Galatians, Cappadocians and Mysians, some 15,500 troops, represent both local subject levies and mercenary hires, as well as troops dispatched by the king of Cappadocia. In the years leading up to the Roman War, Antiochus had sought to improve his position in Asia Minor through the acquisition of a regional ally by means of a marriage alliance. His first choice had been Eumenes II of Pergamon, but Eumenes, correctly judging that taking a daughter from the Great King was an act of submission, declined, and Antiochus obtained a second-rate alliance with the king of Cappadocia instead.[364] While the geostrategic position of the Attalid dynasty was more central than that of the Cappadocians, the manpower contribution each power could offer was more or less the same: Ariathes sent Antiochus two thousand infantry; Eumenes II contributed several thousand infantry and 800 cavalry to the Roman side.[365]

Our final snapshot of Seleucid manpower is Polybius' depiction of the procession given by Antiochus IV at Daphne in 166. The procession was clearly intended to blazon Seleucid power and prestige, especially coming off the famous snub Antiochus IV had received from C. Popillius Laenas at Eleusis.[366] Polybius himself believed that the games were designed to rival the games given by Aemilius Paullus in Macedonia.[367] Antiochus might have also planned the parade as the start of a grand expedition to the east; the king did die in Elam in

---

[359] Tarentine cavalry figures are not provided by Livy, but this deduction by Bar Kochva (pg. 169), based on stated numbers of cavalry (12,200) minus actual cavalry contingents listed (11,700) is sound.
[360] Livy 37.37.9.
[361] Bickerman 1938: 67; Aperghis 2004: 191.
[362] Seleucid casualties at Thermopylae: Polybius 20.8.6.
[363] L. Scipio's consular army contained two legions of 5400, with equal allied wings (Livy 37.39.7). Following Polybius' report that the strength of the triarii was kept at 600, this would imply each legion had 1600 *hastati*, 1600 *principes* and 600 *triarii*, for a total heavy infantry strength of 15,200.
[364] Appian *Syr*. 5. Polybius 20.20.8, Livy 37.53.13.
[365] Livy 37.39.9. The exact infantry contribution of Attalus is uncertain; Attalid and Achaean light infantry formed a brigade 3000 strong.
[366] Sherwin-White and Kuhrt 1993: 221-220, Kosmin 2014: 129-130.
[367] Polybius 30.25.1.

164.[368] The procession suggests vigorous Seleucid manpower resources into the second century.

The text is at times vague, although it is unclear if it is corrupt; it has been unfortunately emended (including the insertion of a regiment of "gold shields" nowhere attested in any manuscript). The passage in full reads:

> It was headed by five thousand men in the prime of life armed after the Roman fashion and wearing breastplates of chainmail. Next came five thousand Mysians, and immediately behind them three thousand Cilicians armed in the manner of light infantry, wearing gold crowns. Next came three thousand Thracians and five thousand Gauls. They were followed by twenty thousand Macedonians, five thousand Bronze Shields, and the same number of Silver Shields. Next marched two hundred and fifty pairs of gladiators, and behind them a thousand horsemen from Nisa and three thousand citizen cavalry, most of whom had crowns and trappings of gold and the rest trappings of silver. Next to these came the so-called "companion cavalry," numbering about a thousand, all with gold trappings, and next the regiment of "royal friends" of equal number and similarly accoutered; next a thousand picked horse followed by the so-called *agema*, supposed to be the crack cavalry corps, numbering about a thousand. Last of all marched the "cataphract" or mailed horse, the horses and men being armed in complete mail, as the name indicated.[369]

The 5000 Ῥωμαϊκὸν ἔχοντες καθοπλισμὸν at Daphne represent a Mediterranean-wide trend, following Rome's demonstrated superiority on the battlefield, to mimic Roman tactics, organization, and equipment.[370] There is evidence that the Ptolemies, as well as the Hasmonean Jewish kingdom, also adopted significant military reforms, inspired by the Romans, in the second century.[371] The recent find of a Roman style *gladius hispaniensis* near Jericho, used by either Seleucid or Hasmonean forces adds further confirmation that armies in the Eastern Mediterranean sought to copy Rome's recipe for military success.[372]

Even so, the "Romans" constituted only a small portion of Epiphanes' army. The bulk of the heavy infantry still fought in the traditional Macedonian manner. My reading of the numbers of Macedonian style infantry is admittedly on the high end: it is not entirely clear whether we should read 20,000 Macedonians, in addition to 5000 Bronze shields and another 5000 Silver Shields, or 20,000 Macedonians, including these two subsets. The 30,000 Macedonians at Raphia suggest that the higher number is in fact correct, and that in the generation since the debacle at Magnesia the pool of citizen manpower had been fully regenerated.

The continued representation of Galatian, Mysian and Thracian mercenary contingents from Asia Minor after the Seleucid kingdom had renounced control of Asia Minor west of the Taurus suggests that the Seleucids maintained old networks of mercenary recruitment despite the loss of suzerainty over these regions. It is a reminder that mercenary loyalties were far from transient; traditions of service to a state could endure for generations. The

---

[368] On the procession of Antiochus IV: Sherwin-White and Kuhrt, 1993: 220-221, Walbank 1996: 125-9; Strootman 2007, 309-313.
[369] Translation after Paton (LCL).
[370] Sekunda, 2001: *passim*.
[371] Ptolemies: Sekunda 2001. Jews: Gordon 1985.
[372] On the Jericho *gladius*, Stiebel 2004.

recruitment was also in violation of the treaty of Apamea, which forbade the recruitment of mercenaries from the Roman sphere of influence.[373]

Table 6.3: The Parade at Daphne, 160s

Professional Cadre:	
Armed in Roman Fashion:	5000
Silver Shields:	5000
Agema Cavalry:	1000
Companion Cavalry:	1000
Cataphracts:	1500
Nysine Cavalry	1000
Citizen Soldiers:	
Phalangites	20,000
Bronze Shields:	5000
Citizen Cavalry:	3000
Mercenaries:	
Mysians:	5000
Thracians:	3000
Cilicians:	3000
Galatians:	5000

According to this reading, Antiochus paraded some 58,500 soldiers, 51,000 infantry and 7,500 cavalry, through Daphne. We see a different configuration in the organization of Seleucid infantry. There are only 5000 Silver Shields, instead of the traditional 10,000. Sekunda is quite likely correct in his assertion that the 5000 "Romans" represent half of the Silver Shields re-armed to fight as Roman-style *thureophoroi*.[374]

The existence of the Bronze Shields is more puzzling. A Bronze Shield corps is not previously attested in Seleucid service, but Bronze Shields had been a central element of Antigonid armies. The sudden appearance of Bronze Shields in the Seleucid army, less than three years after the destruction of the Antigonid monarchy, may not be a coincidence. Sekunda has raised the possibility that Seleucid kings decided to transfer the lineage of the unit by raising one of their own.[375] An additional possibility exists: two Macedonian districts that had traditionally supplied citizen soldiers for royal campaigns had been completely demilitarized by the Roman settlement. It is not impossible that these two districts were the very ones that manned the Bronze Shields. Some of these citizen soldiers may have missed the opportunity to do frequent military service for pay, and perhaps Antiochus capitalized on this fact by creating a Bronze Shield phalanx manned with Macedonian mercenaries/immigrants. This, however, must remain speculation.

The sound Polybian descriptions of Raphia, Magnesia (via Livy) and Daphne all suggest that the Seleucids were routinely capable of mobilizing large field armies, and indeed give credence to certain figures reported by other

[373] Polybius 21.43.10, Antiochus IV violated several other clauses by illegally maintaining a fleet and elephant herd, which produced limited Roman concern.
[374] Bar Kochva 1976: 60.
[375] Sekunda 2001: 89.

sources: Josephus' report of 55,000 at the Battle of Beith-Zacharia in 162 and Justin's 80,000 led by Alexander VII against the Parthians in 129.[376] Indeed, even the 100,000 infantry and 20,000 cavalry suggested by Justin to accompany Antiochus III on his anabasis (211-205) seems only moderately exaggerated.[377] It is quite likely that for this great campaign, Antiochus III took an army that was of the same order of magnitude as those he deployed at Raphia, and Magnesia.

Garrisons

Aperghis estimates the number of garrison soldiers, settler and mercenary, at roughly 20-30,000, assuming that Seleucid peacetime garrisons were less than the 36,000 soldiers Alexander reportedly needed to garrison his recently conquered realm.[378] As with many estimates for peacetime garrison requirements, this is too high. Teos, a nominally free city in the early third century, maintained a garrison of only twenty men at the fortress of Kyrbissos.[379] Larger cities, such Apamea, Susa and Babylon, likely had more substantial garrisons, but even these probably numbered in the hundreds, not thousands (cf. the peacetime Antigonid garrison at the Acro-Corinth, a mere 400 men).[380] If we assume 500 soldiers in the ten largest cities of the empire, and generously postulate some 250 small garrisons the size of that of Teos, this would only require the services of around 10,000 men.[381] Many Seleucid communities seem to have been designed to be "self-garrisoning", in that the settlers were required to man the fortifications themselves, negating the need to hire mercenaries. The best evidence comes from Stratonicea-in–Caria, where the inhabitants of particular city blocks (*amphoda*) were grouped into units and assigned to segments and towers of the city wall.[382] The one problem with this manpower strategy was that the mobilization of settlers from a community would have reduced the number of settlers to serve in a garrison capacity, although the most likely solution was to mobilize younger men for active fighting during periods of intense warfare, and leave the garrison functions to older settlers—the approach of the Antigonid conscription Diagramma, which mobilized younger men in the household and then left older men to serve as reservists in their communities.

The maximum mobilization for the Seleucids, in the late 190s, involved 72,000 in field armies and another 10,000 full-time garrison troops, would therefore be roughly 80,000 soldiers.[383] My estimate for full time garrisons is admittedly somewhat low, and if the garrison footprint was larger, the figure could well have approached 90,000. Mobilizations of this order of magnitude were obtained only during periods of intense warfare, including the years from 219-217, during the Fourth Syrian War; from 211-205, during the anabasis of Antiochus III; and during the Roman war from 192-190. Similar mobilizations

[376] Josephus *BJ* 1.41-6, Justin 38.10, accepted by Bar Kochva 1976: 10-11.
[377] Aperghis 2004: 192-193, Bar Kochva 1976: 10.
[378] Aperghis 2004: 199-200
[379] Burstein 1985: 35, no. 28.
[380] Plutarch *Aratus* 24.1.
[381] Garrison at Apamea: Polybius 5.50.10; Susa: 5.48.14; Babylon: Sherwin-White 1982: 58-64. Seleucia Pieria, Polybius 5.61.2.
[382] Kosmin 2014: 206.
[383] Aperghis 2004: 201.

were likely effected during the successful campaigns of Antiochus IV and the doomed efforts of Antiochus VII.

The total population of the Seleucid kingdom can only be crudely guesstimated. Aphergis suggests some 14-18 million people at both of the empire's territorial peaks, under Seleucus I and Antiochus III, falling to something closer to 10 million in times of dynastic crisis and territorial contraction.[384] Peter Green has suggested a population as high as 30 million, although he does not elaborate on the basis of the figure.[385] These figures must remain highly speculative; nonetheless it is relatively safe to say that the Seleucid kingdom at its height had a total population far greater than any other great power in the Mediterranean. It therefore had the lowest mobilization rates of any power. Even if we assume a generous estimate of the maximum mobilization rate (say 100,000) against a conservative guesstimate for total population (ten million) this would mean that the Seleucids were only able to mobilize less than 1% of their population.

II. Manpower Strategies

Citizens/Settlers

The ranks of the Seleucid infantry phalanx, as well as some cavalry units, were recruited from the citizens of the various Seleucid cities.[386] Units were recruited by city, thus we hear of 6000 soldiers serving as a single unit from the large northern Syrian city of Cyrrhus.[387] Polybius refers to at least one regiment of 3000 cavalry at the Daphne procession as πολιτικοὶ, either the hometown muster of Antioch, or, judging from the large size of the unit, an amalgamation of civic regiments from various large cities with in the empire.[388] Finally, there is the tragic report of grieving in Antioch following the massacre of Antiochus VII Sidetes along with his royal army:[389]

> When the death of Antiochus became known at Antioch, the whole city mourned, and every house was full of wailing, especially from women, who bemoaned this great loss. Three hundred thousand men had been lost, including those who did not serve in the ranks. Every family had some loss to grieve: among the women, some had to mourn the death of a brother, others that of a husband or a son; and many girls and boys, left as orphans, lamented that they were bereaved.

Diodorus' casualty roll of 300,000 dead is certainly a gross exaggeration, but the passage nonetheless presumes heavy recruitment from the citizens of the city.

The communities from which Seleucid kings recruited citizen soldiers had been founded by Seleucid kings though the distribution land grants (*kleroi*) given to settlers (*katoikoi)*.[390] These grants carried with them an explicit military service

---

[384] Aperghis 2004: 57.
[385] Green 1990: 371.
[386] That Seleucid soldiers were drawn from military settlers is supported by Griffith 1968, 157-164, Bar Kochva 1976:59-62, and Billows 1994: 173-178. Against is Cohen 1978: 51-52, Aperghis 2004: 194.
[387] Polybius 5.50.8.
[388] Bar Kochva 1976: 30.
[389] Diodorus 34.17 (Booth).
[390] Bar Kochva 1976: 20-38, Griffith 1935: 148-165.

component, and it is clear that garrison service was required as part of the deal, although nowhere do we have mentioned that settlers were explicitly required to serve in the royal field army (perhaps such an obligation was so obvious that it did not need to be said). The best epigraphic evidence comes from an inscription recording the proposed synoikism between Smyrna and Magnesia-ad-Sipylum after the Third Syrian War.[391] Magnesia had supported the Ptolemaic side, and retained a residual Ptolemaic garrison. Seleucus II, still shaken by the Ptolemaic invasion, attempted to bring them back into the fold: the settlers of Magnesia were given generous benefits for returning their loyalties to the dynasty and joining their city to Seleucid Smyrna. The Ptolemaic soldiers still in Magnesia were provided with significant land grants as a reward for defection.

The inscription does imply strong links between the granting of land and military service. One subset of inhabitants of Magnesia are *katoikoi,* although these were not the only inhabitants of the city, and citizenship in the new synoikism was granted to anyone who is free and Greek. City officials maintained muster rolls, and men who were *katoikoi*, both cavalrymen and infantrymen (based presumably on lot size) were required to register with polis officials as part of the administrative shuffle necessitated by the synoikism. Some of the *katoikoi* at Magnesia seem to have had responsibility for garrison the fort at "Old Magnesia," and they seem to have likewise gone over to Ptolemy III. Seleucus II, who clearly wants the fort garrisoned by loyal troops, tries to coax them out by promising that the plots (*kleroi*) granted to them by either Antiochus I, or a certain Alexander (likely a governor or official) would be tax exempt for three years. Here there is a firm linkage between garrison duty and land allotment.[392]

The granting of lands had been a critical strategy in the foundation of military settlements, ranging from the great poleis of the empire such as Antioch and Seleucia-on-the-Tigris, to small settlements of barely a few hundred people.[393] It certainly is true that settlers were expected to be military assets, serving as a loyal garrison to the king out of a desire to protect their own land. This comes across in a letter purportedly by Antiochus III, preserved by Josephus:[394]

πυνθανόμενος τοὺς ἐν Λυδίᾳ καὶ Φρυγίᾳ νεωτερίζοντας μεγάλης ἐπιστροφῆς ἡγησάμην τοῦτό μοι δεῖσθαι, καὶ βουλευσαμένῳ μοι μετὰ τῶν φίλων, τί δεῖ ποιεῖν, ἔδοξεν εἰς τὰ φρούρια καὶ τοὺς ἀναγκαιοτάτους τόπους τῶν ἀπὸ τῆς Μεσοποταμίας καὶ Βαβυλωνίας Ἰουδαίων οἴκους δισχιλίους σὺν ἐπισκευῇ μεταγαγεῖν. πέπεισμαι γὰρ εὔνους αὐτοὺς ἔσεσθαι τῶν ἡμετέρων φύλακας

Having been informed that a sedition is arisen in Lydia and Phrygia, I thought that matter required great care; and upon advising with my friends what was fit to be done, it hath been thought proper to remove two thousand families of Jews, with their effects, out of Mesopotamia and Babylon, unto the castles and strategic spots; for I am persuaded that they will be well-disposed guardians of our possessions…

[391] OGIS 229.
[392] Noted by Billows 1995: 174.
[393] On these settlements in general, Cohen 1978, 1995, 2006 and 2013.
[394] Josephus *AJ* 12.149-150; Cohen 1978, 5-9; Cohen 1995: 212-213; Schalit 1960.

Here the function of the settlers is quite explicit: they are to be garrison troops, guarding τὰ φρούρια καὶ τοὺς ἀναγκαιοτάτους τόπους. Likewise, we saw above the garrison duties being performed by *katoikoi* of Magnesia, although the bargain of land for loyalty had certainly broken down in this instance.

How many military settlers were there? Bar Kochva suggests that these could provide around 44,000 infantry and 12,000 cavalry. His method is as follows: he adds the strength of the heavy infantry at Raphia (30,000 infantry, the phalanx and Silver shields) to contingents that were not present: 6000 mutineers from Cyrrhus, and 6000 heavy infantry with Achaeus, now also in rebellion. To this he adds the 2000 Jewish *katoikoi* settled by Antiochus III, putting the total heavy infantry potential of the settlements at 44,000.[395]

Did *katoikoi* also man the standing units, such as the Silver Shields, the cavalry *agema,* and the royal companions? Bar Kochva believes that they did, and proposes a hypothetical system whereby the sons of military settlers served a stint in the Silver Shields, before retiring to their *kleroi* as reservists.[396] This likely did occur, but it should be noted that Livy describes the cavalry *agema* as drawn from native peoples in the empire: *medi erant, lecti uiri, et eiusdem regionis mixti multarum gentium equites* "they were Medes, picked men, and mixed horsemen from many peoples of that region."[397] The Royal Companions are described as *Syri plerique erant Phrygibus et Lydis immixti* "many Syrians, with Phrygians and Lydians mixed in." The Syrians are perhaps cleruchs from the *tetrapoleis*, but what of the Medes, Phrygians and Lydians serving in these two regiments? Bar Kochva insists that these were in fact military settlers from Media, Phrygia and Lydia, a suggestion that cannot be ruled out. Yet it is more likely that this full-time unit in fact recruited from non-Greco-Macedonian subjects serving as professional soldiers.

Subjects:

Like their Achaemenid predecessors, the Seleucids mobilized forces from across their vast and diverse empire.[398] The mobilization of subject manpower was no doubt a matter of military necessity, but it is important to note that the Seleucid use of native troops stood out when compared to the dynasty's Hellenistic counterparts: the Ptolemies notably made almost no use of native manpower, while the Antigonids used subject auxiliary troops quite lightly, with the exception of some Thessalian cavalry and Illyrian and Paeonian infantry. This in part was the result of the geographical dimensions of the Seleucid kingdom, and the fact that Seleucids had a comparatively larger net population of subject peoples. The Seleucids, therefore, mustered tens of thousands of subjects into the field armies. The 14,500 subjects at Raphia and the 15,200 (or more) at Magnesia each represent over 20% of the total force, a substantial supplement to Macedonian-style formations in the Seleucid army.

Native subjects were also useful as garrison troops, especially if they were positioned outside of their homeland, where their primary loyalty would be to the Seleucid king, and not to any local nodes of power and patronage. Seleucus

[395] Bar Kochva 1976: 39-43.
[396] Bar Kochva 1976: 46-47.
[397] Livy 37.40.6-12.
[398] E.g. Herodotus 7.62-86.

II, for example, sought to impose a garrison of Persians on Magnesia, under the command of Omanes, likely a native aristocrat; Achaeus' garrison at Sardis was commanded by Aribazus, likewise an Iranian name.[399]

Indeed, for most subjects east of Mesopotamia, service in Seleucid armies was perhaps the only way in which they interfaced with the Seleucid state. Paul Kosmin has recently produced two quite provocative maps in his stimulating study of Seleucid territoriality: the first maps royal journeys, the second produces a dot map of royal colonies.[400] On these two metrics, the bulk of royal efforts, both in terms of peregrination and colonization, were directed along an Asia Minor-Syria-Mesopotamia-Media axis. Seleucid kings, with the exception of Antiochus III, did not venture into Persia and the lands beyond. For these regions never saw a king and were virtually devoid of colonists, subject peoples still made significant military contributions: Elamites, Cyrtians, Medes, Persians, Dahae. It may well be that for the inhabitants of these regions, the primary interaction with the Seleucid state was military service.

Military collaboration could take place even with subjects who were not firmly enmeshed in imperial structures, perhaps in part because marginal subjects were willing to serve (effectively as semi-mercenaries) even if they were not fully integrated into the other administrative structures of the empire. For example, the Elamites contributed troops to Seleucid armies at Magnesia, yet both Antiochus III and Antiochus IV perished while looting Elamite temples. Seleucid kings had the ability to muster men from this highland region, but were unable to exert closer forms of control, compulsion, and exploitation.[401]

Mercenaries:

The Seleucids, like other Hellenistic powers, used mercenaries to supplement their field armies, but these were never a mainstay. Mercenaries comprised only 12% of Antiochus' army at Raphia, and just under 20% of his force at Magnesia. 30% of Antiochus IV's force at Daphne was mercenary in nature, although the increase owes much to the fact that the Seleucids no longer controlled territories in Asia Minor from which they continued to maintain recruiting networks. Galatians consistently provided the Seleucids with sizable contingents, even as early Seleucid propaganda happily celebrated Antiochus I's victory of the Gauls in the so-called "Elephant battle."[402] 5500 Galatians fought at Magnesia, and 5000 marched at Daphne. The lack of a Galatian contingent at Raphia may be in part due to the fact that Achaeus' rebellion interfered with Seleucid recruitment efforts, although it is also possible that Antiochus was hesitant to hire Galatian contingents that had so recently been employed by the rebel Molon.[403] Other usual suspects in the East Mediterranean military labor pool turn up with frequency, especially mainland Greeks, Thracian, and Cretans.

Allies:

[399] Omanes: OGIS 229; Aribazus: Polybius 7.18.7.
[400] Kosmin 2014: 145 (royal journeys) and 184 (colonies).
[401] Antiochus III: DS 29.15; Justin 32.2.1-2. Antiochus IV: App. *Syr*. 66; Polybius 31.9; Diodorus 31.18; 2 Mac. 1.14. See Taylor 2014c for additional discussion.
[402] On the myths of the "elephant battle," see Coskun 2012.
[403] Polybius 5.56.8 for Gauls in Molon's army.

In addition to subjects, Antiochus deployed the manpower of allies, all of which existed in a state of what we might call "subordinated independence". In his campaigns, Antiochus the Great was keen to develop contacts with the Arab chieftains flanking Koile Syria, and some 10,000 Arab cavalrymen joined his army at Raphia. Arab camel riders, in unknown numbers, also joined his army at Magnesia. Seeking to firm up his position in Asia Minor, Antiochus also married a daughter to Ariarathes of Cappadocia, who subsequently contributed 2000 troops to Antiochus' force at Magnesia. Nonetheless, the Seleucids, with their extensive subject manpower, were not excessively dependent on allies to bulk up their forces. Indeed, given the various concentric penumbras of Seleucid power, the distinction between an ally and a subject was often vague. The ready willingness of allies such as the Arab chieftains or Ariarathes to commit troops waned and waxed with Seleucid power.

III. Military Organization

Seleucid kings maintained a sizable professional cadre consisting of two regiments of royal cavalry, each 1000 strong. The first was the *agema*, the second the *basilike ile*, also known as the *hetairoi* (Companions). [404] In addition, there were the elite infantry of the "Silver Shields"(*arguaspides*) a Macedonian style regiment with a hint of Achaemenid flavor. Alexander the Great's *Silver Shields* had been some 3000 strong. The elite Macedonian peltasts in the Antigonid army numbered 5000. Yet the Silver Shields of the Seleucid kingdom had a strength of 10,000. A military unit 10,000 strong is not necessarily remarkable in the ancient world, but it may not be coincidental that this was the strength of the Persian "Immortals" (*athanatoi;* possibly confused by Greek authors for *anusyia*, "Companions") the professional infantry cadre of the Achaemenid kings.

The initial Silver Shields unit, veterans of Alexander's campaigns, had been posted to the East by Antigonus One-Eyed.[405] It is quite likely that Seleucus (or one of his immediate successors) re-constituted the unit, perhaps around a cadre of surviving veterans. This could have happened during Seleucus' anabasis in the East, or later during Antiochus I's tenure as ruler of the Upper Satrapies. Whatever the exact narrative of the unit's creation, it was brought up to a strength not of the original Macedonian unit, but rather to match the royal unit of the dynasty's Achaemenid forbearers. [406]

Like the professional infantry cadre in Macedonia, the Silver Shields contained a smaller elite sub-unit. Whereas the Macedonian sub-unit was dubbed the *agema*, the Seleucids retained the Alexandrian name of the *hypaspides.* This is likely why Polybius describes the 10,000 as ἄνδρες μύριοι τούτων οἱ πλείονες ἀργυράσπιδες.[407] The remainder were likely the *hypaspides*, grouped with the Silver Shields, but likely with somewhat different shield decoration. In the siege of Sardis, a daring special operation involved Dionysius τὸν ἡγεμόνα τῶν ὑπασπιστῶν, backed up by a picked force of 2000 men, who are quite likely the

[404] Bar Kochva 1976: 68, who notes that what Livy calls the *regia ala* is referred to by Appian as the *hippos hetairike;* the proper name of the regiment was likely the *ile basilike tōn hetairōn.*
[405] Plutarch *Eumenes* 19.2; Diodorus 19.48.3. Both reflect a hyperbolic source that suggest the Silver Shields perished on eastern frontier duties in Arachosia.
[406] Herodotus 7.41, 7.83.
[407] Polybius 5.79.5. Bar Kochva 1976: 64-65.

hypaspides themselves.[408] As Bar Kochva notes, this would fit well into an Asclepiodotian framework, with the *arguaspides* having a paper strength of 8192, divided into two *strategiai*, with two chiliarchies of *hypaspides* bringing the total of 10,000.[409]

It is quite likely that by the late third century, the 10,000 *arguaspides/hypaspides* had adopted the smaller version of the Macedonian shield (c. 66) utilized by elite Antigonid units, and may have therefore been referred to colloquially as *peltastai*.[410] Thus we hear of Antiochus the Great fighting in Bactria backed by 10,000 *peltastai;* these must be the Silver Shields.[411]
This professional infantry cadre was then supplemented by the citizen phalanx, with a maximum attested strength of 20,000, fighting as traditional Macedonian style phalangites.

Native levies brought diversity to Seleucid forces. This diversity may at times have been distracting: it is clear that Seleucid kings were sometimes unsure how to use the unique capacities of various native levies. Many of the numerous native levies at the Battle of Magnesia, which should have given Antiochus III an enormous advantage over the badly outnumbered Roman force, seem to have played no appreciable role in the fighting.

One native form of fighting that did prove exceptionally useful was the Seleucid adaptation of Iranian style heavy cavalry, known in Greek as *kataphraktoi*. Cataphracts are first attested at the Battle of Panion (c.200). Unfortunately, Polybius' criticism of Zeno's account of the Battle provides little description beyond the term itself.[412] Livy reports that some 6000 cataphracts were deployed at the Battle of Magnesia. He describes them as armored cavalrymen (*equiti loricati*), and indicates that they could be distinguished from the royal cavalry in the *agema* by the fact that these has less armor for both the horse and rider than the cataphracts (*regia ala leuioribus tegumentis suis equorumque, alio haud dissimili habitu*).[413] By the Daphne parade, cataphracts now only number 1500, but are again defined by heavy mail armor on both horse and rider.[414] The balustrade reliefs on the Temple of Athena in Pergamon likely reflect some of the armor worn by Seleucid cataphracts. The reliefs feature various forms of loot that correlate strongly to the war with Antiochus the Great: rams, which reflect joint Attalid-Roman victory at Myonessus, and a chariot, a visual reference to the scythed chariots employed by Antiochus the Great. The reliefs also feature in a pile a beaded face-mask, two arm-guards (similar to the *manciae* later worn by Roman gladiators), and the plumed face mask for a horse. These very likely reflect the heavy armor worn by the 6000 Seleucid cataphracts at the Battle of Magnesia, elements of which were routed by the charge of Eumenes II's cavalry.

The large numbers of cataphracts at Magnesia may be indicative of waxing Seleucid control over Iran after Antiochus the Great's campaigns, which waned under his sons, or it may simply reflect shifting tactical priorities.

---

[408] Polybius 7.16.1-6.
[409] Bar Kochva 1976: 65.
[410] Markle 1999.
[411] Polybius 10.49.3.
[412] Cataphracts at Panion: Polybius 16.18.6-8.
[413] Livy 37.40. 5,11.
[414] Polybius 30.25.10

Seleucid cataphracts seem to be quite similar to the heavily armored riders employed by both the Roman Empire and the later Parthians/Persians, as illustrated by the famous Dura graffito.[415] The use of armored horses may have in fact started under the Persians if not earlier; for example Cyrus the Great's bodyguard rode on horses with προμετωπίδια καὶ προστερνίδια, and these front-pieces and chest plates may have been functional was well as decorative.[416] Nonetheless, the development should also be seen as a product of military collaboration between the Seleucids and their native subjects.

Conclusion:

Seleucid kings were consistently able to mount 50-75,000 men field armies, with a maximum mobilization, counting field armies and garrisons, of perhaps 80,000 men (or even, optimistically, 90,000). These numbers were achieved through a diversified manpower "portfolio," a combination of *katoikoi* mustered from Greco-Macedonian communities, subjects and allies fighting in native units in keeping with their own martial traditions, and hired mercenaries. The size of the mobilization allowed Seleucid kings a great deal of strategic flexibility, in particular in the simultaneous maintenance of multiple theaters of operation. For example, in 220/19 the young Antiochus III campaigned against Ptolemy IV in Koile Syria, while an army led by the general Xenoitas marched against the rebel Molon, and a second army under his cousin Achaeus fought in Asia Minor against Attalus. This three-front arrangement collapsed when Xenoitas was defeated and Achaeus rebelled, but these setback owed to other dynastic issues; the very fact that the three simultaneous operations were sustainable was a testament to the scope of Seleucid resources. When Antiochus III marched out on his eastern anabasis with his large army in 212, he was able to leave a substantial force under the command of his viceroy Zeuxis in Asia Minor, to mop up after in the aftermath of Achaeus' revolt.

The size of the Seleucid manpower pool also allowed the Seleucids to deal with substantial setbacks. For example, Antiochus mustered 68,000 soldiers at Raphia despite the fact that Achaeus and his army was in revolt, another 6000 soldiers from Cyrrhus were still in open mutiny, and the survivors of Molon's revolt had been discharged, rather than retained for the renewed war against Ptolemy IV.[417] The soldiers at Daphne paraded at a time when the Maccabean revolt was already in full swing.

All of these challenges were the product of internal stresses, rather than externally inflicted trauma. The Seleucid kingdom was characterized by a high degree of structural instability, given its territorial expanse, geographic fragmentation, lack of unifying waterways, and ethnic heterogeneity. The substantial manpower resources of the empire were a major reason why the dynasty succeeded in transcending this fundamental instability.

Nonetheless, the empire was notably vulnerable to external invasion. Ptolemy III blasted through Seleucia Pieria to Antioch, and his armies got as far as Babylon (admittedly, he was helped by the fact that in the civil divisions,

[415] On post-Seleucid cataphracts, see Rattenbury 1942 (obviously inspired by current events) and Eadie 1967.
[416] Xenophon *Anabasis* 1.8.7; Tarn 1930: 73.
[417] Discharge of Molon's army: Polybius 5.54.8.

many citizens of these cities saw him as a supporter of the legitimate king, the son of Berenice). Antiochus III, despite a large army, was unable to stop L. Scipio and his legions. An aspect of this particular defeat itself owed to contingency; the early phases of battle went very much in Antiochus' favor. What is curious is the inability of Seleucid kings to recover from even moderate casualties. 13,000 dead (and another 4000 captured) at Raphia caused Antiochus III, still young, admittedly, but already hardened in the ways of war and murder, to race back to Antioch and sue for peace.[418] Antiochus again sued for peace at Apamea after his defeats at Thermopylae (where another 10,000 died) and Magnesia (53,000 likely inflated).[419] Severe defeats, catastrophic even, by any measure, but both Rome and Carthage proved capable of enduring far greater carnage, despite controlling a far smaller overall population.

Nonetheless, the Seleucid kingdom could have endured greater casualties, given the evidence of robust manpower resources. One reason for the hasty capitulation of Seleucid kings in the face of military defeat was related the fragility of royal legitimacy. Quite simply, it was better for a king to surrender on negotiated terms than risk losing more high profile battles. A king's legitimacy rested heavily upon a reputation as a field general. Most notably, Antiochus III, having suffered personal defeat at Thermopylae and Magnesia, and the destruction of his fleet at Myonessus, capitulated after Magnesia despite rallying a substantial force of survivors, who at the very least might have fought a successful holding action while additional reinforcements could be levied. But Appian reports that the Great King was unnerved by muttering in his court, and for good reason: his older brother Seleucus III had been murdered following a botched campaign.[420] Rather than risk another debacle, Antiochus moved to end the war on unfavorable terms. This was the great irony of the ideology of the "warrior king": it prevented the manpower rich Seleucids from being truly tenacious competitors.

[418] Casualties at Raphia: Polybius 5.86.5. Seleucid killed and captured represent 25% of his total force.
[419] Erdkamp 2006 links high casualty figures to the annalistic tradition, and this may represent an annalistic interpolation into an otherwise Polybian narrative.
[420] Mutters in the Seleucid court: Appian *Syr.* 37.

Chapter 7: Mediterranean Manpower, a Synoptic View

In 190, the army of Lucius Scipio, some 30,000 strong, marched out of its camp to face off against a massive opposition force, 72,000 men commanded by Antiochus III. With 60,000 infantry and 12,000 cavalry, the king's army outnumbered the Roman invaders by more than 2:1.[421] Why did Lucius Scipio feel compelled to fight outnumbered two to one? Fighting with such lopsided numerical odds seems to run counter to the standard explanation of Rome's imperial success, namely, vastly superior reserves of manpower. Polybius marveled that in 225, Rome could call on a manpower reserve of 700,000 infantry and 70,000 cavalry. Modern historians routinely link Rome's conquest to superior human resources. The explanation is on one hand inherently satisfying: Rome won because she had more men. A simple quantitative metric underlies the complex process of Roman imperialism; it provides an easy answer to a hard question. But if the Romans had such superlative manpower resources, why did Lucius Scipio fail to simply bring a larger army with him when he invaded Asia Minor? The answer to this question gets to the heart of the nuanced relationship between manpower and empire in the Roman Republic.

Fighting Outnumbered:
The case of Lucius Scipio and Antiochus the Great was not unique. In fact, the Romans often fought outnumbered. The chart below offers a roll-up of the manpower attributed to each side by the ancient sources for some of the most decisive battles in Mediterranean history. In instances where the sources vary, I have included both alternatives.

In the far-right column, I indicate whether the Romans fought with superiority, inferiority, or parity(meaning that the difference between the two parties is less than 5%). It should be noted that in many instances, multiple sources are required to reconstruct troop strength. Suffice it to say, in most of the critical battles, the Romans fought either outnumbered, or at the very least, managed only to obtain a rough parity in manpower resources. From this viewpoint—i.e., when considering individual battles —the numerical superiority of Italian power seems meaningless. Having a huge number of peasants on the muster rolls, in brief, did little good when the general gave the order to march out from camp and form up the battle line.

Table 7.1: Tactical Manpower in Decisive Battles

	Rome	The Enemy	Roman manpower
Ilipa:			
[Livy[422]	55,000	54,500	Parity]
[Polybius[423]	45,000	74,000	Inferior]

[421] Antiochus's Strength: Livy 37.37.9. Bar Kochva 1976: 8-9, 168 offers the most sensible solution, namely that the un-enumerated strength of the Silver Shields must be 10,000 strong, the same strength posted by the unit at the Battle of Raphia.Roman strength (Livy 37.39.7-11): Two legions with 5400 infantry and equal allied wings, 3000 cavalry, 2200 Romano-Italian and 800 Attalid, 500 Trallians and Cretans, 3000 Attalid and Achaean peltasts and 2000 Thracians and Macedonians as a camp guard, or 30,100 total.
[422] Livy 28.12.
[423] Polybius 11.20.2-8.

Zama:[424]	30,100	50,000	Inferior
Cynoscephalae:[425]	26,000	26,000	Parity
Thermopylae:	22,000	10,500	Superior
Magnesia:	30,100	72,000	Inferior
Pydna:[426]	32,400	41,000	Inferior

Roman armies dispatched overseas to conquer the Mediterranean were modest, usually consisting of two legions and two allied wings, supplemented by local allies. These expeditionary forces stood in contrast to the large armies the Romans raised to defend Italy itself: six legions, perhaps 60,000 men with allies, at the Battle of Sentinum in 296, 40,000 men in four legions at Trebia in 218, 86,000 in eight legions at Cannae in 216 and perhaps 50,000 at the Metaurus River in 207.[427] The fact that the Romans concentrated large 40-80,000 men armies for defensive operations in Italy, but struggled to send 20-30,000 man expeditionary forces abroad suggests that seaborne logistics were a major constraint on the size of Roman armies abroad. While both Paul Erdkamp and Jonathan Roth have rightly suggested that the Romans during the late third century became experts at logistics on a grand scale, there were still basic limitations to the number of men that a commander and his quaestor could effectively feed and supply.[428] An additional 10,000 infantry would require an extra 300 tons of grain a month while on campaign, not counting other supplies.[429] The easiest way to simplify logistics was to reduce headcount.

Complicating things for the Roman expeditionary force, the logistical trends so unfavorable for the attacker proved advantageous for the defender. When a Hellenistic king fought on his "home turf," he enjoyed short, local

---

[424] Appian *Pun*. 41 reports Scipio's force at 23,000 Roman infantry, 1500 Roman cavalry, 1600 Numidians under the cheiftain Dacamas, plus 4000 Numidian cavalry. Livy's most plausible report for Scipio's force was 16,000 Romano-Italian infantry (or two legions and alae, 16,800), then the rest of the 23,000 are likely the 6000 Numidian infantry reported by Livy 30.29. Total Roman forces at Zama were therefore 30,100. Appian puts Hannibal's strength at 50,000 (Pun 40), this seems to include the 4000 cavalry mentioned in Pun. 42. Polybius reports that the first line of infantry consisted of 12,000 mercenary skirmishers, suggesting all three infantry lines could reasonably contain 35-40,000 men. Polybius puts the combined killed and captured at c. 40,000, suggesting the Appian's order of magnitude is correct.

[425] Plutarch *Flam*. 7.3, with the Roman force at 26,000 and the Macedonian with the same strength. Polybius lists Macedonian contingents totalling 25,500.

[426] Perseus' strength: Livy 42.51. Roman strength: Paullus had two legions with 6000 infantry and 300 cavalry, and allies a near equal strength (44.21.8). He had in addition 7200 Greek allies (Livy 42.55.7-10).

[427] Roman army sizes in the defense: Sentium: 6 legions and alae (Livy 10.27); Trebia: four legions and alae, 40,000 total (Polybius 3.72.10-13); Cannae: 8 legions and alae (Polybius 3.107.15). Metaurus River: 2 legions and allies under the consul Livius, 2 more under the praetor Porcius and 7000 detached under the consul Nero.

[428] Roth 1998 and Erdkamp 1999.

[429] The ration of the Roman soldier, according to Polybius, was ⅔ of an Attic *medimnos*, or 4 *modii*. While this was a measure in volume rather than mass, *modius* of wheat on average weighed around 15 lbs or 6.8 kg. Thus each Roman infantryman required 60 lbs/27kg of grain per month, ignoring all other supplies.

supply lines, with friendly (or at the very least obedient) local communities ready to provide supplies in kind as well as other forms of logistical support. For example, the city of Teos provided Antiochus' navy with wine during the Romano-Seleucid war, while Macedonian communities rushed to provide wagons to Perseus at the start of the Third Macedonian War.[430] The Battle of Thermopylae in 191, where Roman troops enjoyed perhaps a 2:1 advantage in numbers over those of Antiochus, was unusual in the sense that both combatants operated as logistically constrained expeditionary forces.

In addition to logistics, the ability to recruit locally from subject or vassal communities helped defenders assemble massive armies. At Magnesia, for example, Antiochus, safely back on his home terrain after the debacle at Thermopylae, mustered troops from across his sprawling empire, but notable are the contingents of troops from Asia Minor itself: 2500 Mysians, 5500 Galatians, 2000 Cappadocians, 1500 Carians and Cilicians, 3000 Pisidians, Pamphylians and Lycians: 14,500 in all, or 20% of the enormous defensive army.[431] These dynamics helped Hannibal in 202, Antiochus in 190 and Perseus from 171-168 all ensure that they had far superior numbers when on the defensive against modest expeditionary forces shipped in from Italy.

Strategic Manpower:

If the Romans seldom obtained a decisive advantage in tactical manpower, or even in the total manpower infused into a wider theater of operations, then to what extent can superior manpower resources be said to be a significant advantage over Rome's foes? The most obvious answer is at the level of strategic manpower, namely the total number of soldiers that could be deployed throughout the Mediterranean, allowing Rome to conduct multiple simultaneous operations: for example, in 190, the Romans deployed two legions in Spain, four legions in Italy and two legions in Greece against the Aetolians and two more in Asia Minor against Antiochus the Great. In all, the Romans mobilized approximately 175,000 men, nearly double the roughly 80,000 men that Antiochus the Great was able to muster.

Even so, the ability to mobilize 80,000 men gave the Seleucid kingdom, like the Roman Republic, the ability to conduct large-scale operations simultaneously on multiple fronts. For example, in 220, Antiochus III led an attack into the Biqua Valley with a royal field army; at the same time his cousin Achaeus led a sizable satrapal army in Asia Minor to fight against Attalus I, while another general Xenoitas, led a force against the rebel Molon in Mesopotamia.

Both the extent and limitations of Roman strategic manpower were again on display in 168. In that year the Romans had two legions in the Spain, four legions in Italy, four legions in the East (two against Illyria and two against Macedonia), and a fleet of approximately 70 quinqueremes. All told, this mobilization exceeded 120,000 men. The strain on the demographics of Italy was

[430] Wine for Antiochus: Livy 37.27.3; Wagons for Perseus: Livy 42.53.4.
[431] While considering the whole of Anatolia "local" might seem to stretch the term, it is important to note that the Seleucids themselves considered Asia Minor north of the Taurus mountains as a single administrative district, for example the appointment of Zeuxis as viceroy of the entire region, as well as the appointment of Nicanor as its high priest (Wells, 1934, no. 44).

apparent when in 169, special steps had to be taken to require men of military age to register in Rome, in order to prevent draft-dodging and desertion. Rome did mobilize sufficient manpower to win both the wars against Genthius and Perseus.

Limits on Roman strategic manpower may also explain the curious passivity of the senate to endure a great deal of disobedience and slights, particularly from the East. On the surface, this seems puzzling, given that obedience was central to the Roman understanding of empire (imperium itself defined as the power of command). [432]Yet eastern states disobeyed Rome on numerous occasions. A few examples will suffice. In 162, a Roman ambassador discovered that the Seleucids had flagrantly ignored provisions in the Treaty of Apamea against maintaining a fleet and elephant herd; worse, a Roman legate was murdered by a Seleucid official while hamstringing the elephants.[433] In previous instances, most notably negotiations with the Illyrians in 229, the murder of an ambassador had meant war.[434] Here the patience of the senate seemed infinite, however, having decided that this was not an issue worth the commitment of two legions. Likewise, the Romans had since the late 180s ordered the Achaean league to respect the integrity of Sparta; despite a slew of Spartan embassies, the senate did nothing against the aggressive campaigns of Philopoemen.[435] The only time Sparta was able to find aid in the form of legions was in 148, and here it must not be coincidental that the Romans already had been forced to send a consular army to the east to deal with a Macedonian pretender; and with the legions already mobilized and deployed, the senate decided to kill two birds with one stone.

Indeed, the brutal settlement of the East in 168/7 can in some ways be seen as an act motivated by a weakness in strategic manpower, rather than an act of overweening superiority. Rome punished perceived enemies not necessarily out of sheer hubris, but because she did not know the next time she would be able to project four legions into the East. The fact that Rome did not annex and provincialize Macedonia must likewise be linked to concerns over strategic manpower: the Romans could not spare one to two legions per year to occupy the territory.[436] Thus, as Cato the Elder admitted in a speech "the Macedonians must be free because they cannot be defended."[437] The annexation of the Greece and Macedon in 146 on one hand was a sign that the previous policy had failed, but was also made possible by the fact that the Roman position in northern Italy had improved dramatically after a series of successful campaigns against the Ligurians in the 160s, so that legions no longer needed in the north could be rotated through Greece and Macedonia instead.

As we have seen, in 214 and again in 190, total Roman ground mobilization peaked at approximately 175,000. This is a very large force. But it is notable that Carthage came very close to matching the size and scale of the Roman strategic mobilization. Indeed, Polybius informs us that in 218, Hannibal

---

[432] On the Roman (and Polybian) conception of empire as obedience, see Derow 1979.
[433] Polybius 31.2.11.
[434] Polybius 2.8.12-13.
[435] Polybius 22.3.1-2.
[436] Eckstein 2010: 245.
[437] ORF[8,] Fg. 162.

set off with an army of 102,000 men, after dispatching 15,200 to his brother Hasdrubal to garrison Spain and another 19,920 garrisoned Africa. The total Carthaginian mobilization for 218, according to Polybius himself, was around 140,000 men. In that same year, Rome mobilized a mere six legions, approximately 50,000-60,000 troops; the Carthaginians therefore deployed more than twice as many men as the Romans in the first year of the Second Punic War. We have already discussed how Carthage's different manpower strategies, based on subjects, allies and mercenaries rather than citizens and subjects, proved remarkably resilient, so that Carthage suffered casualties between 204-202 that rivaled those endured by Rome from 218-216.

Both Carthage and Rome adopted strategies that focused on cutting to the core of their opponent's manpower base. For Hannibal, this involved trying to peel away Italian communities, particularly in the southern part of the peninsula. For the Romans, this meant neutralizing Carthaginian holdings in Spain, which had proven a seemingly endless font of manpower. This led to a curious case in 218, when the Romans rushed to invade Spain, while Hannibal rushed to invade Italy, with both sides aiming to strike at what Clausewitz might term the enemy's "center of gravity," hoping to dislodge subjected manpower pools by both force and diplomacy. The diplomacy was on display in two anecdotes from Polybius: firstly, Hannibal let Italian prisoners free without ransom, while keeping Roman prisoners on starvation rations; later, in Spain, Scipio (not yet Africanus) declined to rape a comely female hostage, and instead sought to obtain the loyalty of various Iberian chieftains through his courteous treatment of their children.

Lack of strategic manpower, however, does explain why both the Antigonids and Ptolemies faltered in the struggle for Eastern Mediterranean hegemony. The Ptolemies had an effective field army centered around a 25,000 strong cleruch phalanx. Such a force would have posed a real threat had it been deployed overseas against the Antigonids. But Ptolemaic kings were reluctant to deploy it outside of Egypt, and perhaps with good reason: a native revolt erupted after it was deployed outside of Egypt during the Third Syrian War, while the phalanx suffered serious casualties in Koile Syria during the Battle of Panion. The Antigonids were able to raise effective field armies, based around 10-20,000 a phalanx of citizen-soldiers, but this cadre was insufficient to support large-scale overseas deployments. Macedonian kings needed to keep troops back in Macedonia to defend the northern frontiers against Balkan peoples. The result was that the Antigonids seldom deployed large expeditionary forces outside of their immediate region.

Reserve Manpower:

The 700,000 infantry and 70,000 cavalry Polybius reports on the muster rolls in 225 represented reserve manpower (the Romans only mobilized about 80,000 men that year to deal with the Gallic invasion). Perhaps fewer than half were in their military prime, that is, able-bodied men under the age of 35 or so, but even still this was an enormous pool. The presence of such a large reserve of military manpower was a critical factor that allowed the Romans to maintain a large strategic presence throughout the Mediterranean. But it had another benefit, which is widely recognized: it allowed the Romans to suffer incredible casualties and keep fighting. This feature of Roman military demography was

most notably on display during the First and Second Punic Wars, although most notably during the Second Punic War, when perhaps 100-125,000 Romans and Italians were killed between 218-216. Despite this, the Romans were able raise yet another army or another fleet, and continue the war. But the reserve manpower was not bottomless. The cautious "Fabian" strategy was itself a product of the need to conserve severely depleted manpower resources, which by 215 were being supplemented by the desperate measure of enrolling slaves into both the legions and fleets.

While Roman manpower resources could be strained by massive casualties and heavy overseas deployments, they were enormous when compared to the human resources of Macedonia. Philip V only raised around 25,000 native Macedonians during the Second Macedonian war, and Perseus, after reports of robust population growth, was able to manage around 35,000. These figures are similar to the number of Macedonians in the army of Alexander the Great. Macedonian imperialism had never been a numbers game: Alexander conquered Persia because he had a well-trained, tactically flexible army, even as Darius raised numerically superior armies to meet him.[438]

The result was that Macedonian kings were forced to capitulate after a single bloody battle wiped away a generation of Macedonian youth. The loss of 8000 dead and 5000 enslaved at Cynoscephalae would be heavy even for the Romans, but for the Macedonians it was a catastrophe, representing perhaps a quarter of the men of military age. It is not surprising that Philip V capitulated shortly after the battle. The loss of 20,000 dead at Pydna would have been even more devastating, and explains why Perseus likewise surrendered having concluded the situation was hopeless, rather than attempt last-ditch measures to save his kingdom. [439]

Other states proved somewhat more resilient. Antiochus III suffered a crushing defeat at Thermopylae, with over 10,000 men killed or captured along with the savaging of his main fleet at the battle of Myonessus, where he lost 42 ships sunk or captured, with crews of approximately 14,000 men.[440] Antiochus nonetheless prepared an enormous army to face down the Roman invaders.

The heavy losses at the Battle of Magnesia did force the king to capitulate, although factors other than manpower and casualties likely informed his decision. The problem with a monarch claiming to rule "spear-won land" is that military defeat resulted in sudden de-legitimization. Appian reports that Antiochus became aware of harsh whispers circulating within his court, blaming him personally for the defeat.[441] This was all the more ominous given that his own brother, Seleucus III, had been murdered by his own men after conducting a botched campaign in Asia Minor.[442] Because he ruled a population of 10-15,000

---

[438] As will almost all classical reports of Persian military strength, the sources for the sizes of Darius' field armies are invariably bogus. Alexander's tactics at Guagamela, however, supposed a numerically superior opposing force.

[439] Of course Perseus' decision to surrender was not based on military compulsion alone: he was deserted by most of his court, as Ma 2011 points out, but this must again rest on the fact that Macedonian nobles considered his military situation untenable.

[440] Casualties at Themopylae: Polybius 20.8.6. Ships lost at Myonessus: Livy 37.30.7; Appian *Syr.* 27.

[441] Appian, *Syr.* 37.

[442] Appian, *Syr.* 66.

million people, he almost certainly could have raised another army and fought on, had he chosen to do so. The political, rather than the demographic, consequences of defeat forced him to capitulate.

The case of Carthage further tests the rule that Rome's rise to empire can be based on any unique ability to suffer casualties. Between 210, as the tide of war swung against them, the Carthaginians suffered defeat after defeat and yet continued to fight on. In particular, they demonstrated a resilience from 204-202 that matched that in Rome from 218-216. In 204, Scipio launched a surprise attack against the joint Carthaginian and Numidian camps. The 74,000 reported dead in the sources is unlikely anything but a profound exaggeration, but nonetheless the account of the action suggests that we should accept the basic assertion of staggering casualties, which left both the Carthaginian and Numidian armies non-mission capable. Despite this, the Carthaginian general reconstituted a new force approximately 30,000 strong, most likely a mix of the survivors of the camp raids, reinforced by some 4000 recently hired Celtiberian mercenaries. This new force suffered a double envelopment at the Battle of the Great Plains in 203, with the four-thousand Celtiberians reportedly fighting to the death; remaining casualties are unknown, but we are led to believe that the army was again rendered non-mission capable, and Hasdrubal Gesco may have been crucified for incompetence. The destruction of the Carthaginian ally/vassal Syphax dried up the well of Numidian manpower on which the Carthaginians had come to rely heavily for the defense of Africa. It is unclear whether the armistice of 203 was anything but a ploy to allow Hannibal to return from Italy, but with the resumption of hostilities, the Carthaginians enthusiastically continued the war, hiring some 12,000 additional mercenaries and even mobilizing a large force of citizens to join the ranks of Hannibal's veterans. Even after the crushing defeat at Zama, voices in the Carthaginian senate urged a continuation of the war; it took Hannibal's personal prestige combined with extra-parliamentary maneuvers to convince the war- party that the war was unwinnable.

The ability of Carthage to endure a string of defeats had as much to do with the political system as with demography—the inverse of the Seleucid case. It is notable that both Carthage and Rome could endure defeats and casualties in a way that Philip V, Antiochus III and Perseus could not. This was because Carthage and Rome were republics. As discussed above, when a king lost a battle, liability ultimately fell back on the king himself. Certainly subordinates could at times be saddled with blame: Antiochus III, despite a tenuous political position early in his reign, was able to survive a series of defeats in Mesopotamia inflicted by the rebel Molon, mostly due to the fact that subordinate generals were in command. But kings were expected to command important armies, and so the defeat of a royal army fell back on the king himself. Strong kings might endure a defeat, even a humiliating one, thanks to the standing bonds of loyalty between themselves and their subjects and the ongoing support of the court. Going back to Antiochus III, it seems he was able to weather the stunning defeat at Raphia in 217 in large part because he had recently exerted strong control over his court through violence; the fact that he conducted successful military operations both before and after the battle was also critical for containing the political fallout of this severe setback.

The number of defeats that a Hellenistic king could suffer was therefore finite. Republics, however, had mechanisms for dealing with military defeat

without suffering from a loss of legitimacy. For Carthage, one technique was to blame the general, resulting in the crucifixion of multiple failed generals. Nathan Rosenstein has noted how the cohesive senatorial aristocracy successfully managed to deflect blame from defeated commanders, accruing it to religious errors or ill disciplined soldiers. Recently, Jessica Clark has noted that the Romans in the third and second century successfully crafted political and cultural narratives of defeat that allowed military disasters to be viewed as a step on the path towards eventual victory, not necessarily as a disaster requiring brute accountability.[443] In both instances, it was the republican aspect of each state that allowed blame to be (sometimes literally) nailed to a single aristocrat, or diffused so broadly that the "government" itself was not implicated. Kings precariously embodying the state itself did not have this luxury.

Allied Manpower

Despite the enormous reserve of Italian manpower, the Romans were nonetheless heavily dependent on allied forces in the Middle Republic.[444] Such forces, of course, had the great advantage that they did not require being shipped from Italy. They also provided tactical diversity. The advent of Roman hegemony over the Italian peninsula had led to a homogenization of military equipment and, quite likely, tactics.[445] One critical addition that foreign auxiliaries could make was as archers and slingers, two areas in which the martial traditions of Italy were utterly deficient. Thus the 800 Cretan archers with the army of Flamininus, an additional 800 with L. Scipio at Magnesia, and 1500 Achaeans, fighting in the Cretan fashion (likely but not certainly archers) with the army of Aemilius Paullus.[446] Ultimately, allied infantry simply provided numbers, lengthening the Roman battle line, providing camp guards as the main forced marched out, and garrisoning key points to free up more Roman and Italian soldiers to serve in field armies.

More critical than allied light infantry was local cavalry. Cavalry horses occupied disproportionate space in transport ships, which were then additionally burdened by the massive quantities of fodder necessary to sustain the animals on even a modest voyage. One consequence of such difficulties was Roman reliance upon local allied cavalry, which generally substantially outnumbered Roman and Italian horsemen. Scipio Africanus, for example, brought only 1600 Roman and Italian cavalry with him to Africa, but was able to raise 5600 cavalrymen at Zama thanks to his alliances with Numidian chieftains.[447] This must explain in part the virtual disappearance of legionary cavalry by the year 100, replaced entirely by local auxiliaries.[448]

---

[443] Rosentstein 1990; Clark 2014, who notes that this narrative broke down by the end of the second century.

[444] Prag 2007 and 2010.

[445] On the homogenization of Italian military equipment, see Burns 2003.

[446] See Taylor, forthcoming, for a discussion of the archer on the monument, arguing strongly that it fights on the Roman side.

[447] Italian horse, Appian *Punica* 41, whose basic numbers for the Roman force feel far more reliable than Livy's summary of problematic annalistic sources. Scipio's Numidian reinorcements included 4000 cavalry from Masinissa (Livy 30.29).

[448] Other factors, including shifting elite priorities, must also account for the demise of legionary cavalry in the Late Republic. Cf. McCall 2002: 100-136; Lendon 2005: 219-220.

Local allies could also provide an additional critical service: knowledge of local terrain. In the absence of advanced cartography (although rudimentary itineraries and simple maps surely existed), a commander needed access to reliable guides, men who knew the roads, the byways and shortcuts by which troops could be marched.[449] Locals, however, could be unreliable (and at times had to be forced to guide at sword point), while merchants were known for their deception and tall tales. The most reliable guides were therefore men fighting on the same side, who had an interest in the survival of the overall army. Notably, Titus Flamininus accepted a contingent of 1200 Athamanians, not necessarily because he needed their services as light infantrymen, but because he hoped they would prove useful as guides.

Manpower Strategies: A Comparative View

Citizens:

So far I have only discussed quantitative metrics of manpower mobilization,. But not every soldier in the ancient world was equal. There was a strong correlation in the ancient world between citizenship and the quality of troops, with only Carthage relying on non-citizen infantry. For the Hellenistic powers, citizens or cleruchs provided the corps of heavy phalanx infantry and elite cavalry units, while the citizen legions formed the tactical core of consular armies. Indeed, one of the primary advantages Polybius saw for the Romans in their war against Carthage was the fact that the Romans mobilized enormous numbers of citizen soldiers, whereas the Carthaginians relied heavily on mercenaries.[450] While non-citizen troops, ranging from subjects to allies to mercenaries routinely fought with great skill and dedication, citizen soldiers did have the advantage of being linked to their state through bonds of political process, ideological loyalty and economic advantage in a way that other types of soldier were not.

Most powers sought to man roughly half of their field armies with citizen-soldiers. The Roman consular army thus consisted of two legions with roughly equal wings of allied contingents. Antiochus' army at Magnesia was comprised of 40% cleruchs, while his army at Raphia was 47% cleruchs. Ptolemy IV's army at Raphia was 45% cleruchs, and their numbers were likely higher in previous field armies, given that an unusually large portion of the army at Raphia was comprised of native Egyptians. Antigonus Doson's army at Sellasia consisted of 42% Macedonians; Philip's army at Cynoscephalae consisted of 77% citizens, while Perseus' army in the Third Macedonian War was 65% citizen. In the desire to base field armies around citizen troops, Carthage was an outlier, a fact that likely owes to the unusually small citizen body at Carthage.

Rome had perhaps the largest citizen body of any city in the ancient world, with perhaps 1.2 million citizens c. 218, consisting of roughly 350,000 adult males. Citizen mobilizations were concurrently large. In 212, there were perhaps 80,000 citizen males serving in the legions. In early second century,

[449] This was true when Xerxes relied on a local informer to find the flanking path around Mt. Kallidromos at Thermopylae, as when Caesar assembled merchants and shippers to gain basic insight to the geography of Britain.
[450] Polybius 6.52.5-7.

between 40,000 and 60,000 citizens served in the legions every year; none of these figures include citizens serving in the fleet, which in times of war could number another 10-25,000.

No other power could match this level of citizen mobilization. In Carthage, citizens only fought in the defense of Africa as a muster of last resort. Perhaps 5000-6000 served in the army at the Battle of Tunis in 255, while around 10,-15,000 fought at Zama in 202. Citizens did serve in Carthaginian fleets, although their proportion in the crews is impossible to determine. Macedonia was similar to Rome in being able to mobilize a high proportion of her citizen body, and as a result Macedonian kings could call on a large population of highly militarized peasants. As Arthur Eckstein notes, Polybius seems to think that Macedonian citizen-soldiers were the best in the Mediterranean, "reveling in war as if at a feast."[451] This body of competent citizen manpower must explain the outsized military success that Macedonia enjoyed from the reign of Philip II onwards. However, Macedonia suffered from having a small citizen body. During the Second Punic War, Philip V was only able to mobilize c. 25,000 Macedonian citizens, likely representing a very high proportion of his total population. He was required to undertake rather desperate steps in order to do so, including drafting men up to the age of 55. Perseus perhaps mobilized 35,000 ethnic Macedonians a generation later. Still, this enormous, desperate muster, while impressive (it exceeded in size Alexander the Great's invasion force in 333), failed to exceed the minimum number of citizen legionaries deployed by Rome in years of "relative" peace.

The notion of citizenship in the Seleucid kingdom is less defined, as there was no "Seleucid" citizenship, merely subjecthood. However, Seleucid kings recruited heavily from royal foundations such as Antioch, Apamea, Cyrrhus, Seleucia, etc. It is even possible that citizenship in these great cities carried with it a military mobilization to serve. Seleucid kings also settled soldiers in small communities (*katoikiai*); while these men would have lacked citizenship in a city, they would have been enmeshed in a reciprocal network of mutual obligation with the state.

Quantifying the number of citizens in Seleucid armies is difficult. The best that can be done is to capture the number of soldiers fighting as "Macedonian" heavy infantry and cavalry, although non-Macedonians and non- "citizens" may well have fought in these formations. At Raphia, the main phalanx, the silver shields and the heavy cavalry totaled 36,000. At Magnesia, Macedonian style infantry and heavy cavalry comprised 34,000 soldiers.

But was Polybius right in his view about the advantage of patriotic citizen soldiers? Indeed, if we take a pessimistic view of the nature of citizen participation in the Roman Republican system, then many Roman citizens were perhaps little more than subjects, bearing the burdens of citizenship--in particular, heavy military service--while reaping few of the rewards, in particular political participation. Walter Scheidel, for example, has noted that far more Roman citizens served in the legions in any given year than voted: at most perhaps 12,000 Romans could vote in any given tribal assembly, and perhaps no more than 30,000 or so might vote in the *comitia centuriata,* and these maximum limits do not seem to have been often reached. This suggests voter turnout for a

[451] Eckstein 2006: 202-203; Polybius 5.2.6.

major election was far lower than the 40-60,000 citizens routinely deployed during the early second century. This goal of this paper is not to delve into the vast controversy raised by Fergus Millar about "Roman democracy."[452] Nonetheless, there is evidence that citizen soldiers retained the habits of participatory government once they entered into the legion. Besides the consuls elected in comitia centuriata and military tribunes elected in comitia tributa, each heavy infantry line elected its own set of centurions, so that common soldiers had some say concerning every echelon of command.[453] The participatory reflex was particularly in effect in 211, when the survivors of the military disaster in Spain elected their own commander, taking special care to ensure that every soldier had the chance to rotate out of the guard posts to vote.[454] It was also on display in 167, when Aemilius Paullus' soldiers, disgruntled about his stinginess with distributing booty, flooded the forum in an attempt to vote against his triumph.[455] Even if only a small percentage of Romans voted in any given year, military participation seems to have had a strong effect on electoral participation, so that a general's veterans were a critical political asset. To ensure that they would return to support himself and his family in elections, Roman generals had to display competence or at least courage, and on a material level, ensure a fair distribution of booty, topped in some instances with a generous donative.

If Roman soldiers fought because they were motivated by patriotism and by a sense of participation and belonging, this brought an additional boon to the Roman state: it was able, as a result, to pay its citizen soldiers dramatically less than its rivals paid their soldiers. The Roman pay rate of two obols a day, with deductions for food, clothing and equipment, was radically lower than the 6-9 obols a day that prevailed in the Hellenistic east. The heavy use of mercenary soldiers in the Hellenistic world contributed to the higher pay rates, as competition between powers for the finite supply of mercenary labor likely drove up the wages for all soldiers, even citizens and subjects. The relatively low pay of Roman soldiers allowed the Romans to maintain enormous armies at relatively low cost, and also explains why the Romans were slow to adopt a coherent system of silver coinage.

Table 7.2: Maximum Mobilization of Citizens/Cleruchs

Power	Citizens	Year
Rome:	71,500	190
Seleucids	36,000	217
Ptolemies	38,700	217
Macedonia	27,000	171-168
Carthage	<10,000	202
Subjects:		

[452] Millar 1984.
[453] Polybius 6.24.1-2. I hope to publish soon more on the problem of political participation by Roman soldiers.
[454] Livy 25.37.5-6.
[455] Livy 45.37-49.

Yet in most armies, the majority of mobilized troops came from politically subordinate subject populations, for whom the requirement to supply military manpower was a form of exploitation. There were of course profound risks to arming and organizing subject peoples, and as a result, strategies for the use of subject manpower varied widely. At one end of the spectrum, the Ptolemies made limited use of the native Egyptian population, save as sailors, marines, and paramilitary police forces. The one exception was the battle of Raphia, where large numbers of Egyptians were equipped as heavy infantry. Here the risk of arming subjects seems to have been made apparent, as Polybius explicitly links the Egyptian phalanx to the subsequent revolt in Upper Egypt. It should be noted that while we do not hear again of native troops in what might be dubbed the "the regular army," the deployment of Egyptian paramilitary forces in fact increased over the course of the second century. Still, compared to other powers, the Ptolemies still made the least use of native troops, and this seems to have been largely through deliberate policy. This may have been in part through a distrust of the political loyalty of Egyptians, but also through a desire to keep the Egyptian peasants on the land as a strategy to maximize tax revenue.

The Antigonid Macedonians likewise made relatively limited use of subject manpower, in part because of the dynamics of Macedonian imperialism, which was concerned less with a territorial empire outside of Macedonia (save for a handful of exceptions), and more through maintaining control of strong points through garrisons. Furthermore, it is often unclear when we hear of Illyrians, Paeonians Thracians and even Gauls in Antigonid armies if they represent outside mercenaries or subject peoples living in a peripheral region of the kingdom (in some instances, as the boarders of the kingdom shifted, the definition of a subject and a mercenary may have shifted as well. Thessalians perhaps formed the most distinctive subject peoples living under Macedonian control, although they seem to have played a limited role in Antigonid armies, mostly supplying small cavalry contingents. [456]

Subject manpower was critical to the two Western Republics. The dearth of citizen manpower (likely owing to a small citizen body), forced Carthage by the third century to rely heavily on the subject Libyan population, supplemented by mercenaries. The Truceless War, which hinted at the unreliability of both the Libyans and her mercenaries led Hamilcar to seek a new source of human and material resources in Iberia. Iberian troops would represent the majority of Carthaginian forces during the Second Punic War, and the loss of Spain was a mortal blow.

While Rome had a far larger citizen body (indeed, the largest citizen body of any ancient state), subject manpower, politely referred to as "allies," provided 50-75% of all Roman forces and allowed the Roman state to maintain its decisively large strategic mobilizations. While some *socii* rebelled during the Second Punic War, these subjects proved overall to be extremely reliable. This was in large part because Rome treated them relatively well, especially when it came to distribution of captured loot and appropriated land.

Mercenaries:

[456] Although Philip V's letters to Larissa suggest losses due to war, as well as an interest in the city's citizen demographics. IG 9.2.527.

The Hellenistic age is often times described as an age of mercenary armies. Mercenaries were an ever more important component of Eastern Mediterranean armies in the Hellenistic period than they had been during the classical age. But there simply were not enough mercenaries for any power to base their force around mercenaries alone.

Let us consider the following moment in 217. In this year, every single Mediterranean power was at war: Rome with Carthage, Antiochus III with Ptolemy IV and Philip V with the Aetolian League. At this moment, the labor market for mercenaries was saturated with demand. We have some sense of how many mercenaries were deployed: Antiochus III had around 7500 in his army, Ptolemy IV deployed 13,000, Philip V had roughly 1200 mercenaries in his army, while the Achaean League employed 8500 mercenaries.457 In all, we get the general sense of around 30,000 deployed mercenaries, perhaps no more than 40,000 if we account for mercenaries on garrison duty. Thus must represent the upper limit on the number of Hellenic-style (i.e. Greek and Cretan) mercenaries willing to serve in the Eastern Mediterranean.

As a result of the limited number of mercenary hires, no state based its manpower strategy around mercenary forces alone. The main reason was that there was no guarantee that mercenaries would be available during a moment of intensive warfare---because the very fact of a war ensured that the opposing power would be a direct competitor for the finite number of mercenaries on the market.

Mercenaries were therefore primarily used to supplement field armies in the Hellenistic world (with the cadre of each field army being citizen/cleruchic troops). Indeed, for every well attested field army we know for the three Hellenistic dynasties, the number of mercenaries never exceeded the number of citizen/cleruchic troops. As the chart below demonstrates, mercenaries usually comprised only 15-25% of Hellenistic field armies.

Table 7.3: Mercenaries deployed in royal field armies

King	Battle	Total Forces	Mercenaries	percentage
Antigonus Doson	Sellasia	28,800	3300	11%
Antiochus III	Raphia	68,000	7500	11%
Philip V	Cynoscephalae	25,500	4500	17%
Antiochus III	Magnesia	72,000	14,200	20%
Perseus	Pydna	43,000	6500	15%
Antiochus IV	Daphne	58,500	13,000	22%

Why Rome Won:

Polybius, attempting to provide material and moral explanations for what he perceived as the sudden rise of Rome, found both explanations at work when discussing Roman manpower: the Romans had what to a Greek statesman was an unimaginable number of men (770,000), and once more, many of them were citizens who felt a special loyalty to the state. With the exception of Carthage, most Hellenistic states relied on citizens/cleruchs to provide at least half of their

[457] Achaean mercenaries: 5.91.6.

field armies—roughly the same proportion of citizens to *socii* in a Roman army. Polybius was certainly correct about the numbers: the Romans did indeed have deeper reserves, and were capable of far larger strategic deployments, than its competitors. It is true that Carthage matched, and may have even slightly exceeded, Rome's maximum strategic deployment during the course of the Second Punic War, although this feat was far less politically stable, given that Carthage's troops were primarily drawn from her various concentric peripheries, while Rome drew hers from the citizen core of her state. As a result Carthaginian manpower fluctuated dramatically with the ebb and flow of war, whereas the Roman settlement in Italy proved remarkably stable, even accounting for the defections that followed Cannae.

The tens of thousands of soldiers mustered by the five great powers needed to be given regular pay, as well as rations, equipment, transport and a host of other logistical requirements. In the next section, we will explore the fiscal resources that the five great powers extracted in order to fund military operations.

Part II

Finance

Chapter 8: Financing Ancient Empires

Forensic Accounting:

This dissertation utilizes a method inspired by modern techniques of forensic accounting. Suppose, for example, that an employee is suspected of embezzling from a firm. By definition, there is no documentation of how much the employee has taken. A forensic accountant called to investigate the errant employee might start by focusing on attested expenditures: has the employee purchased expensive real estate or a fancy car? Less quantifiable expenditures might also be examined: does the employee frequent casinos, or engage in lavish shopping trips? Piecing together bits of data allows the forensic accountant to produce a compelling case of the general level of expenditure, which can then be used to prove the employee has an illicit stream of income in excess of documented salary and benefits.

As ancient historians, we are much like the forensic accountant. Our sources are profoundly limited, but we nonetheless often have relatively good information about the scale of a single, but essential, state expense: military expenditures. For our period, we often have good information about the size of armed forces from either Polybius or Livy. The information is naturally imperfect; for example, we know more about wartime mobilization, given our sources' interest in conflict, than we do about peacetime garrisons. Nonetheless, equipped with even a general sense of army size and with decent information concerning military pay, it is possible to sketch a reasonable account of military expenditures. Other aspects are more difficult to reconstruct: the cost of religious festivals and annual cult activities, courtly expenditures, salaries of public officials, royal benefactions, etc. Our information for the Roman Republic will inevitably be more complex and complete than for the other states under consideration, thanks to the balance of the surviving literary evidence.

Coins and Bullion:

In the following chapters, I will not focus heavily on numismatic evidence, even though numismatic research dominates modern research in Hellenistic fiscal history. While numismatic research will inevitably inform this part of the dissertation, it will not take center stage.[458] It is impossible to reconstruct the state-level economy on the basis of the money supply. Firstly, coined money, the realm of numismatists, was not the only form of money. In particular, states received revenues in bullion (especially from mines, but also loot and indemnity payments), and as a result, sometimes issued state payments in raw bullion as a convenience. For example, the Roman soldiers marching in the triumph of Manlius Vulso received 42 *denarii*—an odd sum until one realizes that they were given exactly a half-pound of silver.[459] Macedonian kings also made bulk payments in bullion: for example the 20 talents Philip V gave to Scerdilaidas, the

[458] A few key works of numismatics are worth mentioning here. For the Roman Republic, Crawford 1974 and 1985 remain the definitive works. For the coinage of Carthage, Jenkins 1963 and 1984, Visona 1998 and Viola 2010. For Seleucid Coins Houghton et al. 2002 and Newell 1938, 1941. For the Ptolemies, Von Reden 2007; Gaebler 1935 for Antigonid coinage.

[459] Livy 39.7.2.

200 talents Perseus paid to Cotys, and the 300 talents set aside for the Illyrian Gentius.[460] In other instances, foreign coins obtained as loot, or even tribute, could be reissued as state payment without reminting.[461]

The supply of coined money (referred to in economic textbooks as M0), did not necessarily represent the total money supply, as this was determined by the velocity with which money circulated. A state might mint coin, issue it to make a state payment, collect it back as taxation and then pay it out again within a matter of months in a high-velocity money scenario: the single coin might therefore count several times on the state's ledger of revenues and expenditures.

There was certainly some link between coin production and military outlay. De Callatay has shown how Mithridates in the first century minted coins in anticipation of military operations.[462] Michael Crawford has noted that for the late second and early first centuries there seems to have existed a basic relationship between the number of attested dies and estimates of state military expenditures.[463] But then again, this only tells us that coins were minted in anticipation of projected military operations, and not necessarily about the link between revenue generation and expenditure. Indeed, Howgego strongly argues that state-level minting was based only on meeting anticipated outlays.[464] In the Roman case, the coins of the late second century onwards were likely minted from reserves of bullion from the Spanish mines, a source of revenue largely disconnected from the pulse of warfare, which was stored and then minted into coinage as needed.

States also minted coins for other reasons than a deficit in the supply of money. For example, a state might prefer to issues coins bearing a targeted ideological message, given that coins represented a particularly important form of visual propaganda.[465] Minting coins before a military campaign might involve melting down old coins (and foreign coins) and replacing them with new issues that were more "on message." Indeed, states varied widely in the number of coins they issued, and I would argue that this did not necessarily reflect state revenues or expenditures, but rather their comfort in re-issuing as payment old and even miscellaneous coins. Some states may have preferred to keep minting to an absolute minimum, in order to save on minting costs. Antigonid kings proved happy to circulate and recirculate Alexander and posthumous Alexander issues, as well as foreign coins and the products of civic mints, only occasionally minting small royal issues of their own.[466] This means that despite having access to silver mines, the Antigonids coined little of their own money, presumably either leasing mining rights in exchange for coins, or selling bullion proceeds on the open market. The Seleucids and Ptolemies were more active minters, in part because they inherited economies that had fewer coins, and also because as foreign despots ruling over native populations, they felt the need to issue more coins with ideological content.

---

[460] Polybius 4.29.7; Livy 42.67.5; Polybius 29.4.7; Hammond and Walbank 1988: 461.
[461] Crawford 1985: 188 for Roman soldiers paid with local coins.
[462] De Callatay 1997.
[463] Crawford 1974: 696.
[464] Howgego 1990.
[465] For coins as a method of ideological propagation in the ancient world, see Noreña 2011.
[466] On the frequency of foreign coins in Macedonia, Hammond and Walbank 1988: 314.

As a republic, the Romans seem to have been relatively indifferent to constantly issuing new coins—there were no turnover of kings to warrant new issues, as with the Eastern monarchies. Michael Crawford in fact argued that the Romans stopped minting silver altogether from 189-157, content to use the coins flowing into the treasury as loot and indemnity payments.[467] Given the stale and repetitive ideological content of Roman coins at this point (gods/goddesses or ship prows), there was not much to be gained from constantly updating the coinage with new issues. Without discounting the value of numismatic evidence, this section will instead focus primarily on literary evidence for expenditure and revenue.[468]

Cash and Kind:

Ancient states collected material resources in both cash and kind, collecting taxes not only in metal specie, but also appropriating resources required by state institutions. The most common form of in-kind appropriation was agricultural produce, in part because it could be applied directly to feed armies and administrators, and in part because such taxes could be easily assessed at harvest time. It was easy for tax cheats to conceal gold and silver coins, but very difficult to hide bushels and bushels of wheat. Moreover, the regular timing of the grain harvest made its supervision by state agents easier to coordinate compared to other forms of ongoing and diffuse economic exchanges.

Naval stores, including timber, pitch and fibers for rope, also constituted a major area of resources which might be collected in kind, as could various other items, including building materials, base metals, weapons and other military equipment, clothing and textiles, etc. There were of course substantial disadvantages to collection of resources in kind. These resources were bulky, and required the state to maintain facilities to store and process them. Some resources like grain could also rot or decay over time. Unlike cash, it was difficult to exchange surplus of one resource for shortage of the next.

In the Achaemenid Empire, the spectrum of taxation in cash vs. kind was heavily tilted towards collection and expenditures in kind, as the Persian king collected and redistributed enormous amounts of foodstuffs to his court and army.[469] Bullion still factored into Persian extraction modalities. Sometimes minted in to coins, bullion was used to pay mercenaries and make diplomatic gifts, but was also hoarded for ideological purposes. Nonetheless, the extensive lists of the Persian fortification tablets indicate that in-kind collection dominated. It is notable that when Xenophon eulogized the generosity of the Persian Prince Cyrus, it was not for his distribution of gold or silver, but his willingness to send half of a cooked chicken or half a bottle of good wine to a friend.[470]

By the third century, the pendulum across the Mediterranean had swung firmly in the direction of collection in cash. This was in part due to gradual

---

[467] Crawford 1974.

[468] One possible way to integrate, pioneered by Crawford 1974 and largely accepted by Hopkins 1980, is to try an estimate the total number of coins produced per die: Crawford posited 30,000. This approach remains highly controversial. Buttrey 1993 and 1994 savages this methodology, although De Callatay 1995 cautiously suggests that it may be possible to make some estimates of state coin production from die studies. Given the controversy, I eschew this approach.

[469] Polyaenus 4.32; also Athenaeus 4.145. Briant 2002: 447-456.

[470] Xenophon *Anabasis* 1.9.25-27.

developments that had been in motion since the development of coinage in the Eastern Mediterranean. The liberation of Achaemenid bullion stockpiles, and the fact that these were coined and distributed during the Wars of the Successors, further accelerated the process.

The most obvious advantage was that coins and bullion could be easily stored, and more easily moved (one silver coin, weighing 4.3 grams, was equivalent in value to roughly 7 or 8 kilograms of wheat). Unlike stores of foodstuffs and raw materials, coins did not decay rapidly. Finally, we must remember that states had limited need for raw materials. Armies needed only so much food, clothing and equipment; navies needed only so much rigging and tackle. But military forces, administrators and courtiers demanded more than rations: they demanded cash and its unique ability to store value in a way that perishable commodities could not. Therefore, while states did collect what they could use in-kind, past a certain point—and certainly for a substantial proportion of their total resource extraction-- they needed cash.

How much did states know and plan?:

Modern states have elaborate administrative apparatuses, staffed by trained technocrats. Ancient states were certainly less sophisticated. They did not produced ten year budgets, or engage in elaborate predictions of revenues and expenditures. But ancient states were also much simpler. They did not, for example, have to predict how an aging population might affect state health care costs,. While states were not always able to predict military contingencies, they nonetheless could plan a basic military budget, based on anticipated force levels.

We do know that states closely tracked expenditures and tax liabilities. The best evidence comes from Ptolemaic Egypt, where some of this paperwork survives, including property assessments and tax receipts.[471] Scattered epigraphic evidence from the Seleucid kingdom reflects tax-assessments levied upon large estates, and hints at a broader program of assessment records.[472] Literary sources give some sense of the paperwork that has been lost from the Roman Republic: Scipio Africanus tore his own account books up before the senate in the face of charges of embezzlement.[473] Tiberius Gracchus, as a quaestor in Spain, re-entered the city of Numantia to reclaim his account books that had been captured by the Numantines.[474] Roman military book-keeping could be quite precise: when the military tribune M. Fulvius disbanded on his own accord a legion serving in northern Italy, he ordered his centurions to swear an oath to deliver the precise amount of unexpended pay back to the quaestors in Rome.[475]

We know of a variety of methods by which ancient states tracked the fiscal obligations of their populations. The Republican census required a declaration

[471] E.g. Muhs 2011.
[472] E.g. the Mnesimachos inscription, Billows 1995: 137-45, Aphergis 2004: 320.
[473] Polybius 23.14.7-12; Livy 38.55.10-12. Diodorus 29.21.1
[474] Plutarch *Tib. Grach.* 6.3. While Republican records were perhaps not as complex as the wealth of imperial documents collected in Fink 1971, these chance references are a reminder of a great deal of Republican era paperwork that does not survive.
[475] Livy 40.41. 8.

and valuation of property. The papyri from Egypt leave no doubt as to the close assessments made of various properties by Ptolemaic officials. The Mnesimachos inscription from Asia Minor shows that Seleucid kings were able to track tax obligations of individual *kleroi* and villages, as well as those from great estates.[476] These documents not only allowed state agents to hold individual taxpayers accountable, but also allowed future revenues to be projected. The Romans certainly knew the total of the assessed property compiled from the census, and what percentage of property tax needed to be levied to support any given military operation. All states likely planned their budgets in part on the basis of recent revenues, which would have provided a general sense of how much money might come in the next year, all factors remaining equal.

We do have some evidence of discretionary expenditures: for example, the Roman state budgeted public works spending over the five years of the lustral cycle, and based this expenditure on available revenues, for example spending almost nothing in 199, when the treasury was severely depleted by spending on the Second Punic War, and allocating upwards of six million *denarii* in 184, when the *aerarium* was much enriched by the loot and indemnities of eastern wars.

Like modern states, ancient states were no doubt often pleasantly surprised by higher than expected revenues and dumbfounded by unexpected shortfalls that demanded short-gap solutions (often times through debasement of coinage).

Denarii, drachmai and shekels: Exchange rate assumptions

There was significant diversity of coinage in the ancient world, and I will generally give revenues in the specific denomination used by each particular power. The Seleucids and the Antigonids both minted on the Attic standard, with a drachma weighing 4.3 grams. In the early third century, the Ptolemies switched to a closed monetary system based around a light standard of c. 3.5 grams per drachma. The Roman denarius as introduced in c. 214 weighed 4.5 grams (1/72 of a Roman pound), slipped to 3.9 grams, at which point it held steady. Internally in Africa, the Carthaginians used the shekel standard, with one shekel weighing 7.2 grams. In Sicily, presumably in large part to pay mercenaries familiar with Eastern Mediterranean coinage, the Carthaginians minted on the Attic standard.

All states used gold, silver and bronze, sometimes minting interlocking coin series, sometimes issuing coins in parallel. Gold, silver and bronze bullion were also used to make payments. As a general rule, I will assume that the ratio of gold: silver was roughly 1:10. This amount is specifically listed in the Romano-Aetolian treaty of 187.[477] Bronze was generally minted on a 120:1 ratio with silver. Exchange rates for bullion would have of course fluctuated with market rates, but the pricing seems to have been roughly stable (with state minting systems providing an artificial stability) for the period under discussion.

[476] Billows, 1995: 137-145, Aphergis, 2004: 320-323.
[477] Polybius 21.32.8; Livy 38.11.9.

Chapter 9: Roman Finance

Introduction:

A relatively detailed discussion of the finances of the Roman Republic is feasible for the simple reason that Roman military deployments are well attested, through the annalistic tradition preserved in Livy, which listed annual legionary deployments.[478] If a source-based estimate of other expenditures can be produced, it holds that total revenues must equal expenditures plus any attested surplus. For this project in forensic accounting, we therefore require a time period with well attested military deployments and a start and end point where the level of treasury reserves is well known. The timeline for this chapter will be 200-157, the same period used by Tenney Frank in his exploration of Roman state finance.[479] 200 is an ideal start date, as the Roman treasury was basically bare thanks to the immense cost of the Second Punic War. In that year, an attempt was made to pay back loans that *publicani* had made to the state during the conflict (essentially providing supplies to the army on credit), only to fail when sufficient cash could not be found.[480] For this exercise, I will assume Roman cash reserves stood at near zero for the start of the period. The end-date of 157 is logical, because in that year the senate ordered an inventory of the treasury vaults, the results of which are reported by Pliny the Elder.[481] We therefore know how much cash had been accumulated, which means that total revenues can be deduced by estimating overall expenditures, and then adding the attested surplus. There is one problem with taking the study up to 157, namely the loss of Livy's detailed account in 167 along with the important economic information that he provides. The report of Pliny, however, provides such a rare window into the holdings of the Roman *aerarium* that it is simply too valuable to pass up.

Having established a level of expenditure, it next becomes possible to map revenues onto expenditures. Many revenues are in fact well attested: indemnities

---

[478] This data, as with all information about the ancient world, is imperfect, but the subject of legionary deployments benefits from the critical analysis of Afzelius and Brunt, who will be followed closely here.

No discussion of Roman state finance during the mid-Republic can proceed without acknowledgement of the seminal work of Tenney Frank, a giant of the early 20th century. Born to a modest family in Illinois, Frank paid his way through the PhD program at the University of Chicago by working part-time in the city's stockyards; he would be the Sather Professor at UC Berkeley in 1930, cementing his reputation as one of the luminary classicists of his generation. Frank's estimates on Republican revenues, initially put forward in a 1932 article in the *American Journal of Philology*, and then reiterated in the first volume of his monumental *Economic Survey of the Ancient Rome* (1933), remain the only major modern scholarly contribution for the financial apparatus of the mid-Roman Republic. It is high time for a new estimate, not to negate the work of this great American classicist, but rather to probe its strengths and weaknesses, offer both complimentary and contradictory methodologies, and supplement its conclusions. My intellectual debt to Frank remains enormous, and more so than even my frequent citations will seem to suggest. I engage in a more comprehensive engagement with his various estimates in Appendix 4.

[480] Livy 31.13.3 *uix aerarium sufficeret, negauerant esse unde iis in praesentia solueretur.* This was the case even though Scipio had just returned from Africa with over 123,000 pounds of silver (worth roughly 10 million *denarii)*. The suggestion by Buraselis 1996 that the Roman state plunged into the Second Macedonian War to delay the repayment of loans is highly unconvincing; it seems to me that the Romans plunged into to war despite a dire fiscal situation, rather than because of it.

[481] Pliny *NH* 33.55.

from defeated powers, loot displayed in triumphal processions and the annual tribute that the four Macedonian republics paid following the end of the Third Macedonian War. The estimate for citizen *tributum*, is more difficult, but I will argue that Livy preserves both a figure for total assessed property (for 187) as well as the tax rate (for 184), which will allow for an estimate of this important, and in my opinion underestimated, source of revenue. More problematic are the returns for Spanish mines. Polybius gives a figure for the revenues from a mine in Spain, at an enormous 25,000 *drachmai* (i.e. *denarii*) a day; the figure may represent a temporary boon, but I will concur with recent studies that suggest that the Spanish mines were less important to Roman revenues than a chance reference in Polybius suggests.

One major aspect of making this estimate will be converting lump sums of silver and gold bullion entering the treasury into *denarii*. The denarius as introduced c. 211 was initially weighed 1/72 or a Roman pound (4.54 g).[482] However, by 200 or so, the weight had declined to 1/84 of a Roman pound (3.9g), where it remained steadily until the Early Empire. For example, in 187 Manlius Vulso gave each soldier a donative of 42 *denarii*, exactly half a pound of silver (in this case likely un-coined bullion).[483]

Rome's treaty with Aetolia in 189 specified that the Aetolians could use gold to pay their indemnity at a rate of 1:10.[484] I will use this rate to convert gold into silver: one Roman pound of gold will be calculated at 840 silver *denarii.* While the "talent of account" is generally rendered as 6000 *denarii*, it is important to note that an Attic/Euboic talent of 27.24 kilograms would have in fact been sufficient to mint 6720 *denarii* on the 1/84 standard.[485]

The reader will notice that estimates are often times initially highly specific, made down to the denarius (say the cost of the paper strength of a legion can be calculated down to the denarius), but that aggregated figures are quickly rounded to the nearest 5 million *denarii.* As I am engaging in a creative, if reasoned, reconstruction of Roman state finance, I have rounded the final numbers to avoid giving the impression of excessive accuracy.

Expenditures, 200-157

The Legions:

Legionary pay (*stipendium*) constituted the most critical military expenditure for the Roman state. Accounting for legionary *stipendia* further allows us to account for the cost of rations and clothing provided to legionaries while on campaign, as these were deducted, at fixed rates, from legionary pay.[486]

---

[482] Thanks to the find of an early denarius in the destruction layers of Morgantina, the introduction of the denarius is now dated to just before 211. Buttrey 1989a, 1989b.

[483] Livy 39.7.2; Crawford 1985 notes that the donative was likely paid in bullion, not coin.

[484] Polybius 21.32.8.

[485] Harl 1996: 474. My valuations of many attested sums are therefore slightly different from the work of Tenney Frank (1932,1933), who valued a pound of silver at 80 *denarii*, a pound of gold at 1000 and an Attic talent at an even 6000 *denarii*.

[486] Polybius 6..39.15. τοῖς δὲ Ῥωμαίοις τοῦτε σίτου καὶ τῆς ἐσθῆτος, κἄν τινος ὅπλου προς δεηθῶσι, πάντων τούτων ὁ ταμίας τὴν τεταγμένην τιμὴν ἐκ τῶν ὀψωνίων ὑπολογίζεται. For similar deductions from the Empire, see Fink 1971: nos. 68-72.

Pay for an infantryman was three asses a day, or 108 *denarii* a year. Centurions were paid double, and cavalry triple.[487]

This figure is not without controversy. According to Polybius, a Roman legionary was paid 2 obols a day.[488] Dispute exists over the exact conversion of Polybius's (presumably Attic) obols into *asses*, leading to a technical problem Michael Crawford has described as a "fundamentally boring."[489] Boring it may be, but for our purposes it is essential that a correct rate of military pay be determined, as any error in the matter will be multiplied by the hundreds of thousands of Roman soldiers who received annual *stipendia* over the period. It is often argued that just as two obols represent one-third of a drachma, Polybius' pay-rate should translate into one third of a denarius, or 3 1/3 asses a day, putting the legionary's annual pay at 120 *denarii* a year. However, Plautus, writing at the turn of the century, references military pay as *tres nummi* implying an even three asses a day.[490] Polybius' two Greek obols are therefore Plautus' three Roman asses, making pay for a Roman legionary 108 *denarii* a year, assuming a pay year of twelve thirty day months, or 360 days.[491] Its does not seem to me to be a coincidence that when the denarius was introduced, it was minted on a 1/72 pound weight standard so that 108 *denarii* was equal to exactly 1.5 pounds of silver. The even annual weight perhaps reflected an earlier time prior to the introduction of the denarius, when Roman soldiers were paid by the weight of miscellaneous silver coinages, as well as in bullion.[492] Even after the introduction of the *denarius*, it was still not uncommon for Roman soldiers to receive their pay in bullion, just as Manlius Vulso issued his troops a half-pound of silver (the curious sum of 42 *denarii*) during his triumph.

The *stipendia* for a 4200 infantry legion, with 60 centurions and 300 cavalry, therefore cost the 557,280 *denarii*. A 5200 man legion, with 60 centurions and 300 cavalry would cost 665,280 *denarii.* During major conflicts, the Romans deployed legions with 6000 infantry, costing 751,680 *denarii*, although the only attested 6000-strong legions between 200-157 were mustered for the Third Macedonian War.[493] Polybius implies that 4200 infantry legions were standard,

---

[487] Polybius 6.39.12 indicates that centurions were paid double, but that cavalrymen received a *drachma* a day. Again, his conversion is likely inexact (Rathbone, 1990: 152). Given the consistent ratio of 1:2:3 in the donatives given for Roman triumphs the correct pay for cavalrymen is nine asses a day, or 324 *denarii* a year.

[488] Polybius 6.39.12

[489] Crawford 1985: 147.

[490] Plautus *Mostellaria* 357; the *nummus* in question is certainly the *as.* Cf. Crawford 1985: 147, Alston 1994: 114 and Rathbone 1990b: 152. Rathbone makes the important suggestion that if it were 3 1/3 sextenal asses, this could have been easily converted to 6 1/3 post- 141 asses. However, this did not happen, as it was decided instead to simply calculate pay in *denarii*. Polybius is elsewhere quite casual in his exchange between Greek and Roman currency. For example, he at one point (2.15.6) makes ¼ of an obol the equivalent of half an *as* (which would make one *drachma* equal 5/6 of a denarius), despite elsewhere treating the denarius as interchangeable with the *drachma* (e.g. 6.19.2).

[491] The Republican calendar contained only 355 days at the time; I am using the imperial pay calendar of 360 days, which was in use during a time when the Roman calendar year had 365 days (see Boren 1983: 438 for discussion). The difference is minor, and should not impact overall conclusions.

[492] Of course, with the drift towards the 1/84 lb standard, the silver weight of military pay would have fallen to 1.28 lbs.

[493] Livy 43.12.3-4.

and that legions of 5000 infantry were raised only in times of exceptional danger. However, Polybius himself seems to be using an anachronistic source (likely, according to Elizabeth Rawson, a dated handbook for military tribunes reflecting the practice of the Second Punic War).[494] There is some evidence that the legions for the Second Macedonian War (200-196) contained 4200 infantry: for example the detachment at the Aoi Stena pass numbered 4000 (presumably one legion or wing). More importantly, Plutarch reports that Flamininus had 26,000 troops, from which must be subtracted 6400 Aetolians, 1200 Athamanians, and 800 Cretans, leaving 17,500, or 4400 per legion/ala, counting cavalry.[495] If the field army dispatched to this critical theater of war had legions with only 4200 infantry, we would suppose that other legions were at an equal strength, at least on paper.

By the late 190s, however, at Livy's troop strengths imply that legions were consistently 5000+ men. We know, for example, from his war narrative that in 190 the legions of Lucius Scipio deployed at the Battle of Magnesia were assigned a strength of 5400 infantry.[496] For the purposes of my estimates, I will assume that the legions between 200 and 191 were 4200 infantry; from 191 onwards, I will assume that legions consisted of 5200 infantry.[497] I will follow the conclusions of P.A. Brunt's *Italian Manpower* for the number of legions deployed in any given year.[498] Of course, legions did not necessarily serve in perfect annual intervals: there was often overlap between new legions being raised and time-expired troops being discharged. Muller, for example, attempts to calculate the costs for the Third Macedonian war down to the month.[499] Such precision for the overall period, however, is neither achievable nor necessary. It is relatively safe to assume that the overlap between legions being raised and old ones being discharged would have over time have balanced out, and that army costs can be estimated with reasonable accuracy based on the number of active legions per year.

In all, therefore, the cost of legionary *stipendia* would have been roughly 230 million *denarii* for the period from 200-157.

[494] Rawson 1971: 14-15.
[495] Plutarch 7.3, with the strength of the remaining allies in Livy 33.3.9-10 (although the Aetolian infantry is surely the 6000 given by Plutarch, and not the mere 600 listed in the manuscript of Livy. See Taylor 2014a: 313 for discussion.
[496] Livy 37.39.7-8. These legions may have been slightly over-strength given the serious nature of the campaign against Antiochus III.
[497] Brunt 1971: 423 believes the change occurred at some point between 200-184, although his tables assume 5200 man legions from 200 onwards.
[498] Brunt 1971: 424. See chapter on "Roman Manpower" for detailed discussion on Roman military deployments.
[499] Muller 2009.

The allies:

The allied soldiers in Roman armies received no pay from the Roman state. They needed to be fed, however, as allied soldiers received their grain ration ἐν δωρεᾷ. The Roman state received a great deal of grain collected through in kind extraction: the tithes (or in a few instances of heavy military deployment double tithes) from Sardinia and Sicily. [500] Our only secure reference to the Sicilian grain supply comes from the time of Cicero, where the quantity of the tithe was set at three million *modii.*[501] However, there is reason to believe the tithe was significantly lower in the early second century . In 189 , the grain from Sardinia and Sicily, a double tithe from both islands was split between the legions and fleets in Aetolia and Asia, or four legions and alae and a fleet of 75 quinqueremes. This force represented approximately 75,000 men, requiring about 3.6 million *modii* of wheat a year.[502] 1.8 million *modii* a year will therefore be a high estimate for the single tithe from the two islands. Given that the Roman army needed well over five million *modii* a year for an average annual deployment of eight legions, it seems that the "free grain" from Sicily and Sardinia accounted for roughly one third of the Roman military grain supply.

An unspecified amount of grain was also obtained by foraging, although foraging carried with it significant tactical risks: it was time consuming, especially given the limited window of the campaign season. Dispersed groups of soldiers were furthermore especially vulnerable to enemy attack.[503] Thus living off the land was never the logistical strategy of first resort, but was rather used to supplement supplied obtained by other means.

A great deal of grain still had to be purchased at market or near market prices. For example, in 169, the consul Marcius Philippus requisitioned 20,000 *modii* of wheat and 10,000 of barley from Epirus, with the promise that Epirote agents in Rome would be directly reimbursed from the treasury.[504] A form of military requisition known as *frumentum emptum* involved the purchase at a price that was either close to market value or just below the market level.[505] For example, in Spain, communities were required to sell 5% of their grain to the Romans at a level specified by the magistrate. Naturally, Roman commanders set the price low, prompting a protest by Iberian emissaries to the senate, which forbade magistrates themselves from setting the price.[506] It is even possible that when the Romans assessed their second tithe in Sicily and Sardinia they at least paid sub-market rates for the grain: for the second tithe from Sicily in 70 the senate instructed the praetor Verres to pay 3 HS a *modius*. [507] The Romans also at times paid allied states for "voluntary" contributions of grain, although probably

[500] Sicilian and Sardinian tithes: Livy 36.2.12, 73.2.12, 42.31.7.
[501] Cicero *Verr*. 2.3.163.
[502] Brunt 1971: 274, although he errors in by positing a ration of three *modii* a month instead of Polybius' four. See also Erdkamp 1999: 90-9 and 2010: 135-143 as well as Rosenstein, *Bellum se ipsum alet*, forthcoming.
[503] Attacks on foragers: Livy 31.2.7-8; Roth 1999: 130-133.
[504] Livy 44.16.2
[505] Roth 1999, Erdkamp 1998.
[506] Livy 43.2 12.
[507] Cicero, *Verr.* 3.163. For subsequent grain requisitioned beyond this, Verres was to pay 3 ½ HS, and for wheat for his own staff, 4 HS (1 denarius).

not full market price.[508] Yet the Romans also dispatched purchasing agents to buy grain at market rates, for example six purchasing agents were sent to Africa and Numidia to purchase grain during the Syrian Wars.[509] A similar buying mission staffed by senators was dispatched to southern Italy to purchase grain on the eve of the Third Macedonian War.[510] In addition, the army procured grain and other supplies (especially wine, salt and pork) through *publicani*, at contract rates.[511]

Thus the food that the allies ate was not a free lunch for the Roman state. But it is safe to say that the Romans obtained their grain, at well below the wholesale rate, which in the mid-Republican period seems to have been around 7.5- 11 asses a *modius*.[512] This was in part because Rome received large amount of grain from collection in kind. Indeed, if the Roman army received 35% of its grain from Sicily and Sardinia ("free"), 15% from foraging ("free"), and 50% by purchase at market or near market rates (7.5-11 asses), we might expect the average cost of a *modius* of grain to the Roman army to be somewhere between 3.25-5.5 asses.

There is some reason to believe that the "official" cost of rations, at least for the purposes of military bookkeeping was 4 asses a *modius*. This, for example, was the rate at which the aediles sold surplus military grain in both 204 and 201 .[513] More tellingly, Gaius Gracchus also set the price of his grain rations at 4/10ths of a denarius (6 1/3 asses under the new re-tariffed system of 16 asses to a denarius).[514] This perhaps represents, admittedly averaged for accounting purposes, the general cost of buying grain at both market and sub-market rates, factoring in substantial quantities of grain for "free" through tithes, foraging, donation and pillage. The cost of grain to the Roman state would have been deducted from the *stipendia* of Roman soldiers "at a fixed rate" τὴν τεταγμένην τιμὴν, but would have represented an un-reclaimed expense for allied soldiers.[515]

However, the army did not eat grain alone. Wine, olive oil and meat supplemented the Roman military ration. Presumably these were also provided to the allies *en dorea*. Let us assume a ration as follows:

---

[508] Paying for grain donations: Livy 36.4.9 for grain offered by Carthage and Massinissa, Livy. 45.13.15 for grain requested from Massinissa during the Third Macedonian War. See Roth 1999: 299.

[509] Livy 36.3.1; Roth 1999:227.

[510] Livy 42.27.8.

[511] Badian 1972: 16-30; Roth 1999:230-232.

[512] The best evidence for grain prices during the Hellenistic period century comes from Delos (IG 11.158.37), which ranged from 4 *drachmai* 1 obol to 10 *drachmai* for a *medimnos* of wheat, with most prices hovering between 6-7 *drachmai*. See also Foxhall and Forbes 1982: 90

[513] Livy 30.26.6; 31.4.6 although some caution here, as aediles on two occasions also sold grain at 2 asses a *modius* (Livy 31.50.1; 33.42.8). It is noteworthy that the corn sold at 4 asses was military surplus, while the corn sold at two asses seems to have been sent as a gift by foreign states.

[514] Livy *Epitome* 60.7. For grain deductions from *stipendium*, see Boren 1983, 435-6. Garnsey and Rathbone 1985: 25 stress that Gaius Gracchus based his program for subsidized grain program on the distribution of military rations, at a subsidized "price" to Roman soldiers.

[515] Walbank directly contradicts Polybius in arguing that allied communities somehow reimbursed Rome for the cost of feeding their contingents. I see no reason to doubt Polybius here. However, presumably the cost of clothing, weapons and equipment was borne by allied communities. In all likelihood, each community sent its soldiers with a full years pay (hence the need to appoint a paymaster), and then paid in cash to the quaestor when issued clothing or weapons.

Table 9.1: Cost of a Roman ration package

	Cost per unit	Total
48 *modii* of wheat	4 asses	19.2 *denarii*
12 *sextarii* olive oil[516]	1.25 asses[517]	*1.5 denarii*
7 *amphorae* wine[518]	15 asses[519]	10.5 *denarii*
		c. 30 *denarii*

The precise ratio of allied soldiers to Romans is unclear. Polybius, writing in the 140s, reports a ratio of 1:1.[520] Yet Livy implies that the ratio could vary widely. Statistics compiled by Afzelius suggest ratios anywhere from 2:1 allies to Roman to a 1:1 parity. Ratios of 2:1 were more common in the early second century, perhaps reflecting the demographic after effects of heavy Roman casualties in the Second Punic War, coupled with the desire to punish allies who had defected with heavier levies. The return of a 1:1 ratio by the Third Macedonian war may reflect the recovery of Roman population, as well as the demographic decline of allied communities, who had lost vast tracts of land to Roman confiscation following the Hannibalic war.[521] Afzelius' estimates suggested that overall, an average ratio of 1.4:1 ratio of *socii* to Romans prevailed, and this is modified by Brunt to 1.5:1.[522] I will use this in my calculations of allied ration requirements. I will assume, on average, 1.3: 1 allied cavalrymen for every Roman horseman, which despite Polybius' insistence that there were three allied horse for every one Roman, is more in line with the annalistic sources.[523]

Assuming three allied soldiers for every two Roman soldiers, this would imply 2,658,000 annual infantry rations and 142,000 cavalry "double" rations from 200-157 . Assuming the total cost was 30 *denarii* per ration, this would have cost the Roman state some 88 million *denarii* over the 43 year time period.

---

[516] Ration based on slave ration in Cato *De Ag*. 58.1.5
[517] Price based on Cato *De. Ag*. 22.3, who puts one pound of olive oil at ½ HS.
[518] Based on Cato *De Ag*. 57.1.9 for slave rations, the grain content of which actively mirrors military rations (i.e. 4 *modii* of grain for field hands).
[519] Polybius 2.15 notes that a *metretes* of wine costs as much as half a *medimnos* of wheat (or one *medimnos* of barley. He is referring to the unusually low price of in Cis-Alpine Gaul, but I will here assume the ratio was relatively stable. Assuming the market cost of wheat is 3 HS, an amphora (26.2 liters) of wine would cost around 15 asses.
[520] Polybius 6.26.7.
[521] These demographic issues will be dealt with in far greater depth in the section on manpower, hence only an abbreviated discussion here.
[522] Afzelius 1944: 47-50,78-9. Brunt 1971: 681. See Livy 33.43.4, 34.56.6, 35.20.5; 20.11, 37.2.4-6, 38.35.9, 40.1.5, 18.5, 36.6 for instances where 7500 infantry were recruited for each legion.
[523] Polybius 6.26.7 reports allied horse as three times as numerous as Roman cavalrymen, but the information in Livy never shows such a high ratio of allied horse. The issue will be dealt with in greater detail in the chapter on Roman manpower.

In addition, each cavalryman needed 30 *modii* of barley a month for his animals (probably a horse and a mule).[524] Providing 142,000 annual rations of barley, assuming a relatively cheap average price of 2 asses per *modius*, would cost another 10.2 million *denarii*.[525] In all, I estimate rations for allied soldiers at about 100 million *denarii* for the entire period.

Transport:

The Romans required substantial transport capacity to move soldiers, cavalry horses, equipment, rations and other supplies. During the First Punic War, some 800 transports supported the consular legions and fleet off of Sicily.[526] Scipio Africanus' expeditionary force, with two legions and *alae* (perhaps 16,000 infantry), required 400 transports to bring the army into Africa, and at least 300 transports to support it afterwards.[527] I will take it as a rough rule of thumb that a two legion army (c. 20,000 men) needed 400 transports.[528] Jonathan Roth notes that these must have been rather small. A consular army with 30,000 men would in a year consume over 10,000 tons of wheat, 675 tons of wine, 180 tons of olive oil. This is before factoring in room for transporting troops, horses, siege equipment, etc. 400 ships averaging about 50 tons should have been sufficient.

In most years of relative peace, the Romans had at least four legions overseas (two in Spain, one in Sicily, and one in Sardinia). In years of intense warfare, six or even eight legions might be deployed abroad. Brunt postulates four legions in Spain in 195, and again from 187-179 . There were at least two legions in the East from 200-194, 191-188 and 171-168, while there were four legions in the east from 190-188, and from 169-168.[529]

Let us assume that when not hauling Roman soldiers and their equipment, Roman merchantmen would have hauled grain; let us also assume that the fees for hauling soldiers would have been similar. A ship with a capacity of 50 tons could haul 6,666 *modii* of wheat.[530] Assuming a market rate of 7.5 asses to the *modius*, an 50 ton cargo ship could carry grain valued at 5000 *denarii.*

According to Diocletian's Price Edict, our only major evidence for ancient shipping costs, shipping surcharges from Rome to the various locations are as follows:[531]

---

[524] Polybius 6.39.14. Note Plutarch *Marius* 13.2 where Marius, serving as a cavalryman, presents both his horse and a mule for inspection.
[525] Barley as half the price of wheat: Cicero *Verr.* 3.188.
[526] Polybius 1.52.6
[527] Scipio's 400 transports: Appian *Punica* 3.13.
[528]Note also that Antiochus the Great supported his 10,000 infantry and 500 cavalry, effectively one legion and *ala* worth of troops, with 200 transport ships (Livy 35.43.3), or one transport for 50 infantrymen, almost the same ratio as Scipio's invasion force. An Aetolian expeditionary force needed 30 "light" transports ships for 2000 infantry, or 1 ship per 66 infantry (Livy 34.37.7). My hypothetical ratio of 200 light/medium transports for every legion and ala, or one ship for 50 infantrymen is therefore is well supported by contemporary comparative evidence.
[529] That is the second Macedonian War (200-194), Syrian War (191-188) and Third Macedonian War (171-167)
[530] This treats a *modius* of wheat as weighing 15 pounds, or 133 1/3 *modii* a ton.
[531] Scheidel 2013 (working paper) notes that Diocletian's price edict seems to assume the cost of 1 denarius per day of sailing per *modius* of wheat (a .01 surcharge per day). He argues that the rates in the edict reflect the reality of sea-borne transport costs.

Table 9.2: Roman Transport costs

Rome to Spain:	10%
Rome to Corinth:	14%

Providing 400 transports for every two legions would require:

400 ships to Spain for 43 years at 500 denarii a ship:	8,600,000
400 additional ships to Spain for 9 years at 500 denarii a ship:	1,800,000
400 ships to Greece for 15 years at 700 denarii a ship:	4,200,000
400 additional ships to Greece for 4 years at 700 denarii a ship:	1,120,000

At this rate ship-born transport would cost about 15 million *denarii*.[532]

In addition, we must account for the pack animals of the army. No definitive estimate of the mules accompanying a Republican legion exist.[533] If we assume one mule per *contubernium* of heavy infantry, this would require 500 mules a Republican legion, with an equal number for the allied wing. A number of mules also accompanied the cavalry (indeed, each cavalryman seems to have been required to maintain one mule), but these were provided with rations from the cavalryman's barley, and so have already been taken into account. Roth estimates the average daily consumption of dry fodder from a mule at two kilograms a day, in addition to grass and hay foraged along the way.[534] This translates into roughly 1/3 of a *modius* of barley a day, or ten *modii* a month. Assuming a cost of 2 asses a *modius*, this would required some 8.5 million *denarii* over 43 years.[535] In addition, the army needed to procure mules, although some beasts might be obtained through requisition or pillage.[536] Here a crude guesstimate must suffice: let us assume each mule had a service life of six years, and that a mule cost 25 *denarii*.[537] At this rate, mules for the legions would cost about 1.5 million *denarii* from 200-157.

In addition, we must factor in the state rations to non-combatants, termed alternatively *calones, ministratores* and *lixae* in the ancient sources.[538] Each Roman cavalryman was issued a triple wheat ration, and as he could hardly eat this

---

[532] This estimate assumes negligible transport costs for the Roman garrison in Sicily. The size of this garrison is entirely uncertain. Afzelius argues for around 6000 Latins and Italians maintained from 200 onwards. Brunt has his doubts (1971: 683), while Prag 2007 argues that the provinces had only a miniscule garrison, and that Roman governors relied heavily on local levies when they needed troops.

[533] Roth 1999: 82-83. Roth estimates 1400 mules a legion, while I assume 800, 500 with the infantry and 300 with the cavalry.

[534] Roth 1999: 66.

[535] That is, half my estimate for the price of wheat. For barley as ½ the price of wheat, see Polybius Cicero *Verr.* 2.3.18. See Frank 1941, 402. For the weight of barley, see Foxhall and Forbes 1982: 76, although these conclusions have recently been challenged by O'Connor, 2013.

[536] Roth 1999: 144-146.

[537] There is no good evidence for the cost of a mule in the ancient world, although an ox cost anywhere from 80-100 *drachmai.* I am assuming a mule cost about ¼ as much.

[538] Camp followers in the mid-Republican legion: Frontinus *Strat*. 2.4.8; Livy 27.18.12; 31.49.11; 38.40.10-12. See Vishnia 2002 for discussion.

himself, this already implies two attendants per cavalrymen.[539] However other men, either slaves, freedmen or impoverished freemen *(accensi)* must have been necessary to support the rest of the army as mule drivers and baggage handlers.[540] No firm evidence exists on their number. I will estimate one per *contubernium* of heavy infantry (following my estimate on the number of mules in the legion.)[541] This would still lead to 1000 additional non-combatants per legion and associated *ala*, requiring a standard ration package costing around 10 million *denarii* from 200-157. Finally, war requires any number of miscellaneous articles whose aggregate cost is impossible to quantify: nails, tools, carts, wagons, wheels, rope, etc. Some of these items were likely supplied by the soldiers themselves (such as entrenching tools), while others might be requisitioned. The costs of expensive siege machines should also be factored in. I will therefore add another 5 million *denarii* to my estimate of logistical costs.

Thus total costs for transport and logistical support would add up to approximately 40 million *denarii* over 43 years.

A Test of military expenditures:

In all, I estimate that it cost 370 million *denarii* to pay for 355 legion-years. On average, therefore, a legion and an *ala* cost about 1 million *denarii* a year.

It is possible to test its basic validity of this estimate. In 51, during his sole consulship, the senate voted Pompey 1000 talents to maintain his legions (ἀφ' ὧν θρέψει καὶ διοικήσει τὸ στρατιωτικόν).[542] Presumably this figure covered all associated military expenditures that Pompey might be anticipated to undertake as a provincial governor, including the costs of pay, shipping, transports, rations, etc. 1000 talents is of course a neat round number, but when we consider that Pompey had six legions at the time, the round number actually used in the senate's budget projection was 6 million *denarii* (assuming Plutarch is converting the number into a 6000 *denarii* talent of account), or one million *denarii* per legion per year.

Of course, there were substantial differences between the army of the early second century and that of Pompey. But from a budgetary point of view, these may well have roughly balanced each other out: there were no more allied contingents that needed to be provided with grain, but thanks to a law of Gaius Gracchus, Roman soldiers now had their clothing provided free of charge.[543] Pompey's legions have been somewhat larger, perhaps 6000 strong, but no

---

[539] Cavalry rations: Polybius 6.39.12 Each Roman horseman received 2 *medimnoi* of wheat (12 *modii*), presumably to feed two attendants, while each allied horseman received 1 1/3 *medimnoi*, enough for himself and one attendant.

[540] Roth 1999: 91-115 provides an excellent overview of evidence for "non-combatants" in Roman armies. A fragment of Cato the Censor indicates that many of these men were *accensi*, free persons otherwise too poor to serve in the legions (Varro *De Ling. Lat.* 7.57-8). Roth 1994 suggests that the imperial legion contained roughly 700 non-combatants, bringing the total strength of soldiers and non-combatants to 6000.

[541] A Roman legion contained 500 *contubernia* of *hastati*, *principes* and triarii, not counting the *velites*, who I assume did not have servants. This would produce a ratio of 1 servant for every 8-10 infantrymen. As with mules, this is almost double the (low) ratio of servants to soldiers attested in the army of Philip II, with one servant for every infantry file of 16 men (Frontinus *Strat.* 4.1.6.).

[542] Plutarch *Pompey* 55.7.

[543] Plutarch *Gaius Gracchus* 5.1

longer contained regularly assigned *turma* of triply paid cavalry. Most importantly, military pay was unchanged, still 108 *denarii* a year. Ultimately, given there was no major increase in the price of commodities, there is reason to believe that the average cost of maintaining and supplying a legion/*ala* in the early second century should have been roughly the same order of magnitude as a legion in Pompey's day: roughly one million *denarii* a year. This seems to confirm the basic validity of my estimates for Roman army costs.

The Fleet:

A Roman quinquereme had a crew of three hundred rowers and perhaps 60 marines.[544] The exact ratio of Roman citizens to allies fluctuated, but by the second century successful land distribution seems to have severely limited the number of impoverished *proletarii* liable for service in the fleet.[545] For my estimates, I will assume a Roman to ally ratio of 1:2. As such, a 360 man crew would contain around 120 Roman citizens.[546] There is every reason to believe that soldiers and sailors received identical pay—especially given the ease in which sailors were converted into legionaries.[547] 120 Romans would therefore have pay of 108 *denarii*, totaling 12,960 *denarii*; this figure would also cover their rations, clothing, weapons and equipment. Rations for the remaining sailors would cost 7,200 *denarii*, based on the estimate for allied rations discussed above. Total annual crew costs for a single *quinquereme* would have therefore been around 20,000 *denarii*.[548]

I will follow Thiel's estimates for Roman naval deployments between 200 to 157. A fleet fifty strong is attested during the Second Macedonian War, although Thiel postulated a 25 ship squadron engaged in convoy duties in the Adriatic; this is not, in my opinion an unreasonable postulate, given that Roman historians often only give the strengths of tactical formations, not the entire deployed fleet. Thus from 200-194 I will assume 75 warships a year.[549] We hear of no naval deployments until the Syrian War, when Thiel counts 115 ships.[550] Again, the navy seems to have been dry-docked until 181, when duoviral fleets were revived to operate with the Istrians. This fleet of twenty warships operated

---

[544] Polybius 1.26.7 puts the crew of a quinquereme at 300 rowers and 120 marines during the First Punic War. Here, however, the Romans have put one maniple on each quinquereme. The normal compliment of marines may therefore have been lower.

[545] De Ligt 2012: 103-105.

[546] Polybius statement that a quinquereme had 300 rowers is generally accepted (1.26.7). However, his figure for 120 marines seems to be unique to the battle he is describing, when the consular legions have essentially gone aboard to fight as marines. This figure assumes a marine compliment at 60, one Roman century.

[547] Frank 1932 believed that rowers in the Roman navy, being mostly freedmen, were unpaid. Pay for freedmen rowers, however, is explicit in Livy 24.11.7-9.

[548] The Athenians reckoned the cost of maintaining a trireme at one talent a month, or 1 *drachma* a day for a crew of 200. A late third century inscription from Rhodes puts the cost of operating a trireme at 10,000 *drachmai* a month (Syll. 3 581). However, we know from the same inscription that Rhodian soldiers were demanding 9 obols a day, with officers twice that. At this rate, pay for 200 rowers would account for 9000 *drachmai*, again suggesting that the cost of operating a trireme were mostly related to the cost of the crew. In both instances sailor's pay included the cost of their rations.

[549] Thiel 1946: 288. I will also assume, following Thiel 1946:416, that the 25 ships that escorted Cato's armada to Spain in 195 were detached from the Eastern fleet.

[550] Thiel 1946: 263-264.

from 181-177, presumably without interruption, although Livy does not mention the duovirs of 179.[551] In 177, Tiberius Gracchus also had a fleet of ten warships to support his operations. For the Third Macedonian War, Thiel counts 68 ships active in the Eastern Mediterranean.[552] This suggests a total of 1435 ship-years, with a crew cost of about 28 million *denarii* during the period.

Table 9.3: Roman Naval Deployments, second century

Year	Ships
200-194:	75
191-188	115
181-178:	20
177:	30
171-167:	68

In addition, the Romans constructed an additional 150 ships during the outbreak of the Third Macedonian War. We have no information for the cost of a Roman ship, although Athenian evidence put the cost of a trireme at roughly 1 talent (5000 drachmas for the hull, and 2500 drachmas for the rigging).[553] Furthermore, there must have been some costs associated with keeping ships in dry-dock. For this reason I will round up the estimate to 30 million *denarii*.

Donatives to the soldiers:

A portion of the loot paraded in triumphs was distributed to the victorious soldiers. Frank does not consider this amount in his overall estimate of expenditures, believing that the reports for triumphal booty contained only the amount deposited into the treasury, not given over to the troops. However, Livy's triumphal narratives almost invariably involves first a list of the booty paraded in the triumph, and then follows with the report of the donative *militibus ex praeda*. In many instances, the donative was given to the soldiers before the triumphal procession, but it no doubt was included in the report of overall loot involved in the triumph, even if it was carried in soldiers' purses rather than the triumphator's floats. Attested donatives are listed in Appendix 3. As we seldom know the exact troop strength that received the donatives, I will assume full paper strength legions, with equal allied wings, with 400 allied cavalry for every 300 Roman horsemen. For the donatives of 189 and 187, I will assume four 5400 legions and 1800 cavalry (the attested paper strength of the legions of Scipio/Vulso).[554] For 168/167, I will assume 6000 strong legions, the assigned paper strength for the forces of Aemilius Paullus.[555] Of course, legions invariable returned home somewhat understrength: men were killed in action, died of disease or accidents, or deserted. Nonetheless, overall loss rates were not extensive: Nathan Rosenstein estimates that only about 5% of Roman soldiers were killed during the early second century.[556] I will assume that whatever

[551] Thiel 1946:435-429.
[552] Thiel 1946: 375-377
[553] Gabrielsen 2008: 49-51; Pritchard 2012: 51.
[554] Strength of Scipio's army: Livy 37.39.7; it suffered only minor casualties in the battle.
[555] Livy 44.21.8
[556] Rosenstein 2004: 136.

"savings" were made from not having to pay donatives to soldiers who became casualties was largely nullified by the paying out of significant if unspecified donatives to tribunes, legates, *apparitores*, and friends. My overall estimate for soldier's donatives is roughly 25 million *denarii*.[557]

Public Works:

Every five years, the censors let a wide array of contracts, for both the repair and maintenance of city infrastructure, as well as new projects. In the second century, the scope and ambition of Roman public building increased markedly.[558] The censors of 199 seem to have engaged in virtually no public works, owing to the depleted state of the Roman treasury following the Second Punic War.[559] Indeed, their only major outlay of public funds was the colonization enterprise at Castra Hannibalis, the cost of which I take into account elsewhere. The censors of 194 repaired two major public buildings; I will guestimate 1,000,000 *denarii* for this project. The censors of 189 had only two modest projects: the building of a substructure and the paving a road. I will again guesstimate the cost of these at 1,000,000 *denarii*. However, the influx of silver from the Seleucid indemnity saw a spike in massive public works. In 184, Marcus Cato and Valerius Flaccus engaged in an ambitious public works program:

They next made contracts for lining the reservoirs with stone and, where it was necessary, cleaning out the sewers, money having been set apart for the purpose (*pecunia decreta*), and also for the construction of sewers in the Aventine quarter and in other places where as yet there were none. Flaccus constructed a raised causeway at the Fountain of Neptune to serve as a public road and also a road along the Formian Hill. Cato purchased for the State two auction halls in the Lautumiae, the Maenium and the Titium, as well as four shops, and on the site he built a basilica, known afterwards as the Porcian.[560]

From Dionysius of Halicarnassus, who quotes the second century historian Gaius Acilius, we learn the cost of the project: 1000 talents. [561] This round figure corresponds to a major line item of Rome's revenues for that year, one of the 1000 talent Seleucid indemnity payments (this must be the *pecunia decreta* in Livy); if so these 1000 Attic talents would represent expenditure of 6,720,000 *denarii.* Given the other items listed in the lustrum beyond the sewer renovation, Cato and Flaccus must have spent considerably more than 6.72 million *denarii* in 184. I will estimate the total cost of their censorship at 8 million *denarii.*

The next lustrum we know that the entire *vectigal* for that year was assigned to the discretion of the censors. Frank believed that this *vectigal* just referred to just a handful of specific categories: the receipts from *portoria*, *scriptura* and rents from the *ager publicus*, etc. (see section on *vectigal* below). But Livy indicates that the Carthaginian and Seleucid indemnities could be considered *vectigal* (33.47.2), perhaps because of their regular nature. This means

[557] Frank 1932 placed these at 22.5 million.
[558] Crawford and Coarelli 1977 provide perhaps the most detailed overview of building during the mid-Republican See also for discussion on the public works during this period.
[559] Crawford and Coarelli 1977: 4.
[560] Livy 39.44.5-7. See also Plutarch *Cato Maior* 19.
[561] Livy 39.44; Dionysius 3.67.5, Astin 1978: 84.

that at a minimum, the censors for 179 spent, the 1000 Attic talents of the Seleucid indemnity and the 200 Attic talents of the Carthaginian indemnity, over eight million *denarii,* plus the other *vectigal* derived from Italian sources. I will estimate their total expenditure at ten million *denarii*.[562]

The censors of 174 were probably the last to benefit from the Seleucid indemnity (Antiochus IV made the last payment, late, in 173).[563] The censors of that year also embarked on an ambitious series of projects, which matched the scope and scale of projects by the censors of 184 and 179.[564] Indeed, E. Badian assumes that the censors of 174 were again granted an entire year's worth of vectigal, suggesting very similar public work expenditures to the censors of 179 .[565] I will therefore estimate the cost at another ten million *denarii*, with the last of the Seleucid indemnity payments, perhaps coupled with that year's Carthaginian indemnity payment, likely providing most of the cash.

The senate only appropriated half of the vectigal to the censors of 169 , no doubt because of the fiscal pinch caused by the costs of the Third Macedonian War. By now the Seleucid indemnity had ended, so that the overall levels of revenue were substantially lower. I will assign these a more modest sum of 2 million *denarii*. The loss of Livy dramatically reduces our knowledge of the lustra of 164 and 159.[566] The only known projects from 164 are the erection of a statue of Concordia and the construction of a horologium in the comitia.[567] For 159, we learn of another horologium installed in the Basilica Aemilia and construction of a portico on the Capitol.[568] These surely were not the only projects. Given that the treasury was overflowing with loot from Macedonia, I will assign these censors expenditures of four million per lustrum; this is admittedly a guesstimate.

Table 9.4: Estimate expenditures per lustrum (*denarii*)

199: 0
194: 1,000,000?
189: 1,000,000?
184: 8,000,000
179:10,000,000
174: 10,000,000
169: 2,000,000
164: 4,000,000?
159: 4,000,000?

This estimate of 40,000,000 million far exceeds Frank's estimate of twenty million spent over the period. It is nonetheless in keeping with the sources that

[562] Livy 40.51 provides a list of the building projects for 179 .
[563] Last Seleucid payment: Livy 42.6.7, although II Maccabees suggest payments were still owed as late as 165 . See Schwartz 2008, Appendix 6.
[564] Livy 41.27 provides a roll-up of censorial projects for that year. In fact, Livy's list is likely incomplete; see Richter, 1961 for additional discussion on activities during this lustrum.
[565] Badian 1972: 127 (note 34).
[566] On the poverty of the literary tradition as evidence of Roman building projects after 167, Coarelli and Crawford 1977: 7.
[567] Statue of Concordia: Cicero *Dom*. 130. *Horologium*: Pliny *NH* 7.214. Crawford and Coarelli 1977: 5.
[568] Horologium in *Basilica Aemilia*: Varro *De Ling. Lat.* 6.4; Censorius *de die natali* 23.7; Pliny *NH* 7.215. Crawford and Coarelli 1977: 5, 21.

imply enormous expenditures on public works during the period consuming a substantial portion of the state's budget. Polybius describes the censorial spending in lustral years as τῆς τε παρὰπολὺτῶν ἄλλων ὁλοσχερεστάτης καὶ μεγίστης δαπάνης, "the most important and biggest expenditure by far."[569] This passage would imply that the censors spent as much on τὰς ἐπισκευὰς καὶ κατασκευὰς τῶν δημοσίων κατὰ πενταετηρίδα than on the legions.

In addition to the quinquennial spending by the censors, aediles and consuls sponsored building projects of their own. The public works of the consuls fell into basic two categories: so-called manubial projects, mostly small temples, and roads. The exact number of manubial temples is unclear, but at least 10 manubial temples were completed and dedicated during this period.[570] Likewise, only two roads are well attested, both built in 187: the Via Flaminia Minor and the Via Aemilia, with a combined length of approximately 175 miles.[571] Various *fora* along these roads, which usually bear the names of various Roman *gens*, i.e. Forum Livii, Forum Claudii, are difficult to date. The founding of a *forum* along the road seems to have been divorced from the initial construction of the road itself. The date of many of these *fora* are obscure (with various guesses mostly based on conjecture about the namesake), but suffice it to say these suggest periodic construction activities sponsored by consuls, particularly those assigned Italy as their *provincia*.[572] In addition, ambitious aediles on occasion undertook building projects. The aediles for 193 and 192 between them constructed three porticoes and a wharf, as well as installing a number of gilded shields and a gilded statue in the temple of Jupiter.[573]

It is extremely difficult to gauge the cost of these projects. Many of the temples were modest, but again there is almost nothing to go on for an estimate of building costs. Furthermore, we do not know the extent to which the temples and porticoes were decorated, as lavish decoration could easily multiply the basic costs of building the structure. The cost of road construction is likewise obscure. In the Late-Republic, construction of a paved road cost as much as five *denarii* a foot.[574] However, the consuls of 187 utilized soldiers as a workforce, thus radically reducing labor costs; it is not impossible that they simply appropriated materials as well. The roads themselves were likely unpaved wagon trails.

While it is impossible to effectively estimate the cost of any single project, it does not seem unreasonable to posit that the sum of consular and aedilician building from 200-157 was roughly equivalent to a moderately ambitious censorial lustrum. I have decided to assign a cost of 5 million *denarii*. This is admittedly a guesstimate. Overall, I will estimate 45 million *denarii* to public works spending over the course of 43 years.

Cost of ludi, festivals and triumphs:

Roman public festivals were expensive events, involving sacrifices, public feasts, gladiatorial games and theatrical productions. We have one indication for

[569] Polybius 6.13.3.
[570] Crawford and Coarelli 1977: 20-21.
[571] Livy 39.2.
[572] On *fora* and *conciliabula*, see Bispham 2007: 87-91.
[573] Livy 35.10.12, 35.41.10. See also Orlin 1997: 140-141.
[574] Duncan-Jones 1990.

the cost of a major festival. In 218, the *ludi Maximi* cost 200,000 light-liberal asses, and probably lasted four or five days.[575] This would be the equivalent to the bronze value of 100,000 *denarii,* or 20,000-25,000 *denarii* a day. With the currency reform, the sum of 20,000 *denarii* appears on two occasions for spending on games: In 186, the senate authorized 20,000 denarii to pay for Fulvius Nobilior's triumphal games.[576] In 179, the same figure was set as the limit of expenditures for future triumphal games.[577] It is not an unreasonable hypothesis that this figure was based on the "average" cost of a day of games, so that the senate was limiting these generals to one day of public funding, even if they offered multi-day extravaganzas financed through private means.

Let us assume for the second century, the *ludi Romani* lasted ten days.[578] The lengths of the other festivals in the mid-Republic are uncertain, and seem to have varied. For my estimate I will assign three days apiece to the *Ludi Megalensia* (est. 191), *Cerei, Apollinares*, *Plebii* and the *Floralia* (est. 173).[579] This would imply some 937 days of public games between 200 and 157. This should be rounded up somewhat, to count for expiatory games and manubial games, presumably not all of which are attested. Let us assume 1000 total days of state sponsored festivities (not funerary games put on by aristocrats, and additional days added on to public games through private funds). Estimating an average price of 20,000 *denarii* a day, total cost of *ludi* would be 20 million *denarii,* an average of c. 465,000 *denarii* a year. This is somewhat lower than Knapowski's estimate of 656,000 *denarii* for festivals in 168, although he assumes more days per festival based on Late Republican evidence.[580] In 51, the Roman state spent 435,000 denarii on just three festivals, the *ludi Romani*, *Apollinares* and *Plebii*.[581] For comparisons sake, David Pritchard puts the annual cost of Athenian festivals at around 600,000 *drachmai* (100 talents) a year.[582] The order of magnitude of this estimate for festival costs therefore seems to be correct.

Cost of *apparatores* and public slaves:

The magistrates had a number of *apparitores*, who were men of middling to high status, on their staffs, paid for from public funds.[583] From the *Lex Ursonensis* for the Caesarian colony at Urso in Spain, we have the rates at which a

---

[575] Dionysius of Halicarnassus 7.71 puts the cost of the Roman games prior to the Second Punic War at 500 minae, or 200,000 HS; Dionysisus may erroneously treat the sesterces as the equivalent of a liberal as. Livy (22.10.7) notes that the Ludi Maximi in 217 were celebrated at a specific cost of 333,333 1/3 asses. Crawford 1974:615 notes that this would be the same bronze weight in semi-liberal asses as 200,000 light-liberal asses; there appears to have been a conservatism that carried the cost of the festival despite the devaluation of the coinage.

[576] In 186 , Fulvius Nobilior was allowed to withdraw 20,000 *denarii* to fund his triumphal games, although he seems to have augmented these substantially with private funds. We have little evidence for the cost of individual aspects of Roman *ludi*, with the exception that Terence once received an honorarium of 2000 *denarii* from an aedile, although this was likely an exceptional fee, to warrant mention by Suetonius *Vita Terentii* 2).

[577] Livy 40.44,

[578] Livy 36.2.4.

[579] Establishment of the *ludi Megalenses*: Livy 36.36.4-5. A length of at least two days for the Megalenses is implied by Plautus' *Pseudolus*, which invites the audience to return the next day. (Re)-establishment of the Floralia: Ovid 5. 311-330.

[580] Knapowski 1961: 42.

[581] CIL 1.328-29.

[582] Pritchard 2012: 35.

[583] On the apparitores in the Republic, Jones 1949: 38-41 and Purcell 1983: 127-132

Late Republican *apparitor* was paid. Given the conservatism of public pay in the Republic (Roman soldiers in 46 were still getting paid what they were paid in Polybius' day, if not earlier), it does not seem unreasonable to use these figures as a rough guide for the cost of *apparitores* in the mid-Republic.[584]

Table 9.5 Urso pay rates (converted to *denarii*):

	denarii		*denarii*
Lictor:	150	Aide (*accensus)*:	175
Clerk (*scriba*):	300	Crier (*praeco)*:	75
Copyist (*librarius*):	75	Herald (*viator)*:	100
Flutist (*tibicen*):	75	Soothsayer (*haruspex)*:	125

Each duumvir at Urso was entitled to two lictors, an aid, two clerks, two heralds, a copyist, a crier, a soother and a flutist, costing in total of 1625 *denarii.* This is for a duumvir with two lictors; let us assume that a consul with twelve would employ *apparitores* costing six times as much, whose combined salaries would be 9750 *denarii* (not to say that he would need this exact ratio of particular *apparitores*; the goal here is the right order of magnitude). Based on the numbers of lictors, the two consuls (12 lictors each), six praetors (six lictors each), two curule aediles (two lictors each), c. twelve quaestors (1 lictor each) would need to employ personnel costing 61,750 *denarii* a year. In Urso, the municipal aediles were able to employ officials costing 475 *denarii.* Let us assume that in Rome, the ten tribunes of the plebs, the vigintiviri, and the two plebian aediles employed a similar staff, costing 15,200 *denarii.* Finally, let us assign each priest (10 decemvirs, 9 pontiffs, 9 augurs, 3 epulones) an aide, a scribe, a flutist and a soothsayer, costing at the Urso rates 27,900 *denarii.* This would put the cost of *apparitores* at around 105,000 *denarii* p.a. A relatively large number of public slaves would have also assisted the magistrates. The exact number is unclear. In imperial times, a brigade of 700 slaves was maintained for the sole purpose of aqueduct maintenance.[585] I do not think 2000 public slaves to be an excessive estimate for the total number of public slaves in the mid-Republic. 2000 slaves, eating four *modii* of wheat a month (Cato's ration for non-agrarian slaves) at the urban price of .75 denarius to the *modius*, would annually cost 72,000 *denarii.* I will therefore put the personnel costs of civil administration at around 10 million *denarii* from 200-157.

Colonization:

Establishing new settlers on plots was expensive: they required not only the cost of traveling to the area, but also rations until they could get their crops established, and in many instances, the livestock and equipment necessary to operate a peasant farm. The extent of the expense of colonization exercises is perhaps best illustrated by the efforts of Tiberius Gracchus to have the revenues

[584] Lex Ursonensis, 62. CIL II 543: 127-132/ ILS 6087. See also Swan 1970: 141. Cicero in the Late Republic states that the official salary for apparitores was small (Verr. 3.182), perhaps because, as with military pay, rates were a holdover from the middle Republic.
[585] Frontinus *Strat.* 2.116

of the Attalid kingdom, undetermined but certainly immense, used to support Gracchan colonists.[586]

In 173 the Romans resettled approximately 40,000 free male Ligurians with their families in Southern Italy. To cover the costs of relocation, the Roman senate granted these vanquished tribesmen 150,000 pounds of silver (12,600,000 *denarii*) or 315 *denarii* per male colonist.[587] This amount may have been the cost of support a Roman or Latin colonist as well, given the anticipated costs of providing seed and farm equipment, stock animals, building materials for the physical infrastructure of the colony, rations for colonists to last them until they could grow their first crop, as well as other expenses related to relocation.

Livy records colonies resettling another 37,400 Roman and Latin colonists (see Appendix 9.2). In addition, there were two significant viritane allotments during the period: the first was for Scipionic veterans who had served in Spain and Africa, who were granted plots in Southern Italy between 200 and 199 .[588] In 173, land in Northern Italy was assigned to both Romans and allies.[589] I will assume each viritane allotment settled approximate 12,000 men (it should be noted that triumvirs were assigned for colonies of 3000-4000 settlers, whereas the larger viritane allotments were handled by decemvirs, presumably because three to four times a much land was allotted, requiring more commissioners to handled to administrative details). In all, land seems to have been distributed to approximately 60,000 men. Assuming a similar cost per capita to the 40,000 Ligurians, Roman settlement for c. 60,000 men and their families would cost roughly 20 million *denarii*.

Miscellany:

In addition, I will assume that the Roman state spent several hundred thousand *denarii* a year on miscellaneous expenses that are almost impossible to quantify, for example the periodic rewards paid to informers, gifts to foreign embassies, dedications of public statues, etc. This figure will also allow for a modicum of corruption, which surely was a drain on state resources, despite Polybius' insistence that the Romans were unusually honest in matters of pertaining to public money. My guesstimate will be 15 million *denarii* in miscellaneous expenditures over the period from 200-157.

The Re-imbursement of 187:

In 187, Manlius Vulso triumphed in splendid fashion, bringing home enormous amounts of loot from Asia Minor, including several lump-sum installments of the Seleucid indemnity payment. The amount paraded in the triumph was as follows:[590]

---

[586] Plutarch *Tiberius Gracchus* 14.1

[587] Livy 40.38.6.

[588] Allotments to African veterans: Livy 31.4.1; 31.49.5. Assignations to Spanish veterans: Livy 32.1.6.

[589] Livy 42.4.3-5.

[590] For this estimate, I assume each crown weighed two pounds, each tetradrachma was worth four *denarii*, every Attalid tetradrachma was likewise worth 4 *denarii*, and every Philippic was worth twenty-four *denarii*. While Livy uses the term *cistophorus* to describe Attalid currency, great uncertainly exists amongst numismatists as to whether the light cistophoros was in use as early as the 190s; opinion increasingly leans to a later date, making Livy's use of the term an

Table 9.6: The value of loot carried in Manlius Vulso's triumph.

Item:	*denarii*
2400 lb gold (crowns):	2,016,000
220,000 lb silver:	8,480,000
2103 lb gold:	1,766, 520
127,000 Attic tetradrachmas:	508,000
16,320 gold philippics:	391,680
250,000 Attalid coins	1,000,000
Total:	24,162,200

From this, a generous donative was paid to Manlius' army, which consisted of 21,600 infantry and 2200 cavalry: 42 *denarii* for infantry, with double for centurions and triple for cavalrymen, which would have been paid to Roman and allied soldier alike. Manlius then provided the soldiers with a second *stipendium*, which would have gone to Roman soldiers alone (allies did not receive *stipendium*). Thus we must subtract 2,568,240, putting the reimbursement at 21.6 million *denarii*. This is the only instance reported in the second century of *tributum* being refunded.

Total Expenditures:
In all, state expenditures are estimated at c. 540 million *denarii* from 200-157.

Table 9.7: Total expenditures, 200-157.

	millions *denarii*
Legions:	230
Fleets:	30
Allies:	100
Donatives:	25
Transport:	40
Public Works:	45
Apparatores and Slaves:	5
Ludi and Triumphs:	20
Colonization:	20
Resettling the Ligurians:	12.6
Miscellany:	15
Re-imbursement of 187:	21.3

anachronism. For the most recent debate, see contributions by Meadows 2013, De Callatay 2013, and Ashton 2013. I assume here that Livy's source simply referenced Attalid coins of the traditional weight standard (captured by the Seleucids and then captured by the Romans), and Livy assumed they were later *cistophoroi*.

Totals: c. 565 million

Revenues: 200-157

In 157, an inventory revealed 17,410 pounds of gold, 22,070 pounds of silver and 6,135,400 *denarii*, bullion and coin worth 22,613,680 *denarii*.[591] This is quite paltry compared to the approximately 180,000 talents (enough bullion to coin over one billion *denarii*!) in the Achaemenid treasuries in 331.[592] When this surplus is added to the estimate of c. 565 million in expenditures, it follows that the total revenues of the Roman state were c. 585 million *denarii*. Below, I discuss the different sources for various Roman revenues, and provide, when possible estimate for each.

Indemnities:

Rome imposed massive war indemnities on defeated enemies, totaling 26,030 Attic talents, between the 200 and 157 (see Appendix 1). An Attic talent was the equivalent of 6720 *denarii* on the 1/84 standard. The cash value of these indemnities was therefore c. 175 million *denarii.*

Loot:

Livy provides detailed accounts of booty brought into the public treasury during triumphal processions; these are presumably derived by Livy or his annalistic sources using official documents chronicling deposited loot. There is little reason to doubt the accuracy of these figures, aside from the usual problems of corruption during transmission. The raw data for all triumphs is presented in Appendix 2.

Loot displayed in eastern triumphs totaled 96,402,732 *denarii*. However, Frank is quite correct when he notes that some of this "loot" was in fact the indemnity payments made by defeated powers that was paraded as *praeda*. The following indemnities should be subtracted:

Table 9.8: Indemnities likely carried in Roman triumphs.

1. Philip to Flamininus: 500 down payment + two annual payments, 600 total[593]
2. Nabis to Flamininus: 100 talent down payment.
3. Antiochus to Scipio: 500 talent down payment
4. Antiochus to Manlius Vulso: 2500 down payment.
5. Ariathes to Manlius Vulso: 300 talents lump sum
6. Aetolian League to Fulvius Nobilior: 200 talent down payment

[591] Pliny *NH* 33.55.
[592] According to Diodorus 17.80.3 and Strabo 15.3.9, the Persian loot concentrated at Ecbatana totaled 180,000 talents.
[593] I am assuming that the initial 200 talents given by Philip to Flamininus had already been spent, likely on military pay.

In total, therefore, 4200 Attic/Euboic talents, or 28,224,000 *denarii*, must be subtracted from the total, since it has already been counted above. To this, however, must be added the approximately 5.5 million *denarii* derived from the sale of the slaves and given to Aemilius Paullus' legions in 168.[594] The loot from the eastern wars was therefore equal to c. 73.6 million *denarii.* Meanwhile, Livy reports that triumphs in Cisalpine Gaul and Istria that brought in a total of 247 pounds of gold, 2340 pounds of silver and 1,076,250 *denarii,* totaling 1,480,290 *denarii:* Triumphs from Spain produced 5917 pounds of gold, 326,352 pounds of silver, and 163,0666 *denarii*, totaling 32,273,108 *denarii*:[595]

In all, triumphal records indicate 107.4 million *denarii* to the Roman treasury. However, the revenues from loot must have been somewhat higher. We know of three Ligurian triumphs between 167 and 157, but owing to the loss of Livy's complete narrative, we do not know how much loot was carried in the triumph. [596] Furthermore, generals who were not awarded a triumph must have brought at least some loot into the treasury. To account for this, I will round up my estimate for revenues from loot to 115 million *denarii*.

Tributum:

Tributum had been crushing during the Second Punic War. In 215 , following the disaster at Cannae, the senate levied a *duplex tributum* (presumably doubling the rate of the year before), of which half was to be devoted to paying the seven legions in the field that had not disgraced themselves at Cannae (thus the two in Spain, the two in Sicily, the two urban legions in Rome and one legion in Sardinia). We can conclude, therefore that the tribute of 216 had been set equivalent to the pay of seven legions, and the duplex *tributum* that the senate hoped to raise was therefore equivalent to the pay of 14 legions, (as it was, the collected tax fell far short of expectations, so that two legions in Spain went without pay).[597]

---

[594] After sacking Epirus and selling 150,000 inhabitants into slavery, Paullus gave 200 *denarii* to each of his soldiers, with the usual double bounty to centurions and triple to cavalrymen. The estimate is based on two 6000 strong legions with allied wings. On the economic motives of the sack, see Ziolkowski 1986.

[595] Frank 1932, 1941. Also Knapp 1977: 167-170

[596] De Grassi 1954: 105

[597] The Polybian pay-rate applies to the post 211 reformed monetary system based on the sextenal ass and the new denarius coinage. While it is commonly held that it is impossible to know pay rates prior to Polybius, I think we can with a reasonable degree of certainty conjecture that the bronze and silver value of military pay in fact remained constant, despite the monetary reforms. As Crawford 1964 notes, the numismatic evidence suggests a desperate attempt to reduce the bronze weight of military pay from 217-215. Using the pay-rate described by Polybius and Plautus, a Roman infantryman made three asses a day on the sexental standard, a total of six *unciae*. Presumably, under the old rates, he was paid half of a liberal ass a day, or six *unciae* (on the so-called "light liberal" standard would have actually been around five *unciae*). Of course, at that rate, a Roman soldiers pay for a year in the field would have weighed around 125 pounds, but the burden from the late fourth century onwards was lightened by the issuance of part of the *stipendium* in silver. Prior to the introduction of the denarius, there was no direct conversion between bronze and silver, although a rough (but not perfect) 1:120 ratio between silver and bronze seems to have prevailed.[597] Thus one Romano-Campanian tetradrachma, weighing 7.3 grams was crudely equivalent to three asses on the light liberal standard. At this rate, the silver value of pre-211 infantry pay was five or six *didrachmai* a month, although the exact conversion of silver to bronze may have been at the whim of the commander and his quaestor.

Frank believed that *tributum* was collected a set rate, a mill tax of .1% of all assessed property.[598] Claude Nicolet correctly believes that the rate of *tributum* was variable, based on Rome's military commitments for the given year. Yet Nicolet largely believes that the rate of *tributum* was 1/1000 for most years.[599] This hypothesis rests on slim textual evidence: in 204 the senate punished Latin communities who had failed to provide additional recruits with substantial new levies. In addition, they were required to pay the senate a tax of 1/1000, assessed in the same manner as it was in Rome. [600] Frank assumes that the tax rate used to punish recalcitrant Latin communities would not have been lower than that assessed at Rome. However, it must be remembered that the requirement to send large detachments of troops was in of itself a significant financial burden on Italian communities, as these communities were required to provide pay for their own contingents through local taxation. Indeed, the 1/1000 rate was quite likely designed to make up for the fact that the Romans would be providing these contingents with free rations; part of their punishment was being forced to pay for what otherwise would have been given ἐν δωρεᾷ. This surcharge ensured that these chastised communities paid for the entire cost of their own contingents, but it was not necessarily a reflection on the going tax-rate at Rome itself.

To get a more accurate sense of the level of *tributum* levies, we would need to know both the rate of assessment and the total amount of property assessed. Both facts, I believe, are buried within Livy's narrative. The triumph of Manlius Vulso in 187 provides an unusual chance to estimate the assessed property on the Roman tax rolls for the period after 200 . As discussed above, some 23.9 million *denarii* were paraded in the triumph. Some of the money was then used to provide a double stipendium to the soldiers, and an additional half-pound of silver (42 *denarii*) as a donative. I have estimated this cost, based on the size of Manlius Vulso's army, at 2.53 million *denarii.* It was then voted to use the remaining cash, which I estimate at 21.3 million, to reimburse taxpayers a rate of 25.5 asses to 1000, which probably represented how far the money would go when divided among all the taxpayers on the assessment rolls. This provides a critical piece of macro-economic information, namely that the total value of assessed property in 187 (assessed during the census 189) was around 835 million *denarii.* The rate would of course have fluctuated somewhat, although we would not expect radical swings in valuation. The censors likely assigned "traditional" valuations to landed property that need not have closely matched market rates, while a great deal of valuation was self-imposed in the census declaration, so that a peasant had reason to report the same valuation year after year.[601] Outside from the politically charged scrutiny placed on senators and some equestrians, there was little effort to check declarations made in Rome, and therefore the only reason a peasant might have to self-report an enhanced valuation was a desire to move up the class scale. Thus while Frank estimated that land valuations doubled between the Second Punic War and the early

[598] Frank 1933.
[599] Nicolet 1980.
[600] Livy 29.15.9.
[601] On the use of "traditional" valuations in the census, Rathbone 1999: 132; Rosenstein 2004: 56-7. As noted below, the censors for moral reasons might inflate the valuation of luxury items. This, however, would have had a negligible effect on the overall valuation of property, which overwhelmingly consisted of land.

second century, the property valuations of 187 likely remained relatively stable until the abolition of *tributum* in 167.

Now that we have established the total property assessed, we must search for the rate(s) of assessment. In 184, Livy reports that the censors, Marcus Cato and Valerius Flaccus, *in censibus quoque accipiendis tristis et aspera in omnes ordines censura fuit.* In addition, when the pair assessed a number of luxury items, including young slaves and women's jewelry, they artificially multiplied the assessments, in some instances by a factor of ten. Livy then reports that *rebus omnibus terni in milia aeris attribuerentur.*[602] The passive suggests that the assignation of the rate of three per thousand is not the work of the censors. Nor would it be; the evidence clearly indicates that the senate, and not the censors, set the rate of *tributum*. Rather, Livy, perhaps unknowingly, provides the going rate of *tributum* for that year: 3/1000. Indeed, if Cato could set the tax rate, he would have simply declared it to be 30/1000 for expensive slaves and feminine accessories. The fact that he had to raise the assessment valuation by a factor ten in the first place was the fact that he did not establish the initial 3/1000 rate, and so the stern moralist was instead forced to alter the one factor he did control as censor, namely the valuation of the property itself.

The senate was likely using the old assessment rolls, totaling some 835 million *denarii*, when it made the initial assessment: a 3/1000 rate would produce a theoretical income of c. 2.5 million *denarii*. Not all men would pay *tributum*: men who were *sui iuris* serving in the legions were exempt; there would have been the inevitable tax cheats as well, both high and low. However, if we follow Claude Nicolet's model of *tributum* collection, the state would have gotten its due, as *tribuni aerarii* would have forwarded the specified tax, and then done their best to collect back the tax from the citizens in their tribes, with some rich men paying more than their share as a liturgy. [603]

184 saw a relatively low military deployment, with 8 legions in arms and no attested naval activity. *Tributum* was not a fixed tax however, but rose during significant military mobilization. The 3/1000 rate of 184 was therefore probably a baseline rate for years of "relative" peace.[604] Based on the assessment of 184, I will assume a "standard" *tributum* of 2.5 million *denarii*, but will guestimate a higher collection (a postulated rate of 5/1000) during the from 200-194, 191-188 and 171-167. These sixteen years saw the mobilization of 8-12 legions and, more importantly, a large fleet. As noted above, in 216, when Rome deployed 13 legions and a large fleet, the *tributum simplex* was sufficient to cover the pay of seven legions, which would cost c. 4 million *denarii* in post-211 pay-rates; a

[602] Livy 39.44.1 Cf. Plutarch *Cato Maior* 18.2, although Plutarch, who is quite likely using Livy as a source here, is under the mistaken impression that the 3/1000 tax is a special sumptuary tax levied by Cato himself. However, censor did not have the power to level sumptuary taxes: these required laws passed by one of the people's assembly.

[603] For the method of collecting tributum through *tribuni aerarii*, Nicolet 1976 and 1980. Nicolet argues that the system mirrored that of the Athenian symmonies used to collect the eisphora, although critics note that this may be the result of Greek sources, in particular Dionysius of Halicarnassus mapping Greek practice onto a distant Roman past. However, a passage in Plautus seems to describe a harried *tribunus aerarii* worried about forwarding military pay.

[604] It is indicative of the intense mobilizations of the early Republic that a year with over 80,000 troops deployed and both consuls on campaign might seem to be a year of "relative" peace.

5/1000 tax on 835 million would be worth 4.2 million *denarii.* In all, I will assume c. 110 million *denarii* collected between 200-167.

A basic test of my estimate for *tributum* would be to see how war expenditures and war revenues balance out, since after indemnities and loot, *tributum* was the primary way which the Roman republic funded its wars:[605]

Table 9.9: War Expenses and Expenditures, 200-157.

War expenses:		**War Related Revenues:**	
Legions:	230 million	Indemnities:	175 million
Fleets:	30 million	Loot:	115 million
Allies:	100 million	*Tributum*:	110 million
Transport:	35 million		
Total Expenses: c. 400 million		Total Revenues:	c. 400 million

Of course, the Romans often spent war loot and indemnities on donatives to the soldiers and civilian projects (in particular public works and manubial temples), while other revenue (such as Italian vectigal, Macedonian tribute or Spanish mines) could used to cover part of the cost of military outlay. Nonetheless, the above chart does give me increased confidence that my estimate for *tributum* is at the right order of magnitude. Despite huge inflows of loot and indemnities, *tributum* remained a fiscal cornerstone of Rome's imperial project. While it was not the largest revenue related to warfare (it covered roughly one third of direct military spending by this estimate) it had the merit of being not only reliable, and also flexible, as its rate could increase, within limits, according to the fluctuating costs of military operations.

Assuming Rome's free population was roughly a million free inhabitants,[606] the per capita contribution necessary to raise 2,500,00 *denarii* was only c. 2.5 *denarii*, the equivalent to the cost of about three *modii* of wheat. Of course, many Romans did not pay *tributum*: *proletarii* were exempt, as were men serving in the legions. Nathan Rosenstein in a forthcoming article suggests that the burden of paying *tributum* would fall on perhaps 100,000 men, at an average rate of 25 *denarii* a head. The men affected, however, would primarily be wealthy senators, equestrians, *tribuni aerarii* and men of the higher property classes.

Perhaps a comparison to Classical Athens is appropriate. In 428 , after severe casualties due to plague, the Athenians paid an *eisphora* of 200 talents.[607] Assuming there were 120,000-150,000 free Athenians, this would imply a per capita contribution of 8-10 drachmai, a per capita payment much higher than what I have estimated for second century Rome. The rate of the *eisphora* declined

[605] Livy (7.27.4) reports that in 347 there was no *tributum* and no levy—the former unnecessary with the cancellation of the latter. Indeed, Livy himself routinely describes *tributum* as *stipendium*, the word for military pay. In 293, when the consul failed to pay the soldiers out of captured booty the soldiers, the tribunes demanded the leveling of *tributum* to fund military pay (Livy 10.46).
[606] The problem of Rome's population in the mid-Republic will be discussed in another chapter.
[607] Thucydides, 3.19.1. On the Athenian *eisphora*, see Christ 2007 and Gabrielsen 2002: 216-217.

with Athenian imperial power. It was 60 talents in 352 , at which time when the total assessed value of Athenian property was roughly 5700 talents, a rate of just over 10/1000.[608] This was far higher than the rate for Roman *tributum* in the second century , which I have estimated between 3/1000 and 5/1000. (the *duplex tributum* levied in 216 , and probably continued for much of the Second Punic War may well have approached 10/1000). The rate of 3/1000 in 184 was certainly much lower than the *tributum* re-instated by the triumvirs in 43 , which was assessed at a rate of 40/1000.[609] It is also significantly lower than the 10/1000 tax rate attested in Syria during the Early Empire.[610]

We have now come to an end of the revenues that are either well attested (indemnities, loot, Macedonian tribute), or which can be induced with some degree of confidence from the sources (*tributum*). These together totaled around 405 million *denarii*. The remaining c. 180 million *denarii* must have come from two basic sources: Spanish mines and vectigal (indirect taxes) from Italy and Sicily.

The Spanish Mines:

Polybius reports that in his day the silver mines in the vicinity of New Carthage provided 25,000 *denarii* a day τῷ δήμῳ, or some 9 million *denarii* a year.[611] This figure certainly cannot be true for the first half of the second century. This figure, so often casually cited in discussions of Spanish mining output, was probably not accurate even for Polybius' own time. If it were the case, then Spanish mines would have provided 387 million *denarii* to the Roman people from 200-157. This would have allowed, according to my estimates (and Frank's as well!), for all of Roman expenditures to be more than covered by mines, loot and indemnities. There would be no reason to collect *vectigal* or *tributum*, and far more silver would have been inventoried in the state vaults in 157. In short, Polybius' figure, however tantalizing, is highly implausible for our period. Indeed, it was probably implausible even for the period when Polybius wrote, as archaeological evidence suggests that the Spanish mines did not undergo major expansion until the latter half of the second century, perhaps starting around 125.[612] We are left we two possibilities: the first is that, Polybius may be reporting a temporary silver boom that did not persist past a few months or years. The second, is that despite an overall reputation for accuracy, Polybius is providing an utterly incorrect number. There are reasons to think the latter. 25,000 *denarii* comes to almost exactly 300 pounds of silver when minted on the 1/84 weight standard. Already this is suspicious, given the ancients fondness for numbers that are multiples of 30.[613] Pliny the Elder reports that Hannibal obtained 300

[608] 60 talents in 352: Demosthenes 3.4.1, although textual variants give 40 and 72 talents. 5700 talents assessed property: Polybius 2.62.6, for the year 378. In 347, a peacetime levy of 10 talents a year (.15%) was introduced in Athens (IG2 244. 12-13), a comparable, if somewhat lower, rate to Rome's "peacetime" 3/1000 tax in 184 .
[609] Dio Cassius 46.31.3. A separate 10/1000 tax was assessed on the wealthy (Cicero *Ad Brutum* 18.5); Nicolet 1980: 180, Del Hoyo 2007: 226-7.
[610] Appian *B.C.* 8.50.
[611] Polybius 34.9.8; Strabo 3.2.10 (147C).
[612] Del Hoyo 2007: 229 suggests that large scale mining, along with other regularized extractions did not begin until the conclusion of the Celtiberian War in 133.
[613] Scheidel 1996.

pounds a day from a mine in Baebelo.[614] One wonders if Polybius read the same source (perhaps Sosylus?) and needing the output of mines that he had visited, simply converted it into *denarii*. 25,000 *drachmai* could equally be a different, i still suspiciously round number, namely 100,000 HS.

Other evidence suggests that Spanish mines did not provide a silver boom. As already mentioned, the Roman mint was required to reduce the weight of the denarius from c. 4.5 grams to c. 3.9 grams c. 200, despite coming into possession of Carthaginian mining regions by 206 . Bronze coinage continued to predominate the output of Roman mints. When the silver in the vaults was inventoried thoroughly in 157, the overall paucity of silver is notable: a mere 22,070 pounds of silver bullion, compared to 17,200 pounds of gold; in terms of value, silver accounted for only 10% of total Roman reserves. This does not seem to be a state overflowing with silver bullion from the Spanish mines.

Perhaps most damning against the notion of a silver boom early in the second century is isotopic analysis of the silver in Roman *denarii*.[615] Silver can be traced to specific geographic origins through spectrographic analysis of the lead isotope. A recent study analyzing various early second century *denarii* found no link between a series of *denarii* and the isotope signatures of various mining regions; this despite more definitive links with silver from Asia Minor, presumably made from bullion from Eastern war loot and Seleucid indemnity payments. It is only in the late second century that Roman issues begin to match the signatures of Spanish mining regions.[616]

While some Spanish bullion might be mixed in to some of the early second century coins that matched no specific isotopic footprint, we would expect a substantial amount of silver coins to be minted exclusively from Spanish silver if Spanish mines produced revenues of 9 million *denarii* a year, or even a lesser order of magnitude. Indeed, the lack of a definitive link between any Roman silver issue and any Spanish mining region suggests that Spanish silver was only supplementary to bullion derived from other sources, in particular loot and indemnity payments.

If we discard Polybius's 25,000 *drachmai* per day, is it possible to produce any source-based estimate? A telling incident occurred in 185: the returning praetor Lucius Manlius displayed 16,300 pounds of silver in his triumph, promising that his quaestor would shortly return after collecting another 10,000 pounds of silver and eighty pounds of gold.[617] This could be additional booty that Manlius simply was not able to ship over in time for his triumph. But Roman generals seem to have been quite effective at arranging transport for captured items at favorable rates.[618] Rather, it is likely that the 10,000 pounds of silver simply had not come due; the obvious candidate is that they were the

[614] Pliny *NH* 33.9.97.
[615] Hollstein 2000: 114-117. Kay 2014: 43-54 accepts Polybius' figure, at least for the 150s, but acknowledges that mining revenues may have been lower earlier in the century.
[616] Hollstein 2000: 122-123.
[617] Livy 39.29.6-7.
[618] Note the anecdote in Vel. Pat. 1.13.4, about Lucius Mummius obtaining favorable shipping conditions for his pillaged art treasures.

mining revenues owed by leases of Spanish mines and that the money had been contracted, but not yet paid.[619]

The mines around new Carthage in Hispania Ulterior had been in operation since the Romans captured the region during the Second Punic War. Cato the Elder had organized the mining region along the upper Ebro valley during his pro-consulship in 195.[620] If both mining districts were let out for 10,000 pounds of silver and a year, the southern district would provide 430,000 pounds of silver over 43 years, while the northern district would produce 380,000 pounds from 195 onwards. In all, Spanish mines would therefore return c. 70 million *denarii*. This estimate, however, is admittedly a stab in the dark.

It is possible to evaluate the cost of keeping troops in the Spains with the profits derived from governing Spain. Brunt argues for two legions from 196-188 (with four legions for Cato's consular governorship in 195), four legions from 187-179 and then two legions from 179-onwards.[621] On this basis, the *stipendia* of the legions alone would run to c. 50 million *denarii*; transport may have run another 10 million *denarii*, and rations for the allies another 15 million. Military expenses may have been offset somewhat through *stipendia* collected from Iberian communities, collected on an ad hoc basis early in the century, and possibly formalized somewhat by Sempronius Gracchus.[622] Still, money and supplies routinely needed to be sent from Rome. In all, the military costs of occupying Spain may have run some c. 75 million *denarii* from 200-157. The proceeds of loot, some 34 million *denarii*, would not alone be enough to make the Spanish wars worthwhile (this is not to say that states refrain from long term budget-draining quagmires simply because they are money losing propositions; witness Vietnam and Iraq). Nonetheless, the Romans considered Spain a profitable province, despite the ongoing violence, and this makes sense only if mining revenues exceeded c. 40 million *denarii*.[623] My estimate of c. 70 million in mining revenues would put the total revenues from the *Hispaniae* at c. 100 million *denarii* from 200-157, enough to justify the on-going Roman commitment to the provinces.

Other Revenue:

The principle of exhaustion suggests that the remaining revenues accounted for c. 110 million *denarii* of the Roman budget from 200-157, an average of about three million a year. This would include the following items, all of which are impossible to quantify individually:

[619] Richardson, 1976 argues persuasively that Spanish mines were administered from an early date by *publicani* buying contracts from the provincial governors, contracting Frank's tenuous theory that the mines were operated directly by the governors until 179 , with the output included in their triumphal processions, and only turned over the publicani afterwards. See also Badian 1972: 33-34.

[620] Livy, 34.21.7.

[621] Brunt 1971: 661-663.

[622] On the Spanish *stipendia*, see Richardson 1986: 115-116.

[623] Cato *Origenes* (Fr. 93) wrote enthusiastically about the profits of Spain and the overall wealth on the country.

a) revenues from public land, to include rents, grazing fees (*scriptura*/*pascua*), fines levied upon those graziers who violated regulations, and the proceeds from the outright sale of public land.[624]
b) harbor dues and tolls (*portoria*)[625]
c) rents collected from tenants of state-owned shops, especially in the Roman forum[626]
d) revenues derived from salt works[627]
e) a 5% tax on the manumission of slaves[628]
5) additional taxes collected from the provinces.

These revenues were generally farmed out by the censors, and collected by the *publicani.* Polybius describes them as "many things which are farmed, such as navigable rivers, harbors, gardens, mines, lands, in fact everything that forms part of the Roman dominion." [629] The revenues from Italian *vectigalia* would have increased dramatically after the Second Punic War, as the Romans mulcted vast tracts from Italians peoples that had defected during the Hannibalic War. In 199, the censors let contracts to collect *portoria* from Capua and Puteoli, former *civitates sine suffragio* that had come under direct Roman administration following their revolt during the Second Punic War.[630] Additional *portoria* and *vectigalia* were established by the censors of 179, presumably further intensifying exploitation of the expanded *ager Romanus*.[631]

I do not believe it is possible to quantify individual aspects of Italian vectigal. We have no firm idea as to the extent of the *ager publicus*; nor even the rates at which it was taxed.[632] The exact rate of Republican *portoria* is unknown, nor is it possible to produce a precise estimate of the flow of goods. There is no good evidence for the number of slaves manumitted in any given year, nor does the 4000 pounds of gold removed in 209 offer much of a clue, as we do not know when this reserve was last tapped. And so on.

On top of vectigal collected from the Italian peninsula, the Romans collected some revenues from provincial holdings. According to Appian, the

---

[624] Fines imposed by aediles for illegal grazing: Livy 35.10.12. This may have been the first major attempt to enforce regulations on newly acquired lands in Southern Italy.
[625] For the existence of *portoria* in the early second century, Plautus *Asinaria:* 159 makes a joke based on customs dues. The first concrete portoria is the dues established for Capua and Puetoli in 199. On *portoria* in the ancient world, see Purcell 2005. Some port fees were also collected from Sicily.
[626] For example, Livy 27.11, for the construction of *tabernae* and a *marcellum*, the facilities of which were certainly rented.
[627] Livy 29.37.3.
[628] Livy 7.16.7-8. Cicero *Att*. 2.16.1.
[629] Polybius 6.17.2. πολλῶν δὲ ποταμῶν, λιμένων, κηπίων, μετάλλων, χώρας, συλλήβδην ὅσα πέπτωκεν ὑπὸ τὴν Ῥωμαίων δυναστείαν.
[630] Livy 32.7.3
[631] Livy 40.51.9
[632] The total ager Romans is widely held to be around 25,000 square km in 218, expanding to perhaps 40,000 following the Second Punic War. We do not know, however, what was the ratio of private and public land. A rent of 1 as per iugerum charged to grantees of ager trientabulus seems to have been a nominal "ceremonial" rent and does not reflect the going rate. Appian reports a tithe on grainlands and a twenty per cent tax on orchards. It is possible that Appian has been confused by Sicilian practice, or that instead Rome adopted methods used to tax grainlands in Sicily to their own *ager publicus.* This issue is perhaps moot given the fact we do not know how much *ager publicus* there actually was.

Romans began collecting *phoros* from western Sicily immediately following the First Punic War, while Livy suggests that Rome was collecting vectigal from both Sicily and Sardinia before the start of the Second Punic War.[633] Appian in particular refers to a cash tax, on top of the grain tithes from both island, whose role in feeding the legions has been discussed above. Jonathan Prag suggests that the Romans may have started to collect *portoria* from Sicilian ports at an early date, but admits the limits to the evidence.[634]

Nonetheless, the figure of c. 110 million *denarii* for other *vectigalia,* roughly 2.5 million *denarii* a year, is at least imminently plausible, although here my margin of error is quite high, given that my estimate for *vectigal* is impacted my the aggregate errors of all my previous estimates. Given the evidence for an intensification over time, it is quite likely that the per annum figure was lower at the beginning of the second century, and somewhat higher at the end. Badian noted that the increase in *vectigalia*, particularly with the new imposts established in 179 , may have been one factor contributing to the permanent abolishment of *tributum* in 167 .[635]

Table 9.10: War, Finance and Empire

Source:	millions *denarii*	Level of Certainty
Indemnities:	175	High
Loot:	115	High
Macedonian Tribute:	6.7	High
Tributum:	110	Moderate
Other Revenues:	180	Moderate
{Spanish Mines:	----- 70 (?)	Low}
{Vectigal:	----- 110 (?)	Low}
Total:	c. 585 million *denarii*	

Total revenues from 200-157 are summarized above. On this estimate, Rome took in on average c. 13-14 million *denarii* a year. Revenues, however, would have fluctuated widely. In a low year, assuming only estimated revenues from Italian vectigal, Spanish mines, citizen *tributum* and the Carthaginian indemnity, Rome's annual revenues would have come in at around 8 million *denarii*. Total revenues for 167, thanks to Macedonian loot, likely exceeded 45 million *denarii*.

A heavy reliance on booty and indemnity payments contributed to the volatility of Roman state finance. While indemnities were predictable, they did come to an end. The Seleucid indemnity allowed for a great burst of public works in the 180s and early 170s, but had run its course by the time Rome faced the fiscal requirements of the Third Macedonian War. In 191, the Romans notably rejected the Carthaginian offer to repay their indemnity in one lump sum.[636] This is usually, and correctly, seen as a way of maintaining Carthage's status as a

[633] Livy 23.48.7: *Siciliam ac Sardiniam, quae ante bellum uectigales fuissent…*
[634] Prag 2013.
[635] Badian 1972: 62-63.
[636] Livy 34.6.8

subordinate and tributary power for as long as possible.[637] However, from a fiscal standpoint the refusal of the lump sum may have also been designed to keep Rome's revenue flow more stable and predictable. Loot brought in substantial revenues but was wildly unpredictable. Emptying the treasury of a Hellenistic king might bring tens of millions of *denarii* while bashing around an Illyrian tribe might bring next to nothing.

The "budget" of the Republic also provides some insight into the nature of the Roman political system. Namely, we can see evidence for income distribution policies instituted for the broader mass of citizens beyond the narrow ruling class of senatorial elites. Such distribution was never directed towards the poorest members of Roman society, but rather focused on middling peasants already wealthy enough to serve as soldiers, and was effected in three forms: 1) donatives to returning soldiers, 2) land distribution and the concurrent investment in building the infrastructure of these new communities and 3) the remittance of *tributum* in 187, which provided a substantial distribution of cash to Roman taxpayers. When my estimates for these three distributive expenditures are added together, they come to around 65 million *denarii* over 43 years. This represents about 10% of total expenditures over the period, and almost 40% percent of all non-military expenditure. This is not to say that mid-Republican Rome was anything approaching a modern welfare state. The distributive policies of the Republic were strongly tilted towards men who already enjoyed some property and social standing. Already wealthy cavalrymen received three times the level of donative, and substantially larger land more land in colonial foundations than men who served in the infantry. Furthermore, the tax refund of 187 would have also primarily benefited the equestrians and men of the higher classes who paid the lion's share of taxes. Nonetheless, the fact that nearly 40% of all non-military expenditures was distributed broadly across the citizen body suggest that the popular aspect of Roman politics, manifested in the various citizens' assemblies, did exert at least a modicum of influence over resource distribution in the mid-Republic.[638]

By my estimates, about 70% of Roman revenues were spent on military expenditures, not surprising given the military orientation of the Roman state.[639] War, however, was overall not profitable to the Roman state.[640] The immediate proceeds of warfare, the roughly 290 million *denarii* derived from indemnities and booty, fell far short of the approximately 400 million *denarii* I estimate the Roman state spent on military expenses. The Roman state overall lost money on her imperial operations between 200-157, funding them through citizen *tributum* and *vectigal* collected from the inhabitants of Italy. Here two caveats are

---

[637] Gruen 1984: 293.

[638] The claim for a more democratic citizen body has been most forcefully made by Millar 1984, with follow-op articles in 1986 and 1989. Yakobson 1999 emphasizes the importances of elections, largely in support of Millar's views, but also citing land distribution and grain doles as evidence of the political claims of the masses. The "democratic" position has been subject to strong counter-attacks, including Holeskamp 2000 and 2004 and Mouritsen 2001. North 1990 claims the middle ground on the topic.

[639] On military institutions as the embodiment of the Roman state, see Eich and Eich 2005. On military service as one of the primary means by which the citizen interfaced with the state, Nicolet, 1980. On Roman militarism, Harris, 1979.

[640] Individual campaigns, however, might be profitable, as documented by Rosenstein 2011.

important. Firstly, Rome's empire in Italy was itself the product of conquest in the fourth and third centuries, and here Rome reaped the long-term benefits of this previous "investment" in the military control of tributary territory in the peninsula. Secondly, even while the Roman state did not profit from military operations in the first half of the second century, this is not to say that significant profits did not accrue to individuals, both to elites, in particular senators which grew fantastically wealthy thanks to the proceeds of overseas conquests and equestrian *publicani* who made substantial profits supplying Rome's forces, yet also to common soldiers, who benefited from regular pay, a share of loot and triumphal donatives.[641] Nonetheless, my findings trend against the notion that Rome embarked on imperial adventures merely for the purposes of financial gain.[642] Admittedly, the 43-year snapshot only presents an intermediate term vision of the fiscal apparatus of the nascent Roman Empire. Eventually, Rome's imperial holdings did provide a long-term "profit." In the year 66, Plutarch reports the Roman state enjoyed annual revenues of 85 million *denarii,* almost all from provincial *vectigalia*, and far in excess of military expenditures.[643]

Assessing Frank's Conclusions: A Synoptic View.

Frank and I have a number of substantially divergent approaches to the problem, including:

1) A different rate of military pay (120 vs. 108 *denarii* per year for an infantryman).

2) A different rate of conversion of gold and silver into *denarii* (Frank uses 1000 *denarii* to a pound of gold, 80 to a pound of silver, I use 840 and 84 *denarii* respectively).

3) Different valuations of the Attic talent (Frank values it at 6000 *denarii,* a so-called "talent of account," I assess it at 6720 *denarii*, based on how many coins could be minted from the bullion).[644]

4) different estimates for individual expenditures and revenues, as illustrated below (in millions *denarii*):

Table 9.11: Frank and Taylor

	Frank 1932	Frank, 1933	Taylor
Total Revenues:	597	610.6	585
Total Expenditures:	550	555	565
Revenues p.a.	13.9	14.2	13.6

[641] On the wealth of senators, Shatzman 1975. On *publicani*, Badian 1972.
[642] *pace* Harris 1979.
[643] Plutarch *Pompey* 45.3. Crawford estimates military expenditures at roughly 36 million *denarii*, with the grain dole costing roughly as much. Crawford, however, is quite incorrect in positing that Roman income was in fact 135 million *denarii* (reading Plutarch to suggest that state revenues increased by 85 million, rather than to 85 million).
[644] For the conversion of the Attic talent into *denarii*, Harl 1996, 474.

Expenditures p.a.	12.8	12.9	13.1
Legions:	300	300	230
Navy	33.5	58.5	30
Rations for allies	64	64	100
Transport	30	50	40
Public Buildings:	27	25	45
Colonization:	x	x	30
General:	100.5	40	40
Reimbursed/in the vaults:	47.6	48	46.5
Donative to the soldiers	xx	xx	25[645]
Tributum:	60	60	110
Vectigal:	150	109	110 (?)
Provincial tithes	130	130	xx[646]
Macedonian tribute:	x[647]	x	6.7
Booty:	100	109.5	106.8
Indemnities:	152.1	152.1	173.6
Spanish mines	x[648]	50	70 (?)

My results confirm that Frank was ultimately quite correct in his order of magnitude. Frank himself deprecated the accuracies of his conclusions,

[645] Frank curiously did not consider donatives expenditures.
[646] I assume that the benefit of the grain tithes is factored into military expenditures; namely in particular that the cost of feeding allies was lower thanks to tithe grain. As such, I calculate the cost of allied grain at 4 asses, rather than 7.5-12 asses, assuming a significant amount of grain (about half) was obtained by the Roman state for "free" either from provincial tithes or foraging.
[647] Frank factored the Macedonian tribute into his estimate of indemnities.
[648] Frank 1932 assumed that all Spanish mining receipts were rolled into triumphal receipts. Frank 1933 reconsidered this stance, and suggested 1 million *denarii* a year for returns after 178. Frank's solution is accepted by Knapp 1973, but strongly opposed by Badian 1972: 125 and Kay 2014: 50-51.

suggesting that they could easily be half or twice as much as he proposed. I wish to argue that he was far more accurate than he himself dared to claim. Compared to other controversies in Roman history, a range of 585 million *denarii* and 610 million *denarii* is a tight cluster indeed. I must admit, that I initially hoped that my conclusions would deviate far from Frank (what better way to make a splash!), and was increasingly surprised as they converged on his overall figures for Roman expenditures and revenues.

Nonetheless, my breakdown of Roman revenues and expenditures at times varies substantially from Frank's. I argue that citizen *tributum* was significantly more important to Roman state finance. Frank believed *tributum* provided a mere 60 million *denarii* from 200-157, 10% of his estimate of Roman revenues during the period. I argue that it provided 110 million *denarii*, or almost 20% of my estimate of total revenues. As regular, predictable revenue, whose rate could be modified if necessary, citizen *tributum* remained the cornerstone of the Roman tributary complex, even as other imperial revenues flowed in as the second century progressed.

On the expenditure side, my estimate of military costs is considerably lower, in part because I use a lower estimate of infantry pay, 108 *denarii* a year, vs. Frank's 120 *denarii* a year. My estimate for the cost of allied rations is markedly higher, in part because I assume the inclusion of wine and oil in the ration package provided to allied troops. My estimates of naval expenditures are remarkably similar, although Frank assumes more ships with a lower cost per ship than I do. Frank's estimate of Roman transport costs was a shot in the dark; mine incorporate ancient data from Diocletian's price edict, as well as evidence for the size of the supply fleet supporting Roman operations. Perhaps most startling is our divergence of the cost of public works: Frank places the censorial building program at 22 million over nine lustra, and guesstimated that manubial building consumed another five million *denarii.* I suggest that building by censors, consuls and aediles required upwards of 45 million *denarii,* based on the postulate that the Seleucid indemnity payments of 1000 Attic talents a year were the basis of expenditures for at least three censorial *lustra.* Frank's estimate of remaining costs was rather slapdash: he simply proclaimed that general administration must have cost another 100 million. I have tried to parse certain aspects of general administration individually, including pay for staff of magistrates, the expense of public festivals and sacrifices and the outlay of colonization projects, although such estimates also involve a great deal of speculation. . Even accounting for miscellaneous expenditures, I suggest that the cost of public administration was substantially lower, putting total expenditures at 41 million over the period, a little under a million *denarii* a year.

Perhaps the biggest difference between the two estimates is how we factor in the grain tithes of Sicily. Frank, taking his estimate of Sicilian production from Cicero (3 million *modii*, or 750,000 bushels, converts it into cash at a rate of 3 HS per *modius*, for a total income of 130 million *denarii* from 200-157. Mid-Republican evidence for military requisition requirements suggests that grain production was lower, and I have simply assumed that Sicily and Sardinia could provide roughly half the grain eaten by Roman armies, and therefore factored it into my estimate of the cost of feeding the allies. Part of the benefit of the free grain may have been passed on the Roman soldiers in the form of lower deductions for their rations, rather than directly benefiting the Roman treasury. If the grain is

not counted as cash, then the divergence grows between my estimates and Frank's. He postulated collection in cash of around 470 million *denarii* in cash over the period, while I postulate 585 million *denarii*, so that in my model the Roman state collected substantially more specie than under Frank's.

Prequel: Roman revenues prior to the Second Punic War

Rome's revenues and expenditures prior to the Second Punic War can only be guesstimated. Assuming the bronze weight of legionary *stipendia* remained constant between the liberal and uncial standards, the cost of a legion would stand at 928,000 liberal asses, so that the total cost of two standard consular armies (4 legions) would be 3.7 million liberal asses; total military costs counting grain for the allies and small naval deployments (seldom more than twenty ships) probably did not exceed five million liberal asses; it is doubtful that total expenditures much exceeded seven or eight million liberal asses, on the assumption that military spending consisted of roughly 70% of the total budget. This would be the bronze equivalent of between 4-5 million post-211 *denarii*. This estimate is on the high end of Frank's suggestion of pre-218 revenues, which he postulated at between 2-4 million *denarii*.[649]

Appendix 9.1: Evidence for loot and indemnities:

Roman War Indemnities:

Year	Enemy	Down payment	Talents p.a./years	Total (talents)
200	Carthage	(paid in 201)	200 for fifty yrs.	8600
197	Macedonia	200	n/a	200[650]
196	Macedonia	500	50 for five yrs.[651]	750
196	Boeotia	30	n/a	30
194	Sparta	100	50 for eight yrs.	500
190	Antiochus	3000	1000 for twelve yrs.	15,000
189	Ambracia	150	n/a	150
189	Aetolians	200	50 for six yrs.	500
189	Ariarathes	300	n/a	300
Total				26,030
				(175 million *denarii*)

Loot from Eastern Wars:

Year	Enemy	Gold	Silver	coins

[649] Frank was under the impression, following an erroneous report in Pliny, that the denarius had been introduced in 269.

[650] Philip V was forced to pay 200 talents in order to obtain an armistice after Cynoscephalae. There is no evidence that this counted towards the 1000 talent indemnity that would later be demanded of him in the peace treaty.

[651] The senate excused Philip V the remainder of his indemnity payment after his cooperation with Rome against Antiochus III.

194	Livy 34.52	Philip	3828	43270	626,280[652]
190	Livy 37.46	Antiochus	45	3000	1,199,000
189	Livy 37.58	Antiochus	49	x	534,000
189	Livy 37.59	Antiochus	4757	138,843	1,860,000
187	Livy 39.5.13	Aetolia	665	83,000	472,000
187	Livy 39.7.1	Galatians	2723	220,000	1,250,000
167	Diodorus 31.8.10	Perseus	19,200	176,000	6,720,000
167	Livy 45.43	Illyria	27	19,000[653]	73,000
Total			31,294	683, 113	12,734,280
Denarii conversion (in millions):			26.3	57.4	12.7

Triumphs from Cis-Alpine Gaul and Istria

Year	Source	Gold	Silver	Coin
200	Livy 31.49.2			102,500
197	Livy 33.23.4-9			102,750
196	Livy 33.37.11			234,000
191	Livy 36.40.12	247	2340	266,000
177	Livy 41.13.7			371,000[654]
Totals:		247	2340	1,076,250
Denarii conversion:		207,480	196,560	1,076,250

Triumphs from Spain:

Year	Source	lb gold	lb silver	*denarii*
200	Livy 31.20.7	2340	43000	
199	Livy 32.7.4	30	1200	
196	Livy 33.27.2	1515	20000	34500
196	Livy 33.27.3		50000	
195	Livy 34.10.4-7		732	28966
195	Livy 34.10.		34800	351000
194	Livy 34.46.2	1200	25000	663000
191	Livy 36.21.11	127	12000	130000

[652] For the list of coins, I have considered a *drachma* the equivalent to a denarius, a tetradrachma worth four *denarii*, a *cistophoros* worth three *denarii,* and a Philippus worth twenty *denarii*. I will follow Frank and estimate each gold crown as one pound, unless otherwise specified.
[653] The text reads *argenti decem et nouem pondo.* It is highly implausible that a self-respecting commander would display nineteen pounds of silver at a triumph. Given that the commander offered a 45 *denarii* donative to his two legion army along with the sailors in his fleet, an act of generosity that would have cost over one million *denarii,* the most logical correction is that the text should read *decem et nouem milia pondo*.
[654] The amount listed is 307,000 *denarii* and 85,702 *victoriati*, with a value of .75 of a denarius.

185	Livy 39.29.6-7	182	16300	
184	Livy 39.42.3	83	12000	
184	Livy 39.42.4	83	12000	
182	Livy 40.16.11	142	9320	
180	Livy 40.43.6	155	20000	173200
178	Livy 41.7.2		20000	
178	Livy 41.7.2		40000	
174	Livy 41.28.6	50	10000	
168	Livy 45.4.1	10		250000
Total:		5917		

Appendix 9. 2: Roman colonial allotments in Livy:

Source	Colony	Personnel
Livy 32.7	Castra Hannibalis	300
Livy 32.29	Five coastal colonies	1500
Livy 33.24	Cosa	1000
Livy 34.5	Sepontum, Tempes, Croto	900
Livy 35.9	Copia	3300
Livy 35.44	Vibo	4000
Livy 37.47	Cremona Placentia	6000
Livy 37.57	Bononia	3000
Livy 39.23	Buxentum, Sipolentum	600
Livy 39.44	Potentia	2000
Livy 39.44	Pisaurum	2000
Livy 40.34	Aquileia	3000
Livy 39.55	Mutina	2000
Livy 39.55	Parma	2000
Livy 39.55	Saturnia	300
Livy 40.29	Gravisca	2000
Livy 41.13	Luna	2000
Livy 43.17	Aquileia	1500
Total:		37400

Appendix 9.3: Donatives to the Soldiers:

Source:	Year	Infantry Donative (*denarii*)
Livy 31.20.7	200	12
Livy 33.23.7	197	7
Livy 33.23.9	196	8
34.46.3	194	27
34.52.11	194	25
Livy 36.40.13	191	12.5
Livy 37.59.6	189	25 + 2nd stipendium
Livy 39.7.2	187	42 + 2nd stipendium
Livy 40.43.7	180	50 + 2nd stipendium
Livy 40.59	179	30
Livy 41.7	178	25
Livy 41.7	178	25

Livy 41.13.7	177	15 denarii (7.5 for s*ocii*)
Livy 45.34.5	168	200[655]
Livy 45.40.	167	100
Livy 45.42	167	75[656]
Livy 45.43	167	45[657]

[655] In this instance, cavalrymen were only given twice the sum as infantrymen. Plutarch, *Aemilius*, 29.5 reports an alternative version where each soldiers only received 11 *denarii* (110 asses).
[656] For this naval triumph, each sailor was given 75 *denarii*, with each pilot twice the amount and each captain four times the amount. Following Thiel, I will assume Octavius had 50 quinqueremes, for 20,000 crew, 50 pilots and 50 captains.
[657] In addition to the legionaries and allies, Ancius gave 45 *denarii* to his naval crews. I will follow Thiel in assuming he had 18 quinqueremes, with crews of 400.

Chapter 10: Carthaginian Finance

Basic data about Carthaginian state-level expenditures do not survive. We do not know the pay rates for the Carthaginian army, for example, despite being relatively well informed about Carthaginian military deployments during the Second Punic War.[658] The extraordinary levels of mobilization during both the First and Second Punic Wars certainly strained Carthaginian finances, as there is significant evidence of debasement, especially by the end of the Hannibalic War.[659] We are provided with a vague sense of the sources of Carthaginian income: Polybius emphasizes that at the time of the First Punic War, the taxes levied on tributary Libyan territories were Carthage's most important source of income, revenues that were sorely missed during the Libyan revolt of the so-called "Truceless War."[660] These revenues remained important into the early second century; for example, we learn that the city of Lepcis paid a talent of silver a day in tribute.[661] Various Numidian peoples may have paid tribute during the course Carthaginian history, although these revenues were likely both minor and sporadic.[662]

One piece of information is of particular importance for a forensic accounting of Carthaginian revenues: in 191, Carthage offered to pay off the remainder of its indemnity in a single lump sum of 8000 talents.[663] Carthage was eager to pay the indemnity in full, and it was Rome that ultimately declined the offer. It would have been a dangerous and foolish game for the Carthaginians to offer to pay without having the money in the treasury, and there was nothing to be gained by making such an unsolicited offer as a bluff.[664]

One remarkable precursor to this episode: in 199, Carthage was so impoverished that it attempted to pay the first installment of the Roman indemnity in debased coins; the payment was rejected by the quaestors.[665] Given the expenses of the Second Punic War and the economic destruction wrought by Scipio's North African Campaign of 204-202, it is not surprising that Carthage's financial reserves stood at close to zero.[666]

Yet, if Carthage was bankrupt in 199, the accumulation of 8000 talents (48 million *drachmai)* suggests that she was at minimum running an average surplus of 1000 talents (6 million *drachmai)* a year.[667] This is the best evidence we have for

---

[658] See Fariselli 1999 for discussion of Carthage's war economy.
[659] Manfredi 1999.
[660] Polybius 1.72.1.
[661] Livy 34.62.3.
[662] Diodorus 25.10.3 implies that Numidian people paid tribute prior to the Truceless war, at which point they revolted and were "reduced to slavery." During the Second Punic War, both Syphax and Massinissa acted as shifty independent allies, with little hint of direct subjugation.
[663] Livy 36.4.7; Kehrstedt 1913: 136; Hoyos 2005: 195-6.
[664] Visona 1998: 22 argues that the report in Livy must be doubted given the fact that Carthage produced almost no precious metal coinage after the Second Punic War. It is perfectly plausible that given the negligible state payments Carthage was required to make, the state hoarded its silver, save for minor payments made in bronze. On the Roman refusal, Gruen 1984: 293.
[665] Livy 32.2.1-3.
[666] Hoyos 2010: 207.
[667] The primary coin of Carthage was the shekel, which in practice weighed about 7.3 grams. For comparative purposes, I will give values in *drachmai*, a denomination that the Carthaginians themselves minted on Sicily.

the scale of Carthaginian revenues in the early second century. Armed with this figure, it is at least possible to produce an order of magnitude estimate for annual Carthaginian revenues in the 190s.

Ironically, the cash reserves in the Carthaginian treasury in 191 were the result of the harsh Roman peace settlement, which had the unintended consequence of imposing substantial fiscal discipline on the Carthaginian state. Military expenditures in particular were sharply curtailed. War elephants were banned. Carthage was permitted to maintain 10 ships by the peace treaty that ended the Second Punic War.[668] Even If we assume a relatively high rate of naval pay (say one drachma a day) and crews of 200 maintained year round, annual naval costs would have been 750,000 *drachmai*. In reality, the cost of this "coast guard" was probably much less, given that the ships may not have been fully crewed (or crewed at all), or maintained year round.[669] Carthage was not allowed to wage defensive war without Rome's permission, a clause that was a *de facto* ban on maintaining standing military forces beyond a few boarder patrols. It is doubtful other civic administrative costs would have dramatically exceeded another million *drachmai* per annum. Below is a hypothetical annual budget for Carthage from 199-191, in *drachmai*:

Table 10.1: Carthaginian Expenditures, 199-191.

Indemnity to Rome:	10.8 million
Navy:	6.7 million
Civic administration:	9 million (?)
Surplus:	48 million
Total:	c. 75 million
Average annual revenue:	9 million

Following this estimate, average Carthaginian revenues between 199-191 were roughly 9 million *drachmai* (around 5 million shekels/1400 talents). The revenues were likely lower than this prior to Hannibal's reforms of 196. Hannibal is reported to have curbed corruption, improved collection of taxes from the agrarian hinterland, and increased the collection of port dues.[670] Revenues may have declined somewhat following his expulsion from Carthage, although this is only based on the limited literary evidence suggesting a reassertion of widespread corruption following Hannibal's exile.[671]

It is surprising—astounding even-- that the average annual revenues of a defeated Carthage during the 190s were not substantially lower than those of

[668] Polybius 15.18.4. The participation of at least two ships in the war against Antiochus suggests that this small fleet was kept in a combat-ready status (Appian *Syr.* 22).
[669] On Carthaginian Naval Expenditures, Rawlings 2010: 268, who assumes a *drachma* a day in pay, and only assumes fleets sailed for six months out of the year.
[670] Hannibal's reforms: Livy 33.47.1-2.
[671] Polybius considered Carthage a notoriously corrupt state in the middle of the second century, although it is unclear to what extent he is simply regurgitating the conclusions of Aristotle, writing about Carthage in the late fourth century.

victorious Rome from 200-157. This confirms the ancient trope of Carthage as a wealthy and powerful state, and also lends perspective on Roman fears about Carthaginian resurgence in the 150s. While a great deal of paranoia must inform the Roman decision to initiate the Third Punic War, we can appreciate the concern of leading Roman actors that Carthaginian fiscal health might once again translate into military might.

Carthaginian Revenues in the Third Century

If Carthaginian revenues in the 190s were around 9 million *drachmai*, it is probable that they were substantially higher for the period from 229-206, when Carthage still controlled a tributary empire in Spain. Resources derived from Spain were substantial, if difficult to quantify. Carthaginian exploitation of Spain was based on two basic extractive modalities: 1) mining and 2) taxes in both cash and kind collected from various Iberian groups. Pliny the Elder reports that Hannibal derived 300 pounds of silver a day (3.75 talents), or around 8 million *drachmai* a year from a single mine in Spain.[672] There is, however, good reason to be suspicious of this statistic. The number "3" appears commonly in antiquity, and it is possible that the "300" pounds in question is standing in for a very large daily yield. It is also unclear where Pliny obtained this figure. It is possible that he derived it from Greek chroniclers of Carthage, such as Phylarchus, Sosibus or Sosylus. Nonetheless, it is unclear if the figure can be used as meaningful macroeconomic evidence.[673] Even if accurate, it may refer to a temporary yield on a particularly rich vein of silver that was quickly exhausted.

The contributions in both cash and kind from Spanish communities were primarily designed to maintain high levels of standing military forces in Spain. Little Spanish silver seems to have circulated back to the Carthaginian mainland, perhaps because it was consumed by Hannibal's immense military expenditures.[674]

The only glimpse we get of the finances of Carthaginian Spain is the capture of the treasury at New Carthage, from which Scipio captured roughly 600 talents in 209.[675] Let us assume that this implies around 4 million *drachmai*. Given that New Carthage was the capital of the Barcid empire in Spain, and the location of the main mint there, this sum may represent a significant part of the total annual revenues from Spain.

Hoyos, based largely on the mining returns posited by Pliny, estimates that Carthage received roughly 1500 talents of silver from Spain on the casual hypothesis that these may represent total Spanish revenues.[676] This figure is much too high. Between 200 and 157, loot from Spain brought the Roman treasury roughly 35 million *denarii* worth of bullion and specie, an average of approximately 800,000 *denarii* a year. This figure does not, of course, represent mining revenue. Nonetheless, the mineral wealth extracted by Rome from the Iberian peninsula was relatively modest prior to the late second century. I have already noted the lack of any strong isotopic link between the Roman coins of

[672] Pliny *NH* 33.97.
[673] Here in particular the caution of Scheidel, 1996, against numbers which are multiples of 300.
[674] Visona 1998: 16-18.
[675] Polybius 10.19.2 πλείω τῶν ἑξακοσίων ταλάντων.
[676] Hoyos 2003: 225.

early second century and Iberian silver. Thus while the Carthaginians certainly did derive significant amounts of silver from the mining districts in the upper Baetis, there is little reason to think that they received 300 pounds a day, roughly 25,000 *drachmai* a year. It is notable that after the Romans had secured the mining regions from Carthage in 206, they were still short of money to pay the legions, and following the mutiny of 205, money was found not in the mines, but rather though forced extraction from local communities.[677] It is likely that Carthaginian revenues from Spain did not significantly exceed the c. 4 million *drachmai* stockpiled in New Carthage. The combined revenues of Spain and Africa therefore were roughly 12 million *drachmai*.

Even with third century revenues in the range of 12 million *drachmai*, the massive mobilizations of the Second Punic War severely strained Carthaginian finances. The Carthaginian state was notorious for debasing her currency, so much so that by the end of the Hannibalic War the silver content of Carthaginian coins had fallen to 18%.[678] Coinage in gold and electrum meanwhile was minted at only 30% purity by the conclusion of the Second Punic War.[679] The most drastic debasement was likely the result of the loss of gold and silver resources in Spain following the campaigns of Scipio from 209-206.

The great problem with debasement, from the point of view of a minting government is that, according to Gresham's law, "bad coin drives out good." While the debasing government benefits in the short term from the output of debased coins to meet its obligations (primarily military pay in the ancient world), people quickly hoard old, good coins, and use debased coins to meet their tax obligations to the state, saddling the state with its own debased coinage in a single cycle of expenditure and revenue. To a degree, wartime Carthage was less beholden to this cycle: most of its tax revenues came from Libya, where it had only modest outlay, namely pay for the fleet and the African garrison. Given the dynamics of Carthaginian military mobilization, the majority of Carthaginian expenditures went to pay the foreign peoples serving in Carthage's armies abroad. Payments made to Numidian or Iberian soldiery in debased coins actually channeled the export of precious metals from the imperial core in Africa to the militarized hinterlands. Thus, while the debasement of the *as* during the Second Punic War proved a miserable failure for the Roman Republic, in part because pay to citizen soldiers was recycled back into citizen taxation, Carthage was able to debase its coins during the Second Punic War, precisely because of its non-dependence on citizen-soldiery.[680]

Conclusion:

My estimates for Carthaginian revenue do not occur in a vacuum. Kahrstedt also noted that Carthage was running 1000-talent surpluses in the 190s, but with little firm reason extrapolated this to estimate post-war revenues of 3000 talents (18 million *drachmai*). His method, which includes rather vague references to Athens, ultimately lacks analytic rigor. He notes, for example, that the Carthaginian state in the 190s virtually had nothing to spend on (no schools

[677] Livy 28.25.9-10.
[678] Jenkins 1984: 135.
[679] Jenkins and Lewis 1963. See Howgego 1995: 113-114 for additional discussion.
[680] Debasement of the *as*: Crawford 1966.

or public health programs that consume revenues of a modern state at peacetime), but then extrapolates substantial peacetime expenditures of at least two thousand talents a year. With the additional revenues of first Sicily and then Spain, Kahrstedt estimated peak revenues of 36 million *drachmai* for the third century.[681] This is too high. It would be difficult to explain why Carthage would have trouble paying some 20,000 discharged mercenaries in 242 if African revenues alone were bringing 3000 talents. If that were the case, Carthage could have paid the Roman indemnity of 1000 talents, and still had more than enough cash on hand to pay a year's arrears of pay, which Dexter Hoyos estimates at around 1500 talents.[682]

Hoyos offers a more comprehensive approach to African revenues.[683] While Karhstadt dismisses Livy's report that Lepcis paid a talent a day in tribute, Hoyos argues that the Lepcis in question is actually Leptis Minor, and that the tax reflects not just the city's obligations, but its role as a tax-collection center for the entire district. If each of Carthage's four "*pagi*" owed a similar amount, then tax from agricultural regions would be around 1500 talents/9 million *drachmai.*[684] This lines up quite closely with my "forensic" reconstruction of Carthaginian revenues in the 190s. The talent a day collected by Leptis/Lepcis, under Hoyos' model, would include all categories of revenue, including Libyan tribute, harbor dues, and citizen taxation. If annual revenues from Africa and Libya were indeed around 14-1500 talents, then the events of 242 make more fiscal sense: The Carthaginian state had already exhausted its reserves fielding the fleet destroyed at the Egadi islands and was able to pay the 1000 talent indemnity to Rome, but had only limited funds left over to pay discharged mercenaries.

I have discussed Hoyos' views on the revenues from Spain, which in my view are much too high at 1500 talents p.a. Thus Hoyos estimates total Carthaginian revenues at about 18 million *drachmai* (3000 talents) in 218, compared to my estimate of 12 million (2000 talents). The ongoing debasement of Carthaginian coinage during the war in my mind justifies this lower estimate.

Table 10.2: Modern estimates of Carthaginian Revenue (in *drachmai*)

	218	190s
Karhstadt	36 million	18 million
Hoyos	18 million	8.4-9 million
Taylor	12 million	9 million

[681] Kahrstedt 1913: 136-7.
[682] Hoyos 2003: 28. 1000 Roman indemnity: Polybius 1.63.3.
[683] Hoyos 2003: 27-28, 224-225.
[684] On the four "*pagi*" of Carthage, Lancel 1997: 259-261.

Chapter 11: Macedonian Finance

The best evidence for the finances of the Antigonid dynasty comes from light shed on the matter by evidence for the conflict between Rome and Macedon. In the following analysis of Macedonian finances, I again utilize the principle of exhaustion. There is good reason to believe that the expense of the Second Macedonian War virtually bankrupted Philip V, including the 500-talent (3 million *drachmai*) indemnity payment imposed on him in 196, which likely wiped out his cash reserves.[685] The annual payment of 50 talents (300,000 *drachmai*) was miniscule compared to other indemnities imposed by Rome: Carthage paid 200 talents a year (1.8 million *drachmai*) and the Seleucid kingdom an unprecedented 1000 talents (6 million *drachmai*).[686] Indeed, tiny Sparta, an impoverished city-state, was also required to pay fifty talents a year following the conclusion of the war with Nabis in 194, the same annual payment as Macedonia.[687] This Macedonian indemnity was likely based on a Roman estimate of Philip's ability to pay, and I assume that there were close to zero funds in the Macedonian treasury in 196.

Twenty-nine years later, in 168, the Romans appropriated the Macedonian treasury, and the contents were displayed in the triumph of Aemilius Paullus. Since the amount of surplus generated from 196-168 is known, a revenue estimate is possible if expenditures over the period are also estimated.

Expenditures, 196-168

The Army:

Military Pay: In 218, Philip V moved into the Peloponnesus at the request of the Achaean League. The federal assembly voted him 50 talents for his previous campaign, and 17 talents per month for every month he campaigned in the Peloponnese as an ally of the league.[688] The 17 talents likely represent an even 100,000 *drachmai* (technically 16 2/3 talents). But how many soldiers could this sum fund? During his previous campaign in the Peloponnese, Philip fielded 5000 infantry, 300 Cretan mercenaries, and 400 cavalry.[689] Yet several months after the assembly's vote, he mustered 6000 Macedonian infantry and 1200 mercenaries.[690] 100,000 is a round number, and a likely estimate of the funds required by Philip's troops: these numbers fluctuated depending on the mobilization of mercenaries (as noted elsewhere, 217 was a difficult year to hire mercenaries). It is also useful to note the 10,000 *medimnoi* of grain offered by the Achaeans in addition to the first three months of pay. Assuming a ration of two-thirds of a *medimnos* for an infantryman, 10,000 *medimnoi* is almost exactly three-months rations for 5000 men, although it was not enough to feed the 7200 that Philip eventually mustered. Assuming that 100,000 was voted to cover the pay of 5000

[685] Philip's indemnity: Polybius 18.44.7. Plutarch *Flamininus* 9.6; Livy 33.30.7. Philip had previously paid Flamininus 200 talents for the armistice, and there is no evidence that this was credited towards the 1000 talent indemnity.
[686] Seleucid Indemnity: Polybius 21.14, Livy 37.45; 38.37.
[687] Livy 34.35.11.
[688] Polybius 5.1.11-12.
[689] Polybius 4.67.6.
[690] Polybius 5.2.11.

infantrymen for a period of three months, this suggests that Macedonian infantry pay was 4 obols a day.

This particular reading of Polybius matches evidence for infantry pay in the time of Alexander the Great and his successors. For example, Menander, a contemporary and friend of Demetrius Poliorcetes, has a braggart soldier boast that he is paid four *drachmai* as a high ranking officer (rather than four obols, the pay of a common soldier).[691] A late fourth century receipt from Egypt reports pay issued to "four obols a day" men, perhaps referencing common soldiers on a guard detail.[692] The Amphipolis military code (c. 218) imposes double fines on officers, which suggests double pay.[693] Hatzopoulos argues based on epigraphic evidence that there were five such officers for every 256-man *speira*; the additional pay for these officers was negligible.[694]

Philip was limited to a 5000-man army by the treaty that ended the Second Macedonian War.[695] Therefore, for 196-191 I assume that he maintained the maximum allowable force under the treaty. I also assume that all of these troops were infantry, as this would permit Philip to maintain his 2000 strong *agema* of peltasts, part of his permanent professional cadre, and possibly 3000 "other peltasts," organized into two *taxeis* of 1500 apiece.[696] A small number of horsemen was perhaps maintained on the side, although such a bodyguard would be better counted as a court expense. 5000 infantry, officers included, cost 1.2 million a year. For the years after Cynoscephalae, from 196-191, this small army cost approximately 7.2 million *drachmai*.

However, when Philip sided with Rome in the war against Antiochus the Great, he proved himself a well-positioned and cooperative ally. There is evidence that he was allowed to expand his army during the course of the conflict: in 190, for example, he was permitted to accept 1000 volunteers from captured Seleucid garrisons. Previously he had been given control of 4000 Athamanian and Seleucid prisoners: many of the Athamanians were released, but some of these prisoners (particularly mercenaries with no loyalty to the Seleucid crown) were enrolled into Philip's army.[697]

During an Aetolian counter-attack in 189, Philip deployed a field army of 6000 men, leaving additional troops to garrison Athamania.[698] Over the next two decades, Philip and Perseus launched modest campaigns in Thrace and Dolophia, while garrisoning a number of points, including the old "fetter" of Demetrias. For this estimate, I assume that Philip and Perseus maintained an average strength of 10,000 troops from 190-172 (double the amount allowed previously), at a total cost of approximately 46 million *drachmai.* This is in keeping with the number of prisoners Philip added to his initial 5000-man force,

[691] Menander *Perikeiromene* 261-2.
[692] Turner 1975.
[693] Juhel 2002.
[694] Hatzopoulos 1996: 453-456.
[695] Livy 33.30.6.
[696] In 195, Philip committed 1500 Macedonians, or one *taxis*, to Flamininus' campaign against Nabis of Sparta.
[697] Livy 36.14.5-8. Hammond and Walbank 1988 assume that all 5000 prisoners were incorporated into Philip's army.
[698] 6000 troops: Livy 38.2.1. Garrisons in Athamania: Livy 38.1.1-2.

and also corresponds with the modest but significant campaigns waged by Philip during this period.

In 171, however, Perseus unveiled a new model army of 41,000 men: 26,000 Macedonians, 12,000 mercenaries and auxiliaries, and 3000 cavalry.[699] This does not include the 1000 Thracian cavalry and 1000 Thracian infantry who served under Cotys and were paid separately by a grant of 200 talents. This army was maintained at steady strength until its destruction at the battle of Pydna in 168. Assuming triple pay for cavalrymen, this force cost approximately 12 million a year, or 48 million from mid- 171- to mid-168. In total, I estimate that Philip and Perseus spent approximately 100 million *drachmai* on military pay from 196-168.

Rations: Unlike the Romans, who received a large amount of "free" grain from their imperial possessions, Philip and Perseus relied on internal sources to feed their armies. Some was collected in kind, including proceeds from royal estates. Perseus developed substantial grain stockpiles prior to the Third Macedonian War, yet a good deal of grain was purchased. During the war, for example, Perseus sent his naval forces to escort merchants bringing grain from Chios. [700]

Let us assemble a postulated "ration package" for a Macedonian soldier, on the assumption that they were issued grain, olive oil and wine similar to the ration we have previously reconstructed for the Roman soldier.[701] At a *choinix* a day, nearly identical to a Roman soldier's ration, the Macedonian soldier required 8 *medimnoi* a year. Wine, too, was almost certainly issued to Hellenistic soldiers; assuming a ration of one *kotyle* (273 ml), this implies an annual consumption of about 2 ½ *metretes* of wine a year. Finally, for fat, let us assume 12 pints of olive oil per year per capita, equal to Cato's slave rations. Grain at Delos sold between 4-6 *drachmai* per *medimnos*, with the higher price predominating; Eumenes I set the "official" price of grain given to his soldiers at 4 drachmai per *medimnos*.[702] I assume 5 *drachma* as the average cost. Wine sold for 4-5 *drachmai* per *metretes*; I four *drachmai* as the cost in this estimate.[703] Olive oil on Delos sold for a half obol a *kotyle*; a year's supply for a soldier cost 2-3 *drachmai*.[704] At these rates, the Macedonian ration package for a Macedonian soldier totaled approximately 52 *drachmai* per man, or 15 million for the force levels previously estimated.

Navy:

Following the treaty with Rome, Philip was allowed to maintain five ships, the same five *pristes* ("cutters") deployed by Perseus during the Third Macedonian War. Let us assume these were bireme/trireme style vessels. With a crew of 200 men maintained year round, these five ships cost approximately 7 million *drachmai* in pay, and 10 million after accounting for rations, tackle, and maintenance costs.

---

[699] Livy 42.51.
[700] Livy 44.28-29.
[701] See above, Chapter 9, p. 118.
[702] OGIS 266, ln. 1=Austin 2006, no. 230.
[703] Ibid.
[704] Frank 1940: 193.

Logistics: With the end of the Antigonid dynasty's Aegean empire following the Second Macedonian War, the Macedonian kings had no significant seaborne transport costs. The Macedonian army under Philip II was famous for having a light pack train, with only one attendant and mule for every *dekas* of 16 soldiers, while each cavalryman was allowed only one attendant.[705] I assume that Philip did not provide grain for the attendants of mercenary or allied contingents; this was a cost mercenaries bore themselves. Thus rations for Macedonian attendants cost approximately 1.5 million *drachmai* over the period. Assuming one mule for each Macedonian attendant (and each mule consumed 20 *medimnoi* of barley a year at 3 *drachmai* a *medimnos*), this adds another 1.9 million *drachmai*. Accounting for the purchase of pack animals, saddles, and wagons, I estimate the cost of logistics at 5 million *drachmai*. In total, I estimate Macedonian military costs of 130 million *drachmai* from 196-168.

Payments to external powers:

Beginning in 196, Rome required Philip to pay annual installments of 50 talents. Though this indemnity was cancelled in 190 due to his cooperation in the war against Antiochus III, the five payments from 196-191 totaled 250 talents, or 1.5 million *drachmai*.

During the Third Macedonian War, Perseus paid the Thracian prince Cotys 200 talents (1.2 million *drachmai).* Perseus hoped to turn his cash assets into diplomatic capital, and offered a sizable gift of 1500 talents to Eumenes to mediate an end to the war, although Eumenes declined this diplomatic flirtation.[706] Perseus also promised to pay the Illyrian king Genthius 300 talents, although these funds were never transmitted to Illyria.[707] In all, attested payments to external powers totaled 2.7 million *drachmai*.

The Court:

Maintaining the court proved an enormous expense, yet one that is unfortunately poorly attested in the sources.[708] Macedonian kings such as Philip V and Perseus were in an unfortunate position compared to their counterparts in Antioch and Alexandria. They possessed smaller revenues, but were expected to live in a manner worthy of a Hellenistic king.[709] The expensive literary and cultural patronage of the Ptolemies and Seleucids, including the Museion and Library of Alexandria, as well as a library in Antioch and a host of literary figures in the Seleucid court, were lacking in Antigonid Macedonia, perhaps on account of these financial limitations. The king and his court feasted in high style, even on campaign. Lavish gifts to courtiers also consumed a considerable if indeterminate amount. Like his rival kings, Philip also indulged in euergistic activities, including contributions to the sanctuary at Delos.[710]

There is no suitable way to estimate court costs. A stray reference in Athenaeus suggests that Alexander the Great spent 10,000 *drachmai* per day on

[705] Frontinus *Strat.* 4.1.6.
[706] Polybius 29. 7.5-7.
[707] Polybius 29.3.1-5; Livy 44.23. 1-4.
[708] On the Antigonid Royal court, see Ma 2011; for Hellenistic courts in general, see Strootman
[709] E.g. Livy 37.7.8-12, where the young Sempronius Gracchus stumbles upon Philip drunk at a banquet.
[710] See Walbank 1940: 268-271. On euergetism in general, see Bringmann 1993.

modest banquets that served 60-70; if this average were maintained over the course of the year, the cost of royal meals was approximately 3.6 million *drachmai*.[711] Yet it is unclear if the lavish court expenditures of the cash-rich Alexander can be applied to the more modest circumstances of the late Antigonids. A quote from Menander, also from Athenaeus, estimates the cost of a sumptuous banquet at one talent (6000 *drachmai*); a nightly banquet of this type would require 2 million *drachmai* per year—although this is admittedly comic hyperbole.[712]

Philip and Perseus maintained a lavish lifestyle by any standard, even while on campaign. For example, Philip faced embarrassment in 218 when negligent (or treacherous) courtiers failed to forward him money, and he was forced to sell golden tableware to support himself.[713] Since the Achaeans provided pay and rations for his army at this time, presumably the plate was sold to cover the costs of maintaining the court (though how much plate he sold is unknown). Other courtly activities, including gifts and grants to *philoi*, euergistic activities, and additional court expenditures such as the king's wardrobe, are even more difficult to quantify. Ultimately, I hypothesize expenses of 2 million *drachmai* a year, or 60 million over the period. Following these estimates, court costs consumed roughly 25% of the total budget.

Table 11.1: Macedonian expenditures 196-168.

Military Pay	100 million
Rations:	15 million
Logistical Support:	5 million
Navy:	10 million
Payments to Rome	1.5 million
Payment to Cotys:	1.2 million
Court Expenditures	60 million (?)

In all, it seems reasonable that Philip and Perseus spent approximately 195 million *denarii* from 196-168, or 6.5 million *drachmai* a year. This average does not account for the fact that Macedonian expenditures were concentrated during the Third Macedonian War. During that time, Perseus easily spent more than 10 million a year, while in the years of relative peace from 179-171, his expenditures were likely closer to three million *drachmai* per year.

Surplus:

Peresus began the Third Macedonian War in excellent fiscal shape: when various cities and communities in Macedonia made offerings of cash and grain to support the war effort, he declined their offer, even as he mustered the largest Macedonian army in the history of the kingdom.[714] Eumenes II reported to the Roman senate that Perseus had sufficient cash on hand in 171 to pay his own soldiers (estimated at 30,000 infantry and 5000 cavalry) plus an additional 10,000

[711] Athenaeus 4.146 C-D.
[712] Athenaeus 4.146 E.
[713] Polybius 5.2.10.
[714] Livy 42.53.3-4. Perseus did accept donations of wagons to help transport his siege train.

mercenaries for ten years. It is unclear how Eumenes arrived at this figure (which implies over 100 million *denarii*), but the result of the Third Macedonian war confirms that Perseus did indeed possess substantial cash reserves.[715] In 168, Aemilius Paullus displayed the vast contents of the Macedonian treasury in his triumph. Ancient accounts derived from a common source (perhaps the official register of Aemilius' triumph) preserve slightly different information. Polybius, who was chronologically close to the event and personally close to the Aemilii, reports that the treasury contained over 6000 talents, or more than 36 million *drachmai*. Livy, relying on the annalist Valerius Antias, reports the display of 120 million HS, or 30 million *denarii*, but notes that the previous vessels paraded would increase the amount.[716] Plutarch reports that 750 vessels were paraded, containing 3 talents of silver (2250 total), and that 77 were paraded with 3 talents of gold (231); when a ten-talent golden crater is added to the mix, this represents approximately 28 million *drachmai*. Diodorus Siculus suggests 1000 talents of coin, 2200 talents of silver bullion, talents of gold in 220 carriers (=220 talents?), ten additional talents of gold, and a ten talent gold crater. In all, Diodorus reports approximately 33.6 million *drachmai* of bullion and specie, not counting other non-monetary items also paraded.

Table 11.2: Reports for bullion carried in Paullus' triumph

	In *drachmai*	Amount reported
Polybius:	> 36 million *drachmai*	> 6000 talents
Diodorus:	33.6 million *drachmai*	2250 talents AG, 241 talents AU.
Plutarch	28.6 million *drachmai*	2200 talents AG, 240 talents AU, 1000 talents coin
Livy:	30 million *drachmai*	120 million HS[717]

The figures do not add up perfectly, but they all point to the same general range. For the purpose of this estimate, I assume 35 million *drachmai* in Perseus' treasury.

A curious puzzle arises when one examines the enormous surplus (one far larger than the approximately 22.6 million *denarii* surplus in the Roman *aerarium* in 157). Signs of fiscal stress abound during the Third Macedonian War. Perseus debased his late *tetradrachmai* by 10%.[718] During the war itself, he refused to hire Danubian mercenaries on account of the high cost. Polybius and the historians who followed him portray Perseus as "penny-wise yet pound-foolish,", unwilling to undertake the necessary expenses of preserving his kingdom and kingship.[719]

---

[715] Livy 42.12.
[716] Livy 45.40.1
[717] Velleius Paterculus reports the figure at 210 million HS, while Pliny sets it at 300 million HS. It is possible that both figures should be amended to 120 million (i.e. changing |ↀↀc| (Velleius) and |ↀↀↀ| (Pliny) to |ↀcc|.
[718] Hammond and Walbank 1988: 503.
[719] Livy 44.26-27; Diodorus 30.19; App. Mac. 18.1-3. Plutarch Aemilius 12.4-6. Hammond and Walkbank 1988: 535.

Yet the enormous surplus suggests that these incidents can be explained by reasons other than fiscal strain. Hammond and Walbank may be correct in arguing that the devaluation was a fiscal response to a series of coins minted on the lighter Rhodian standard. It is also possible that the standard was lightened to prevent Macedonian coins from departure into Asia, where heavy Roman indemnity payments had caused a significant shortage of silver.[720]

Nevertheless, the devaluation is likely a result of precautionary "belt-tightening" at the start of the war. Part of the reason for Perseus' thrift was the fact that over 1/3 of his reserves were in gold, which was not usually used to make state-level payments. The 18 million *drachmai* in silver coin and bullion displayed in Paullus' triumph (following Diodorus' 2200 silver bullion and 1000 talents of silver coin) is an impressive sum, but only sufficient to pay his 43,000 man army for two years. In almost four years of war, Perseus had spent more than 30 million *drachmai*, the equivalent of the remaining surplus in 168.[721] He did not know that he would lose battle of Pydna in the summer of 168, along with his kingdom. It is likely that he attempted to manage his surpluses in order to maintain the high level of military spending for as long as possible. Thus, Perseus' putative cheapness was actually indicative of long-term fiscal prudence.

Revenues

If one adds the surplus of c. 35 million *drachmai* to expenditures of 195 million *drachmai*, it suggests a total revenue of approximately 230 million *drachmai*, or just under 8 million *drachmai* a year.

The regular revenues of the Macedonian kings came from two basic sources. The first was taxes (both direct and indirect) on the Macedonian population. The second was the exploitation of royal properties, including agricultural estates, forests, and most importantly, mines.

Livy reports that Macedonians paid a *tributum* to the king, less than half of which was paid to Rome.[722] Plutarch states that the payment to Rome was set at 100 talents, which suggests that the kings' portion from such a tax exceeded 200 talents a year. Livy's use of the term *tributum* implies that Macedonians paid a type of direct tax, likely a form of property tax. Yet Hatzopoulos argues that the Macedonians were not subject to regular tribute (*phoros*), noting that Macedonian settlements were explicitly exempted and that *phoros* was imposed on subject populations. However, one of the benefits granted to families of the dead at the river Granicus was relief from what Arrian terms *eisphora*.[723] Whether or not this Athenian term was employed to describe Macedonian taxation, in all likelihood Macedonian citizens were subject to what was in theory an extraordinary levy (similar to the Roman *tributum* or the Athenian *eisphora*) that eventually became regularized to the point that it was routinely collected at the same general rate each year. [724] 200 talents a year would bring in roughly 35 million *drachmai* from 196-168.

---

[720] Hammond and Walbank 1988: 503.
[721] Livy 45.40.2 is therefore quite right when he says that an equal amount to the sum paraded in the triumph had been spent on the war.
[722] Plutarch *Aemilius* 28.6.
[723] Arrian *Anabasis* 1.16.5
[724] Haztopoulos 1996: 439 protests too much on this point.

In addition, Ps. Aristotle estimates revenues from Macedonian customs fees to be 40 talents a year in the late fourth/early third century.[725] Assuming a modest rise to 60 talents a year by the early second century, this contributes approximately 10 million *drachmai* to the Macedonian treasury from 196-168. This estimate excludes local customs fees collected by cities within Macedonia, which were an important source of civic revenue of the coastal *poleis.*

The income from the mining revenues is uncertain. Diodorus reports that Philip II received 1000 talents (6 million *drachmai*) from his mines.[726] There is good reason to be suspicious of this round number; it may be shorthand for "a lot."[727] Yet the sum of all other revenues, including income from mining, proceeds of royal forests stands and royal estates, loot from warfare, and the like, do seem to total approximately 6 million *drachmai* (1000 talents) a year, at least during the reigns of Philip V and Perseus.

Table 11.3: Macedonian Revenues, 191-168

Direct taxation:	35 million
Customs fees:	10 million
Mines, timber, and royal estates:	185 million
Total:	230 million

If Philip and Perseus averaged approximately eight million *drachmai* per year in revenues during the period of 196-168, what can we say about Macedonian revenue prior to the Second Macedonian War? It may have been higher on account of tribute collected from imperial holdings, although reduced revenues from Macedonia proper could have negated this: we are told Philip had to work hard to revive these revenues following the Second Macedonian War.[728] Diogenes Laertius reports that the philosopher Menedemus appealed to Demetrius Poliorcetes and managed to lower Chalcis' 200 talent-per-year tribute by 50 talents.[729] The reduced amount, 900,000 *drachmai*, is plausible, particularly if collected from the entire island of Euboea. This would have been sufficient to pay the annual salaries of roughly 3000 mercenaries. If an equal amount were extracted to support garrisons at Acro-Corinth and Demetrias (and perhaps Attica prior to 229), then the Macedonian state could have collected an additional 3-4 million *drachmai* per year. Yet much of this revenue would have been absorbed through more intensive military activities. Even maintaining a peacetime presence of 500 soldiers at Chalcis, Demetrias, Acro-Corinth, and the Piraeus would cost over half a million *drachmai.*[730] The type of fleet capable of defeating the Ptolemaic navy at Cos and Arados would have cost much more. The 53 decked ships and 150 *lemboi* deployed by Philip V at Chios could easily

[725] Pseudo-Aristotle *Oeconomica* 2.22
[726] Diodorus 16.8.6-8.
[727] Millet 2010: 493.
[728] Livy 39.24.2.
[729] Diogenes Laertius 2.140.
[730] The peacetime Macedonian garrison at Acro-Corinth seems to have had over 400 men in 245 during Aratus' assault. The Achaean garrison installed afterwards consisted of 400 men and 50 dog handlers (Plutarch *Aratus* 24).

cost seven million *drachmai* in crew alone, assuming 300 men per decked ship and 50 per *lembos*, though this represents a spike in naval activity for a major war and not an ongoing commitment.[731] Even with third century revenues between 10-12 million *drachmai,* the expenses of Macedonia's territorial empire consumed almost the entirety of her extra-Macedonian revenues: the surplus of the second century were a result not of victory, but of defeat.

[731] Polybius 16.2.9. There is a lacuna in the text for the number of un-decked ships, which if numerous would have further increased the annual cost of this deployment.

Chapter 12: Ptolemaic Finance

No source has provided an estimate of the total annual revenues for any of the major Mediterranean powers examined up to this point. Yet for Ptolemaic Egypt, the dynasty that controlled the fabled wealth of Egypt, two such references survive. The first comes from St. Jerome's commentary on the Book of Daniel; he reports that the revenues of Egypt were 14,800 talents (88.8 million *drachmai*) and an additional 1.5 million *artabai* (1.125 million *medimnoi*) of grain collected in kind.[732]We cannot ascertain the quality of St. Jerome's source; it is entirely possible that he used a credible Hellenistic source that reflected official Ptolemaic pronouncements. However, elsewhere in the text Jerome illustrates that he is not particularly selective in his sources. In the same passage, for example, he estimates the strength of Ptolemy's army at 200,000 infantry and 20,000 cavalry, numbers that can be quickly dismissed when compared with the more reliable troop strengths reported in Polybius. In brief, Jerome's report does not inspire confidence.

Yet a second reference to Ptolemaic revenues bolsters the basic validity of Jerome's financial estimates: a fragment of Cicero preserved by Strabo puts annual Ptolemaic revenues under Ptolemy XII Auletes at 12,500 talents (75 million *drachmai)*.[733] Strabo is likely paraphrasing Cicero here, who probably stated the figure as 300 million HS, a round number starting with "3" (so popular with the ancients).[734] Yet even if Cicero rounded to 300 million HS, as a high-level Roman politician he was in a position to know the general magnitude of Ptolemaic finances, and this order of magnitude is in keeping with the report that Auletes could promise a 10,000 talent (60 million drachmai) bribe to the Roman legate Aulus Gabinius.[735]

There is also Diodorus' report that the Egyptian kings had an income of a mere 6000 talents κατ' Αἴγυπτον, based on information he received while visiting the country around 60.[736] While also derived from the later part of the off-and-on reign of Ptolemy XII Auletes, this number is a departure from the estimates reported by Jerome and Cicero. Le Rider and De Callataÿ note that the difference may result from the dynastic crisis of the Ptolemaic state, including the loss of Cyprus in 58, as well as from the difficulties of controlling parts of the Egyptian countryside.[737] Wilcken argues that the 6000 estimate may apply only to tax derived from Alexandria and its immediate *chora*, and not to Egypt at large.[738] Préaux argues precisely the opposite: Diodorus' figure applies to the countryside of Egypt and excludes revenues from Alexandria and its hinterland.[739]

---

[732] Jerome *Commentary on Daniel* 11.5. Manning 2003: 135 believes the figure is fundamentally unreliable, although notes the concordance with Cicero.
[733] Strabo 17.1.13.
[734] Again, Scheidel 1996.
[735] Cicero *de Rabinio Postumo* 21, 30. See also Williams 1978: 205-208. Siani-Davies 1997: 328 notes that this money may have come from Roman financiers, although they would only have made such a loan if backed by the resources Ptolemy XII was trying to secure.
[736] Diodorus 17.52.6. Diodorus in Egypt: 1.44.1, shortly before Ptolemy XI was recognized by the Romans in 59.
[737] Le Rider and de Callataÿ 2006: 172.
[738] Wilcken 1899: 414-16.
[739] Préaux 1938: 364.

Rostovtzeff suggests that Cicero's talents may be debased Ptolemaic coins, while Diodorus gives the figures in Attic talents, a solution that narrows but does not bridge the gap.[740] It is also possible that Diodorus reports an estimate from a bad agricultural year in Egypt, while Cicero's quote, like that of Jerome, reflects revenues under optimal conditions.

If both Jerome and Cicero are correct, then we can estimate Ptolemaic revenues at between 75-90 million *drachmai.* It is important to note that the Ptolemies intentionally minted on a lighter standard: the Ptolemaic drachma weighed about 3.6 grams, compared to the 4.3 grams of the Attic standard.[741] As such, 12,500 and 14,800 Ptolemaic talents represent an income of 62 million and 73 million *drachmai* minted on the Attic standard. For the remainder of this chapter, however, I refer to monetary units on the Ptolemaic standard.

Is the range of 75-90 million *drachmai* plausible for the income of the Ptolemaic state? Let us suppose a radically simplified model of the Ptolemaic agrarian economy: approximately 8.5 million *arourai* of agricultural land, assuming 20,000 square kilometers.[742] Suppose that all of it was planted with wheat, which by royal decree had an "official" price of two Alexandrian *drachmai* per *artaba* (1 *artaba* = c. 67 lbs., or 4 ½ Roman *modii*).[743] The main form of revenue was a harvest tax, effectively a rent on crown lands, which ran for grain-lands to 4-8 *artabai* per *aroura*, presumably based on the fertility of the given plot. While this has traditionally held to apply only to tenants of royal land (and not to cleruchs or holders of private plots),[744]Andrew Monson argues that the harvest tax was collected on virtually all lands, at around the same rate, approximately 5 *artabai* per *aroura*.[745] On Bowman and Wilson's estimate for the average yield in Egypt, i.e., 12 artabai per *aroura*, this would mean that the harvest tax would come close to appropriating half of the total harvest.[746]

Following this basic model, 8.5 million *arourai* of grain lands (each paying 5 *artabai*) yields 42.5 million *artabai* of wheat, worth 85 million in silver. This very rough estimate (which assumes a uniformly high rate of taxation, universally healthy yields, and that all agriculture lands grew wheat) does at least seem to suggest that Jerome and Cicero were basically correct in the order of magnitude of their report.

The actual results of the harvest tax would have been lower, of course. A limited amount of cleruchic land was exempt—for example, infantrymen with 25-*arourai* plots could omit the proceeds of five *arourai*.[747] Unproductive or un-inundated land was either exempted, or paid at a lower rate. While some land was planted with higher value crops (vineyards, for example), a lot of land was also devoted to lower revenue crops such as barley and emmer wheat (*olyra*).[748]

---

[740] Rostovtzeff 1941: 1153.
[741] Von Reden 2010: 150.
[742]Scheidel 2001: 223. Manning assumes 9 million *arourai* based on a second century inscription from Edfu, although admits that the document may be rounding up. Clarysse prefers a lower-end figure of 7 million *arourai.* All agree on the basic order of magnitude.
[743] Official Price: Von Reden 2010: 148; Rathbone and Von Reden 2015: 164.
[744] On the rate of harvest tax, Monson 2014: 230.
[745] Monson 2014: 8-14; see also Monson 2012: 170-171.
[746] Bowman and Wilson 2006: 245.
[747] Monson 2014: 5
[748] On barley and *olyra*, Mayerson 2002.

Total harvest tax revenues were therefore lower than the maximizing estimate produced above. Nonetheless, many other taxes supplemented the harvest tax, providing the Ptolemies with cash revenues as they converted the harvest from piles of grain into spendable cash. For example, a salt tax, which was in reality a per capita poll tax, charged a drachma per person in the early third century and brought in approximately 3 million *drachmai.* There was also a tax on dykes, and a conversion tax, equal to four *drachmai* in the early third century, for men who wished to buy out their corvée labor requirements. The burden of the salt tax was progressively lightened over the course of the third century, so that by the 240s, men paid a drachma and women four obols, lowering the returns to perhaps two million.[749] Customs dues were also a substantial form of supplemental revenue: if Rhodes brought in a million drachma per year in the early second century through custom fees, it would not be improbably to presume that Egypt could have brought in at least as much.[750] Egyptian customs dues were notoriously high, with wine imports, the most heavily excised commodity, taxed at more than 50% of their assessed value. The Zenon archive records two ships paying 3,712 *drachmai* in fees—over a half talent.[751] The number of ships cycling through Alexandria harbor is unknown, but at this rate 2000 ships with comparable cargoes could net approximately 4 million *drachmai.* A host of other taxes, excises and levies, added to the sale of monopolies on oil and beer production, also push the total estimate to the c. 90 million *drachmai* reported by Jerome or the 75 million reported by Cicero.[752] These figures, therefore, are plausible both for the amount of agricultural land the Ptolemies controlled, and for the surplus they were able to wring out of it.

But what of the Ptolemaic holdings outside of Egypt? Jerome's estimate applies to revenues *de Aegypto.* But Jerome is not a precise author, and routinely refers to the Ptolemaic king as the *rex Aegypti*, narrowing the entire realm to Egypt.[753] If his estimate is to be used, it must surely apply to the entirety of Ptolemaic holdings. It is possible that the territorial losses suffered by the Ptolemies in the interim, in Koile Syria especially, explain part of the difference between Jerome and Cicero's estimates.

Josephus estimates revenues from Koile Syria alone at 8000 talents under Ptolemy I, but this is impossibly high.[754] Judea, a substantial portion of Koile Syria, probably paid around 450 talents of silver per year to the Ptolemaic kings (Antiochus III had received 300 talents, after he reduced the old Ptolemaic tribute by one third).[755] The islands paid approximately 2000 talents to fund the *Ptolemaia* every four years, at a rate of 500 talents per year, though this assumes that the

[749] The rate of the salt tax follows Clarysse and Thompson 2006. For a tax receipt archive, see Muhs 2011.
[750] Polybius 30.31.12.
[751] Gabrielsen 2013:72-73.
[752] On the rate of the salt tax, see Thompson 1997: 246.
[753] E.g. Jerome *Commentary on Daniel* 11.14.
[754] Josephus *AJ* 12.175, usually viewed as a wild exaggeration; see Bagnall 1976: 20-1 for discussion of the passage, although he does not comment on the implausible enormity of the sum. Wilcken 1899: 412-13 accepts Josephus' figure as plausible. It seems dubious, however, the Koile Syria might have produced revenues near to that taken in by the Roman empire before Pompey's conquests (8333 talents).
[755] 300 talents: Sulpicius Severus *Chronicles* 2.17.5. See Aphergis 2004: 249 for additional discussion.

cost of the festival reported by Athenaeus was matched by future iterations---and it is unclear for how long the Ptolemies maintained a strong presence in the islands. Fischer-Bovet estimates revenues of 3600-7000 talents (21-42 million *drachmai*) from external Ptolemaic holdings, assuming these had a population of 3-3.5 million people, and paid a tax rate of 1.2-2 talents per 1000.[756] The upper boundary of this range is too high. I find it doubtful that scattered Ptolemaic holdings in the Eastern Mediterranean brought in 28 million drachmai, almost as much as the 35 million which Pompey's far more extensive conquests brought to Rome in the first century. The lower end of the estimate remains plausible. If so, Ptolemaic holdings outside Egypt accounted for approximately a quarter of total state revenues.

Silver, Grain and Gold:

One of the great objections raised by Préaux against Jerome's estimate is that the grain revenues associated with it (1.5 million *artabai*-- enough grain to provide standard military rations to about 150,000 adult males) are much smaller than the reports of grain obtained from Egypt during the Roman Empire: the six million *artabai* supposedly collected from Egypt in the time of Augustus, as well as the eight million *artabai* fixed in AD 539 by Justinian.[757] Préaux's critique is almost universally accepted, but I do not think it is valid.[758] Great structural differences existed between the needs of a Ptolemaic king and the requirements of the Roman emperor. The Ptolemaic king derived most of his resources from Egypt. He needed a modicum of grain to provide rations for his military forces (about 100,000 soldiers and sailors in time of war, less than half that number in times of peace), and also to his court. But with army, navy and court fed, he likely preferred his remaining extractions to be liquid cash, which he needed to pay his soldiers and sailors, distribute to his courtiers, and support a sumptuous royal lifestyle. The explicit exchange rate between commodities and cash, with an *artaba* of wheat valued at two Alexandrian *drachmai*: this way the king's agents could quickly dispose of collections in kind, mostly grain, converting them through the market into the silver required by the king.

With the Roman Empire, the situation was different. Roman emperors had many sources of revenue, including gold and silver bullion from Spain and the Balkans, but needed enormous amounts of grain to feed the armies as well as the Roman plebs. The commitment to provide free grain to more than 200-300,000 members of the *plebs urbana* was a peculiar configuration in a pre-modern imperial monarchy, one that stemmed from Rome's Republican roots, when citizens were able to demand distribution of state resources. One *artaba* was equivalent of 4 ½ Roman *modii*. 300,000 soldiers receiving 48 *modii* a year consumed roughly 3.2 million *artabai* of wheat. 200,000 Roman plebs, issued 60 *modii* a year, ate through another 2.6 million *artabai*, while the emperors used

[756] Fischer-Bovet, 2014: 69.
[757] Préaux 1938: 6 million *artabai*: Aurelius Victor *Epit.* 1.4; 8 million *artabai*: Justinian *Edict* 13.7.
[758] Préaux's correction to the grain figures, for example, accepted by Bowman 1986, 27 and Fischer-Bovet 2014. Manning 2010 declines to choose between a high and low figure, although Manning 2003: 135 accepts Preaux's correction.

additional grain supplies to stabilize and subsidize the urban grain market.[759] The Roman emperor therefore needed the 6+ million *artabai* from Egypt. Certainly the Roman emperors also collected cash from the province, although Andrew Monson has recently argued that Roman taxes were substantially lower than under the Ptolemaic regime, with Tiberius instructing his prefect that "good shepherds sheer their sheep, not skin them" *boni pastoris esse tondere pecus, non deglubere.* [760] If so, the luxury the Romans had in fleecing but not skinning the Egyptian sheep came from the fact that emperors enjoyed Mediterranean wide-revenues, while the Ptolemies were desperately dependent on the wealth of their Egyptian fief.

Successive Ptolemies encouraged the monetization of the Ptolemaic economy, even as they grappled with the lack of silver mines.[761] This created a significant problem: at every harvest, the Ptolemies acquired enormous amounts of grain, far more than their army, administrators, or court could possibly eat. The king needed to convert this excess grain into hard cash. Silver was therefore the lubricant of the entire Ptolemaic royal economy, and a sudden shortfall in silver could disrupt the process considerably. In order to keep silver within the country and to increase the supply, Ptolemy I instituted a closed currency system, based on a new standard drachma of 3.5 grams, and forced merchants in Alexandria to exchange foreign currency, usually minted on a higher standard. These actions resulted in a steady silver surplus to the state, likely sufficient in years of relative peace to balance the outflow of silver.

Another solution was the creation of a robust bronze coinage, taking pressure off the limited silver supply, especially in the countryside. Bronze coinage went beyond simply forming "small change" for the larger silver denominations and indeed became the dominant currency of much of the Egyptian countryside. It was used to make certain types of state payments. For example, the garrison mentioned in P. Strasbourg II. 108 was explicitly paid in "Macedonian bronze." These soldiers, who spent much of their pay in the local area, might not have minded bronze denominations, as it equipped them with the small change they would need to spend on local products. Still, silver was necessary to pay overseas garrisons, foreign mercenaries, and high-ranking officials, and to procure royal luxuries and displays of magnificence and munificence.[762]

Yet in order to prevent the massive outflow of silver, state payments had to remain within the Ptolemaic currency system, or be matched by inflow accrued through unequal currency exchange. A shortfall could occur on account of trade imbalance, but warfare was a far more likely culprit. As long as most of the Ptolemaic army remained in Egypt, soldiers re-circulated their pay back into the economy. This was true even for mercenaries on garrison duty; the mercenary in Alexandria who visited the local tavern and brothel was no great threat to the royal tributary apparatus. However, the need to hire temporary

[759] Plebs receiving wheat rations: *Res Gestae* 15; ration of 5 *modii*/month: Sallust *Histories* 3.19. Size of the Roman army rough estimate based on 28 legions, 5000-6000 strong, with an equal number auxiliary troops.
[760] Suetonius *Tiberius* 32.2; Monson 2012.
[761] Von Reden 2007: 34-78. The Ptolemaic economy remained under- monetized despite these efforts, a source of strain on their extensive fiscal system.
[762] On Ptolemaic bronze coinage, see Von Reden 2007: 111-117; Faucher and Lorber 2010.

mercenaries, who took their pay with them when they left, proved a more serious problem. In successful fighting, inflows of bullion looted from the enemy made up for the bullion paid to mercenaries. For example, Ptolemy III obtained at least 1500 (Attic?) talents of silver looting Seleucid territory during the Third Syrian War; this was enough to make up for 25,000 mercenaries taking their yearly pay outside the country upon discharge.[763] The situation was dire in the event of a defeat, or even in the case of a successful war that failed to produce a return in loot. Despite the successful repulse of Antiochus at Raphia, the Fourth Syrian war likely created shortfalls as discharged mercenaries were sent home with pay that was unrecompensed by major gains in loot.

Given their concern about silver stocks, the Ptolemies made bulk payments in gold or bronze whenever possible. This included bullion transferred out of the country, since the Ptolemies were able to replenish their supply of gold from mines in southern Egypt and Nubia.[764] Thus, the bonus to the troops after the Battle of Raphia totaled 300,000 gold coins, worth 7.5 million *drachmai*.[765] Some of this total left the country with mercenaries departing Ptolemaic service.

Gold and bronze were also the preferred mode of payment to foreign proxies. Financial aid to the Romans during the Second Punic War was given in gold.[766] There is also evidence of bronze subsidies to Cleomenes, who produced bronze coins with Ptolemaic iconography.[767] In good economic times, silver formed part of Ptolemaic subsidies, such as the 300 talents of silver given to Rhodes (although Ptolemy III gave an additional 3000 talents of bronze). Ptolemy II granted Aratus a subsidy of 150 silver talents: a single payment of 40 talents, with the remainder paid in increments.[768] Like other Hellenistic states, the Ptolemies also gave away goods in-kind as a form of euergetism, a way of earning diplomatic points while relieving surplus.[769]

Despite the bounty of the Nile, this delicate currency system could falter, especially during military and political crises that disrupted the normal flow of revenue. Around 210, a major reevaluation of the relationship of silver to bronze coinage took place, reflecting a silver scarcity.[770] The bronze coinage meanwhile underwent a series of reevaluations, the details of which remain contested, but which suggest a basic instability to the Ptolemaic monetary system in the late third and early second centuries.[771] This occurred before the great Egyptian revolt, which deprived the government in Alexandria of half of its customary agricultural surplus, and which required enormous military costs to squash the rebellion. By the 150s, a cleruch on garrison duty received 1800 bronze drachmas per year (worth around 15 Attic drachma), yet the prime benefit of military service was the grain ration, and the ability to purchase subsidized grain for

---

[763] Jerome *Commentary on Daniel* 11.23 reports an astonishing 40,000 talents (240 million *drachmai*!) of loot, but this is difficult to believe. The entire Seleucid indemnity payment to the Romans was only 15,000 talents (90 million *drachmai*).
[764] Ptolemaic gold mines: Diodorus 3.12.1-3; Préaux 1938: 253-61, Rostovtzeff 1941: 381-3.
[765] Raphia Stele (Cairo Museum Inv. 31088) l.29. Austin 2006: no. 276.
[766] Meadows 1998.
[767] Hackens 1968: 69-96.
[768] Plutarch *Aratus* 13.4. Mattingly, 2004: 264 links these to royal Arsinoe's found in several mid-third century hoards in the Peloponnese.
[769] Bringmann 2001 and 2005 notes the role of in-kind gifts in royal euergetism.
[770] Von Reden 2007: 60-70.
[771] Faucher and Lorber 2010.

family members.[772] In this moment, the royal economy essentially reverted to an in-kind system. Yet recovery did occur, given the strength of the underlying productive Egyptian economy. By the time Cicero extolled the riches of Egypt in the first century, cash revenue had returned to near third century levels.

Expenditures:

With peak revenues approaching 90 million (Ptolemaic) *drachmai* per year, the Ptolemaic dynasty had revenues approaching those of the Roman Republic following the conquests of Pompey the Great (when Plutarch reports revenues of 85 million *denarii*).[773] It is impossible to reconstruct the Ptolemaic budget in detail, given the lack of routine information concerning Ptolemaic state operations. There is no indication of Ptolemaic bullion stockpiles during the period, other than Appian's claim that the kings of Egypt had 740,000 talents of silver in their coffers at some time.[774] Like many of Appian's exaggerated reports about Egypt, this number reads as utterly unbelievable (unless one believes that the Ptolemies stockpiled three to four times as much bullion as the Achaemenid kings did prior to the conquests of Alexander the Great!). While the exceptional military mobilization at Raphia is well attested, there is little evidence concerning the size of the Ptolemaic army in times of relative peace. Information on naval deployments is limited, despite the overall impression of robust Ptolemaic naval power.[775] Thus, the conclusions on military expenditures sketched below are only rough estimates.

Military Pay

A late-third century papyrus (P. Stras. II. 103), dated by Clarysse and Lanciers to 210, shows a grammateus named Dion calculating payment for a garrison of soldiers equivalent to 2655 *drachmai*.[776] A second official, Agathocles, however, determined that this number was not correct, and reduced the payment to 2430 *drachmai*. A pay rate of nine obols a day over 30 days (45 *drachmai* a month) is divisible by both numbers; in the first case Dion reported 59 troops, and Agathocles reduced the figure to 54. Clarysse and Lanciers note that 4.5 obols per day is a plausible alternative, although one not in keeping with the general preference in the Classical and Hellenistic periods to base daily pay-rates on round figures rather than on fractions of an obol. More important, a nine-obol per day rate matches an attested pay scale for Rhodian rowers and marines in the third century, who were paid nine Rhodian obols a day.[777] Rhodes, like the Ptolemies, minted currency on a lighter standard (indeed, the Ptolemaic standard likely began as a debased Rhodian standard). The result was that nine Ptolemaic obols formed a little more than one Attic *drachma*, making it competitive with pay rates in the Hellenistic east. For the estimates below, I assume a third century pay rate of 9 obols per day for an infantryman, or 540 Ptolemaic *drachmai* per year. Since Ptolemaic kings issued rations from the enormous quantities of wheat

[772] Fischer-Bovet, 2014: 271-2
[773] Plutarch *Pompey* 45.3.
[774] Appian *Prologue* 10.
[775] See above, Chapter 5, pp. 68-71.
[776] Preisigke 1920: 47-51. Clarysse and Lanciers 1989: 127-132, who argue that the *drachmai* in question must be silver, as a pay rate in copper *drachmai* would be obscenely low.
[777] Syll.^{3} 581. Translation in Austin 2006: no. 113.

they retained in kind, I do not factor ration costs, although I do round estimates to account for the additional pay of officers and miscellaneous logistical costs.

In 217, Ptolemy raised an army of 75,000 men, which cost roughly 45 million *drachmai* to maintain in the field for a year. This reflects the Ptolemaic army in a unique moment of crisis: the mercenary armies that normally garrisoned Koile Syria had defected or been crushed by Antiochus' advance, and the Egyptian home defense army relied on the combination of cleruchs, mercenaries, and hastily trained native Egyptians.

Unfortunately, there is no good evidence for the size of regular Ptolemaic military deployments during the apogee of Ptolemaic power between 270-220. All that can be produced are plausible estimates based on limited source references. Below I assemble two models for Ptolemaic military expenditures. In the first, wartime model, I assume a war-time mobilization for a Syrian War style-conflict. I posit an army similar to the Raphia force, although not including a large native Egyptian phalanx or Libyan troops, whose deployment was exceptional in 217. A base of 25,000 in the main phalanx, 5000 peltasts, approximately 5000 cavalry and 15,000 mercenaries provides an approximate estimate of a major third century Ptolemaic field army; I assume another 5000 mercenaries left in garrison. At a pay rate of 9 obols a day, these soldiers cost around 45 million *drachmai*, approximately 50 million when accounting for other logistical expenditures.

As I discussed in the chapter on Ptolemaic Manpower, during times of relative peace prior to the Battle of Raphia, the Ptolemies likely deployed around 10,000 mercenaries in Egypt, and perhaps an equal number in Koile Syria and the Aegean.[778] 20,000 mercenaries cost approximately 11 million *drachmai* (rounding to account for extra officer pay). The cost of keeping the 5000 peltasts and 700 royal horsemen in service year round would require another 4 million *drachmai* a year. Following these estimates, the peacetime army therefore cost approximately 15 million *drachmai* per year.

Finally, the Ptolemies maintained a large naval force. Athenaeus suggests that Ptolemy II had 112 polyremes and another 225 lighter warships, probably triremes and biremes.[779] These figures likely represent the total number of ships, most of which were not deployed except in the case of a major war. These numbers are not implausible: Rome deployed 290 warships during the Second Punic War.[780] Carthage deployed 130 warships during the First Punic War. [781] Antiochus deployed over 100 warships in the 190s, joined by some 200 smaller vessels.[782]

If we estimate a crew of 400 in each of the capital ships, and 200 men in the lighter vessels, Ptolemy II's fleet of approximately 335 warships would require 90,000 rowers and marines when fully staffed. With a pay rate of 1.5 *drachmai* per day, total personnel costs were approximately fifty million *drachmai* (again, I assume that rations costs were provided from the king's grain).

---

[778] See above Chapter 6, p. 75.
[779] Tarn 1913: 456 is correct to note that the other 4000 smaller ships listed by Callixeinus should be dismissed as "absolute rubbish." He suggests that the list of 112 polyremes likely derives from an official naval list.
[780] Thiel 1949: 198.
[781] Polybius 1.23.3.
[782] Livy 34,57,5-59.8; 35.43.3.

Peacetime costs were much lower. However, even to maintain a fleet of 50 closed warships and 100 triremes easily required 25 million *drachmai* a year.[783]
On this basis, I estimate peacetime military costs of approximately 40 million *drachmai*, spiking to 80 million in times of intense conflict (i.e. the Syrian War).

Table 12.1: Estimate of Ptolemaic Military Expenditures

Wartime (c. Ptolemy II-III):

Army (modified Raphia deployment)	c. 40 million
30,000 infantry	
5000 cavalry	
20,000 mercenaries	
Navy (based on Callixeinus of Rhodes)	c. 50 million
112 polyremes	
225 biremes, triremes	

Peacetime

Army	c. 15 million
20,000 mercenaries/cleruchs in garrison	
5000 infantry (agema, peltasts)	
700 cavalry (royal cavalry)	
Navy	c. 25 million
50 polyremes (20,000 sailors and marines)	
100 triremes, biremes (20,000 sailors and marines)	
+ Additional costs (tackle, up-keep, etc.)	

Peacetime expenditures on military outlay were substantially lower, perhaps 40 million Ptolemaic *drachmai* (though a wide range is possible given the model's margin of error). By different reasoning, Fischer-Bovet estimates war time costs of 10,200-13,400 talents (c.60-80 million *drachmai*) and peacetime costs of 4,500-5,700 talents (c. 25-35 million *drachmai*).[784] These estimates rest on different assumptions (for example, Fischer-Bovet estimates a pay rate of 1 drachma per day), but accord with mine in terms of the basic order of magnitude.

Thus in years of warfare, the early Ptolemies spent approximately 90%-100+% of total annual revenue of approximately 75-90 million *drachmai* on military outlay. They rectified the deficit by tapping into cash reserves or

[783] At the start of the Fifth Syrian War, there were 20 decked ships and 20 un-decked ships docked at Tyre (Polybius 5.62.2-3) while another 30 decked ships were dispatched against the Seleucid fleet (Pol. 5.68.4). It should be noted that this war involved mostly fighting on land, and need not have involved a complete naval mobilization.
[784] Fischer-Bovet 2014: 76.

through the capture of loot. In years of relative peace, even the substantial garrison and sizable fleet estimated above consumed less than half the total Ptolemaic budget.

Administrative costs:

Given the unique nature of the Egyptian papyrus evidence, it is impossible to say if other Hellenistic powers rivaled the Ptolemies in terms of the scope and intensity of state administration. Significant epigraphic data compiled by Hatzopoulos suggests that the Antigonids devoted far fewer resources and expenditures to administration than their counterparts in Alexandria; Antigonid kings, as he showed, delegated a great deal of administrative hassle to civic structures within the kingdom.[785] Seleucid royal letters do give the impression of a significant royal apparatus, with the chain of command reaching down into the satrapies, but nothing approaching the level of the Ptolemaic administration. The intensity of the Ptolemaic administrative apparatus led early 20th century historians, living in the shadow of Soviet communism, to label the Ptolemaic economy a "state-centered" project. Certainly the geographic situation of Egypt made such intensive administration feasible; the Nile provided a highway for officials to access the agricultural population easily. Though impossible to quantify, it seems probable that the Ptolemies spent a great deal on this bureaucracy, and likely more than any other great power in the Mediterranean.

Courtly Splendor:

Though equally impossible to quantify precisely, Ptolemaic expenditures on court activities, religious festivals, euergitistic activities, cultural patronage and other royal projects were enormous. Athenaeus reports that the grand procession of Ptolemy Philadelphus cost just under 2240 talents, approximately 13.5 million *drachmai.*[786]

The Ptolemies also practiced euergtism on a more lavish scale than their fellow kings. Following the Rhodian earthquake of 224, Ptolemy III made the largest cash donation of any of the Hellenistic kings:

> Ptolemy also promised them three hundred talents of silver, a million *artabai* of corn, timber for the construction of ten quinqueremes and ten triremes, forty thousand cubits (good measure) of squared planking, a thousand talents of coined bronze, three thousand talents of tow, three thousand pieces of sail-cloth, three thousand talents (of bronze?) for the restoration of the Colossus, a hundred master builders and three hundred and fifty masons, and fourteen talents per annum for their pay, and besides all this, twelve thousand *artabai* of corn for the games and sacrifices and twenty thousand *artabai* to feed the crews of ten triremes.[787]

If the bronze is valued at 25 silver talents, and one assumes only one year of pay for the builders, this cash donation comes to over 2 million drachmas (the cost equivalent of maintaining a Roman consular army in the field for a year). Valuing the grain at two *drachmai* an *artaba* increases the gift to four million *drachmai*, not including the timber.

---

[785] Hatzoupoulos 1996.
[786] Athenaeus 5.203b.
[787] Polybius 5.89.1-5 (Paton)

While the magnificent sum of eighty talents given by Ptolemy II to the philosopher Strato may not be entirely reliable, it does point to the ambitious scale of the intellectual patronage performed by the Ptolemies.[788]
There is also considerable evidence that the Ptolemies supported a more elaborate courtly apparatus than their peers in Antioch and Pella. The Library of Alexandria, the Museion, the resident poets and scholars, the lavish processions, and all of the other fabled splendor of the Ptolemaic court were extraordinarily expensive, requiring tens of millions of *drachmai* every year.[789]

Conclusion:

The Ptolemaic dynasty was the wealthiest of all the major powers in the third century Mediterranean. Its enormous revenues and the military capabilities enabled by them explain in part how they proved themselves the dominant power in the early third century. Yet there remains a disconnect between superlative Ptolemaic revenues and their ultimate failure in the grand game of Eastern Mediterranean geopolitics.

As I have already noted, one structural limitation on Ptolemaic imperialism was the fact that cleruchs (the most loyal military supporters of the regime and the most effective part of the army) were as a rule stuck in Egypt, as their coercive presence was central to the military-tributary complex of the Nile Valley. While the Ptolemies had plenty of money to hire mercenaries to supplement the limited number of cleruchs, the labor supply of mercenaries was highly constricted. As discussed in the previous section, there were likely no more than 50,000 mercenaries available for service in the Eastern Mediterranean at any given time in the third century. Once the labor market for mercenaries was saturated with demand, the Ptolemies could no longer transform money into manpower.

One major avenue of Ptolemaic military spending also proved disappointing in effectiveness, namely the gargantuan polyremes of the Ptolemaic navy, which were expensive to build and to operate. William Murray argues that these were more than mere showpieces, but also effective naval siege platforms, a legitimate strategic function in light of the Ptolemies' focus on the coastal cities of the Eastern Mediterranean.[790] Nevertheless, the Ptolemaic building program, which culminated in the massive impractical "forty", was driven by the propaganda power of these vessels rather than their proven tactical worth.[791] Yet propaganda did have strategic value, as the Seleucids did not challenge Ptolemaic fleets from the 270s-220s, and even withdrew their main capital from Seleucus Nicator's coastal burial place of Seleucia Pieria to the more inland Antioch.

When the Ptolemaic navy did see action, however, it did not achieve decisive results; encounters with the Macedonian fleet in the 250s resulted in defeats or tactical draws at Arados and Cos. Ptolemaic kings had invested

[788] Diog. Laert. 5.
[789] On the splendor of Ptolemaic display in Alexandria, see Erskine 1995, also Thompson 2013 on the extravagance of Ptolemaic royal barges.
[790] Murray 2012: 188-200.
[791] Murray 2012: 178-184, 202-205.

resources in a fleet that could take cities without the aid of an army (an important strategy given the difficulties of mobilizing the cleruchic phalanx), but they struggled against opposing fleets, in part due to a lack of medium polyremes (i.e. quinqueremes) best suited for naval combat. Thus much money was spent building, maintaining, and manning a fleet that did not produce the anticipated results.

Finally, while difficult to estimate line-item expenditures of the Ptolemies outside the realm of military spending, they spent more revenue in this category than any other rival state (that is, prior to the period of disarmament imposed by Rome). The peacetime estimates produced in this chapter err on the side of higher expenditures, suggesting that in years of relative peace, the Ptolemies spent less than 50% of their annual revenues on military expenditures. The dynasty committed the remaining revenue to fund an intensive bureaucratic apparatus and costly forms of royal display.

The Ptolemies took the ideology of royal munificence, already developed under Philip II, to extreme new heights. The increasing level of expenditures likely created future expectations among the political constituency of the wider court. At a certain point, it became difficult to retreat from such lavish expenditures, even if these competed with military requirements. Here I do not mean to reiterate ancient moral critiques of Ptolemaic excess (most notably by Polybius).[792] Rather, Ptolemaic kings likely derived significant ideological and political advantage from such expenditures (from which key political actors benefited), and from their patronage to critical personnel, factions, and communities. Enabled by unusually high revenues, this largess served an important purpose, even as it competed with military expenditures and limited military ambitions outside of Egypt proper. It may also be the case that Ptolemaic kings who gained political security through courtly largesse had less need for risky military endeavors to enhance legitimacy at home.

Subjects of the Ptolemaic state bore an enormous financial burden. Assuming a population of 4 million, each person's share of the revenues of Ptolemy II was approximately 22.2 *drachmai*. By comparison, the "vectigal" (= *eisphora*) of the Macedonian kings extracted 4 *drachmai* per person, and this assumes Macedonian population of 300,000. The Egyptians were likely the most heavily taxed people in the Hellenistic Mediterranean. While revolt and rebellion are not always linked to the burden of high taxes, it is not difficult to see why Egyptian revolt became a chronic source of instability for the Ptolemaic state.

[792] E.g. Polybius 14.12.3. See Eckstein 1995: 75. Hauben 1981 argues that Polybius' criticisms were not entirely off the mark.

Chapter 13: Seleucid Finance

The Seleucid royal economy is the subject of a recent monograph by Makis Aphergis. The ambition and scope of Aphergis' monograph is impressive, and it has served as a major inspiration for this project. He has produced his own comprehensive estimates for Seleucid royal expenditures and revenues. However, in my opinion, he severely overstates the revenues of the Seleucid kingdom, arguing for peak annual revenues of 15-20,000 talents (90-120 million *drachmai*), with trough revenues falling to between 10,000-15,000 talents (60-90 million *drachmai*).[793]

A starting postulate in Aphergis' estimation of annual revenues is that that the Seleucid state was able to collect one silver talent from every 1000 inhabitants. He bases this estimate on the fact that Herodotus reports that the satrap of Mesopotamia collected an *artaba* of silver a day, which Aphergis estimates at 6000 talents a year, for a population which he estimates at 6 million during the Achaemenid Empire.[794] There is limited literary evidence for the total population of the Seleucid kingdom, and Aphergis largely derives his evidence for population from the vagaries of archaeological survey combined with reasoned speculation.[795] Based on limited survey evidence, he uses 200 persons per hectare as a rule of thumb for population densities, and then multiplies this by the rough extent of the empire at various periods.[796] While such surveys do give some sense of population density, their ability to produce accurate estimates of population is limited, especially when that error is compounded over a region as enormous as the Seleucid realm. Aphergis overestimates the population of the Seleucid kingdom, therefore, and his overall estimate for the extraction rate may also be too high. The result may be that he compounds his margin of error, so that his estimates for the income of Seleucid kings is too generous.

We should consider the implications of Aphergis' arguments. In 66, the revenues of the Roman Republic after Pompey's conquests totaled 85 million *denarii*—this figure including the mining revenues of Spain, the Balkans, and North Africa, as well as the revenue from the recently conquered rump of the Seleucid kingdom itself.[797] It would also suggest that Seleucid kings were significantly richer than their Ptolemaic counterparts—and yet we repeatedly hear of Seleucid kings robbing temples, something to which Ptolemaic kings never stoop.[798]

Aphergis' estimates, then, are likely far too high. As a starting point for a new estimate, we should begin with two source references for pre-Seleucid revenues from the territories that would eventually be controlled by the dynasty: the tribute list of Darius I, and the revenues of Antigonus One-Eyed in 313.

Revenues:

[793] Aphergis 2004: 252.
[794] Aphergis 2001: 80; Herodotus 1.92.
[795] Aphergis 2004: 57
[796] Ma 2008 offers staunch criticism of this technique.
[797] Plutarch *Pompey* 45.
[798] Taylor 2014b on Seleucid temple robbing.

The most detailed breakdown of the tributary potential of what became the Seleucid kingdom is the fifth century tribute lists of the Achaemenid Empire provided by Herodotus 3.90-94.[799] There are many problems with this data set. Herodotus' provinces do not precisely match those inscribed on the Behistun inscription. The fact that Herodotus imposed his own Greek geographic schema does cast doubt upon the reliability of his report for the revenues derived from any one district. Nonetheless, the overall figure is still usable. Given the importance of tribute collection to Achaemenid royal propaganda, it is quite plausible that a document enumerating regional tributes circulated, even if Herodotus only obtained his information second or third hand. While the details are no doubt imperfect, the overall figures should not be readily discarded. Indeed, it is not impossible, as O. Kimball Armayor suggests, that Herodotus started with the correct total, and then apportioned it amongst his flawed understanding of Persian assize districts.[800] It should be noted that Theopompus believed that the Persian king spent 20-30 talents a day on banqueting, or between 7200-1100 talents per year (it is unclear if in Attic or Babylonian talents).[801] Theopompus likely confused the king's household expenditure with outlay for banquets, given that the king's "household" expenditures in fact involved distribution of rations to administrators and soldiers on a massive scale.[802] The king's household was, in this instance, synonymous with the royal state, and the order of magnitude of Herodotus' figures (9880 Attic talents, not counting Indian gold), lines up quite well with Theopompus' report of royal expenditure, especially when in light of the fact that Achaemenid kings hoarded around 900 talents of bullion per year, so that in the 200 years from 530-330, they successfully stockpiled the 180,000 talents that fell into Alexander's hands (the enormous bullion hoard should also be seen as emphatic proof that the Persian king collected a significant portion of his revenue in bullion, as well as in kind).[803]

The Persians collected taxes in silver, as well as substantial donations in kind. For example, Nehemiah describes the Jews collectively paying 40 shekels of silver per day, on top of providing food for the governor's table.[804] Herodotus' account focuses on silver and gold bullion, but also notes in-kind contributions such as cavalry horses from Cilicia and grain from Egypt. Some of the cash income reported by Herodotus may also have been the cash value of goods that were ultimately delivered in kind.

Herodotus reports that Darius I had an income 9880 talents of silver, discounting the rich haul of gold dust that Achaemenid kings supposedly received from India. Of course, Darius I controlled substantially more territory than any Seleucid king ever did, in particular Egypt, Thrace, and the provinces beyond the Hindu Kush. Yet there is some reason to think that the territories controlled by the Seleucids, while smaller, may have been more prosperous. In particular, the foundation of cities, particularly the Syrian *tetrapoleis*, provided

[799] Laird 1921.
[800] Armayor 1978: 7.
[801] Athenaeus 5.145A.
[802] E.g. Polyaenus 4.2.32.
[803] Strabo 15.3.9, Diodorus 17.64.3, 66.1, 71,1, 80.3. Reports of bullion in Justin 11.14.9 and 12.1.3 total 190,000 talents.
[804] Nehemiah 5.15.

new engines of economic activities and tribute generation.[805] Secondly, Seleucid kings helped to monetize their territories, which likely would have lowered transaction costs and facilitated economic growth.[806] It is quite plausible that Seleucid kings therefore derived roughly 10,000 talents in revenues despite controlling less territory than their Achaemenid predecessors.

We learn from Diodorus that the empire of Antigonus One-Eyed, which at its peak in 313 covered much of the same territory as the Seleucid kingdom at its peak, had revenues of around 11,000 talents.[807] This amount may have included some revenues from Antigonus' bases in Greece, and included many parts of Asia Minor that only sporadically came under Seleucid control; it certainly included regions such as Bactria and Sogdiana that by the mid-third century had permanently fallen away from Seleucid control. Subsequent economic development in both Syria and beyond likewise would have allowed Seleucid kings to derive more from the regions over which they retained control.

The Roman annexation of Syria (combined with the holdings of Mithridates), brought the Republic revenues worth 35 million *drachmai*.[808] While some of this territory (i.e., Pontus) had never been under Seleucid control, it is safe to say that Seleucid revenues would have been much higher in the empire's peak.

The two pre-Seleucid figures both imply a rough order-of-magnitude estimate of about 10,000 talents, or 60 million *drachmai*. One way to test this figure is to review the military expenditures for the Seleucid kingdom, to assess the extent to which they correspond to revenue levels on this scale.

Expenditure

Military pay:

A pay receipt from Babylonia reports that a Seleucid military unit received for one-month pay of "249."[809] Regrettably, the ostrakon does not provide any other useful information, such as the unit of currency, the size of unit for which the pay is designed, or whether this includes the costs of rations. A few assumptions, however, are possible. The figure "249" most likely refers to *drachmai*. Given that these were garrison troops, probably mercenaries, the most plausible explanation, as Aphergis has noted, is that the figure 249 represents the monthly pay of a *lochos* consisting of eight men, each receiving 1 drachma a day, paid a total of 30 *drachmai*.[810] The additional nine *drachmai* may represent a bonus for the *lochos* leader (who in this case would come close to being a "10 stater man," paid 39 *drachmai*).[811] This would be in line with the scattered references for military pay from around the Hellenistic Mediterranean, with one drachma per day being a relatively standard payment.[812] Evidence from Alexander's army

[805] Grainger 1990; Kosmin 2014: 183-221.
[806] Aphergis 2004: 213-246.
[807] Diodorus 19.56.5; Billows 1990: 258.
[808] Plutarch *Pompey* 45.3.
[809] Sherwin White 1982: 55-64; Aphergis 2004: 202.
[810] Aphergis 2004: 202.
[811] Arrian *Anabasis* 7.23.3.
[812] Pritchett 1971: 1-15.

suggests that cavalrymen were paid three times that of infantry, and I will assume that the Seleucids continued this practice.[813]

Military Expenditures I: Intense warfare

Army: In 190, the revenues of the Seleucid kingdom were perhaps as high as they had ever been, given the success that Antiochus III had enjoyed in restoring Seleucid power. For that year, thanks to the Romano-Seleucid War, we have an excellent view of Antiochus military expenditures. At Magnesia, Antiochus fielded an army of 60,000 infantry and 12,000 cavalry.[814] Assuming the pay rates discussed above, with triple rates for cavalry, the total pay cost would be around 35 million drachma. Rations, assuming a rations package costing 50 *drachmai* per year for eight *medimnoi* of grain, oil, and wine, would cost 3.6 million, which should perhaps be rounded up to five million to factor in the cost of rations for attendants and other non-combatants. Barley for cavalry horses, assuming a 5 *medimnoi* per month ration and a price of 3 *drachmai* to the *medimnos* would cost another 2 million *drachmai* or so. With some additional costs factored in, Antiochus' field army in 190 required expenditures of perhaps 45 million *drachmai*.

Garrisons: I have guesstimated active Seleucid garrisons at around 10,000. Pay and rations for these men, coupled with other expenses such as maintenance for slaves, watch dogs, and horses associated with the garrison and logistical support might cost in the neighborhood of 5 million *drachmai* a year.

Navy: Antiochus' one-hundred ship fleet in 192 contained 40 decked ships (*tecti*) and 60 un-decked (*aperti*). The decked ships were presumably quinqueremes and above, while the un-decked were triremes and below.[815] Let us assume a crew of 400 in the decked ships, and 200 in the un-decked. With a pay of one drachma per day, the total cost for such a fleet would be roughly 12 million *drachmai*. Rations, as well as tackle, sailcloth, and other equipment could easily drive fleet-related expenses to above 20 million *drachmai*.

Table 13.1 Estimated military expenses, intensive warfare (in *drachmai*):

Field Army	45 million
Garrisons	5 million
Navy	20 million
Total:	70 million

In all, it would not be unfair to estimate Seleucid military costs of 70 million *drachmai* during the Syrian War. This would have severely strained the state's

[813] Diodorus 17.64,6; Curtius 5.1.45; Sekunda 2010: 465.
[814] Livy 37.37.9.
[815] Livy 35.43.3.

finances, although at the end of 190, Antiochus was able to make an initial down payment of 3 million *drachmai* following the Battle of Magnesia.[816] Indeed, the Romans may well have saved Antiochus a great deal of money by killing so many of his soldiers and sailors, so that much of the pay owed for the year 190 was never issued. Nonetheless, the war and the subsequent indemnity clearly strained Seleucid coffers to the breaking point. Antiochus struggled to make the 15 million *drachmai* indemnity payment to Manlius Vulso the next year, being only able to pay 9 million, so that Manlius dispatched a legion to collect the rest.[817] Antiochus seems to have been severely short of cash; despite another two cycles of revenue collection, he risked plundering a temple in Elam, and was killed in the process.[818]

Nonetheless, Antiochus felt confident in assuming military liabilities totaling roughly 70 million drachmai per year, and this figure must have been within the capacity of the Seleucid kingdom to pay. Given the seriousness of the Roman war, Antiochus likely appropriated the bulk of his annual revenues, and probably dipped into cash reserves as well. The 70 million *drachmai* needed for military expenditures likely represented perhaps 100-125% of his annual revenues, putting these at between c. 50-70 million *drachmai*. This fits well with the source attestation for the revenues of the Achaemenid kings (60 million) and Antigonus One-Eyed (66 million). Thus I would argue that 60 million *drachmai* per year was the general level of Seleucid revenues during periods of relative strength. This figure would have dropped precipitously during the many periods of internal crisis, and concurrent territorial losses, that so often afflicted the Seleucid kingdom.

Peacetime military expenditures would have been significantly lower, of course, perhaps by as much as half (c. 30 million drachma/5000 talents), although the sources do not provide an adequate overview of Seleucid military deployments outside of moments of intense warfare.

Nonetheless, there is every reason to believe that in peacetime kings spent great sums of money maintaining a peripatetic royal court, paying administrators, engaging in royal benefaction (particularly in cities and constructing infrastructure). Such expenses likely involved millions of *drachmai* per year, but given the state of the sources, any attempt at reconstruction is strictly speculative.[819]

A maximum revenue of 60 million *drachmai* nonetheless meant that the Seleucid king, in theory, was a very rich man, enjoying revenues matched only by the Ptolemaic king. It is notable that the Roman indemnity of 15,000 talents, paid in two down payments (500 and 2500), and then twelve 1000 talent installments, was the largest indemnity Rome demanded from any defeated state. In comparison, Carthage paid only 10,000, spread out in small payments over the course of fifty years. The enormous demand made on the Seleucid royal treasury reflects the fact that the Scipio brothers knew what the Seleucid kingdom could afford to pay.

---

[816] Livy 37.45.14.
[817] Livy 38.37.11.
[818] Diodorus 29.15; Justin 32.2.1-2. See Taylor 2014b: 230.
[819] Aphergis 2004: 207-211 speculates that such expenditures together could cost around 25-35 million *drachmai*, but admits his estimates are highly speculative.

Chapter 14: War and Finance: a Synoptic View

A Check on Forensic Accounting

Now that I have produced estimates, rough as they are, for the five powers under investigation, it is time to explore the implications of the findings in a comparative framework. For the sake of this comparative exercise, I have converted all of the estimates into Attic *drachmai.*

Table 14.1: Revenue Estimates for the Five Major Powers

	Peak revenues	*Trough revenues*
Ptolemaic kingdom:	75 million (c. 270s)	35 million (c.200s)
Seleucid kingdom:	60 million (190s)	40 million (160s)
Rome:	13 million (200-157)	3-4 million (III C)
Carthage:	12 million (c. 218)	9 million (c.190s)
Macedonia:	12 million (IIIC)	8 million (196-168)

We can test the validity of these basic figures by looking at the indemnities imposed by Rome upon defeated powers. It is important to remember that all of these indemnities were imposed as part of a conditional surrender, when the defeated powers still had some capacity to resist. As a result, there was some correspondence between the indemnities and what these powers were reasonably able to pay.[820] For the purposes of proofing these estimates of annual revenues, the proper focus should be on the annual payment, not the overall sums demanded.

Table 14.2: Annual indemnity payments demanded from each power

Defeated Power	*Annual Rate*
Carthage	
First Punic War	1.32 million
Second Punic War	1.2 million
Macedonia	
Second Macedonian War	300,000
Third Macedonian War	600,000[821]
Seleucid kingdom	6 million

The ratio between the indemnity payments of Carthage and the Seleucid kingdom, and my estimates of their revenues, are virtually identical: the

[820] Le Rider 1993 for the plausible payability of the Seleucid indemnity.
[821] The annual payment after the Third Macedonian War was technically not an indemnity, but re-occurring tribute paid to the Roman state.

indemnity ratio comes to 1.2:6, while my estimate for peak Carthaginian revenues to peak Seleucid revenues is likewise 1.2:6. In both instances, the Roman indemnity claimed approximately 10% of total revenues.

The Macedonian *vectigal* paid after the destruction of the monarchy in the Third Macedonian War represents 7.5 % of my estimate for pre-war revenues, and is therefore more or less in keeping with the c. 10% imposed on the pre-war revenues of both Carthage and the Seleucid kingdom.

The Macedonian indemnity following the Second Macedonian War, on the other hand, seems low compared to my estimates of Macedonian revenues in the early second century. It must be noted that I am averaging the better times of the 180s and 170s with what may have a grim fiscal environment in the 190s when the indemnity was imposed—it may be that before Philip set about reviving Macedonian mining and agriculture, his revenues had fallen to closer to three million *drachmai* per year, and that the Romans adjusted their demands accordingly. Nonetheless, the consistent ratio between the low Macedonian, modest Carthaginian and sky-high Seleucid indemnity payments suggests to me that my estimates for their averaged annual revenues are basically correct.

Revenue and Military Success

Returning to the estimates produced in each of the finance chapters, it is striking how disconnected these numbers are from the overarching political narrative of the period. The two wealthiest states, the Ptolemaic and Seleucid dynasties, suffered steep declines in the second century, despite having state revenues in the third century that were many times greater than those of the ultimate victor, the Roman Republic. In the 270s, the Ptolemaic kingdom enjoyed revenues perhaps twenty times greater than Rome's.

Some aspects of the chart do correspond well to the geopolitical history of the period. The near equivalence in the maximum revenues of the Ptolemies and Seleucids, for example, reflects the back-and-forth nature of the Seleucid wars. The triumph of Antiochus III in the 6th Syrian War comes at a time when Ptolemaic revenues had plummeted as rebellion denied the dynasty access to key tributary territories, while Seleucid revenues were at their peak thanks to Antiochus' energetic campaigns. Macedonia comes across as the weakest of the Hellenistic kingdoms here, with substantially lower revenues than its counterparts in Antioch and Alexandria. Nonetheless, Macedonia's third century revenues, perhaps 13 million *drachmai*, far exceeded those of contemporary Rome, and perhaps matched those of Carthage—the two candidates for the "Cloud in the West" so feared the Greek statesmen in 217.[822]

The stunning story, from the perspective of finance, however, is the startling rise of Rome. For much of the third century, it is doubtful that Roman state revenues much exceeded 4-5 million *denarii*. The Republic received far and away the lowest revenues of any militarily prominent state in the Mediterranean. Average revenues increased, perhaps three-fold with Rome's rise toward hegemony in the second century. Nonetheless, even during the second century, Rome was never fiscally dominant. Rome in victory does not seem to have had revenues all that much higher than Carthage in defeat.

[822] Polybius 9.37.10.

Rome was admittedly better situated for military success than the chart above indicates. In particular, the cost-per-soldier was radically lower for the Roman Republic than it was for her Hellenistic counterparts. The average military pay for the Eastern Mediterranean seems to have hovered around 1 *drachma* per day, at a time when the Roman soldier was paid less than two obols (three sextenal asses). Given that personnel represented the largest single expense for military activities, the savings Rome garnered by paying its troops a third less than competitors were substantial. The chart below attempts to provide a degree of perspective by listing the number of infantrymen that could be paid (excluding rations and other costs) by the peak estimated revenues. For the Hellenistic powers, I apply a pay rate that hovered around 1 *drachma*, with some evidence that Macedonian pay-rates were somewhat lower at 4 obols per day, and that Ptolemaic pay-rates may have been 9 (Ptolemaic) obols per day. I have excluded Carthage, where evidence for military pay is non-existent. I also consider the fact that Rome obtained the services of her allies for only the cost of rations (c. 30 *denarii* per annum by my estimates). I have therefore assumed that the average cost of keeping a Roman/Italian soldier in the field (here assuming a 2:3 ratio) was in fact around 60 *denarii* a year.

Table 14.3 Number of infantrymen that could be paid with peak annual revenues:

		Daily pay:
Rome:	215,0000	3 asses
Seleucid kingdom:	200,000	6 obols (Attic)
Ptolemaic kingdom:	185,000	9 obols (Ptolemaic)
Macedonia:	62, 500	4 obols (Attic)

Rome is at the top of the chart, but for all intents and purposes, the Seleucid and Ptolemaic dynasties should have been financially capable of fielding roughly as many soldiers. Both states seem to have paid their troops somewhat more that Rome paid her legionaries, but both also had substantially larger revenues. Despite their fiscal resources, neither dynasty managed to mobilize much more than 80,000 troops, well under half the number they could have in theory afforded to pay. The maximum Roman mobilization, 175,000 in 190, was in fact quite close to the theoretical Roman maximum. This suggests different priorities in spending, with the Romans devoting more of their resources to funding military operations, while the two dynasties must have directed a greater proportion of their revenues towards non-military expenditures.

Court and Army:

As we have seen in Part I, in 217 Carthage fielded an army of upwards of 170,000. In 190, Roman armies peaked at approximately 175,000. The peak revenue of each Republic was modest, c. 10-15 million *drachmai*/*denarii*. Yet each republic managed to raise armies that were over twice the size of the c. 75,000 strong forces achieved by the two richest Hellenistic dynasties, the Seleucids and the Ptolemies, both states with revenues likely in excess of 60 million *drachmai* (and perhaps as high as 90 million). The fundamental variable between the two

sets of powers was that Rome and Carthage were republics, unlike the Seleucid and Ptolemaic monarchies.

The past decade has seen significant work on the Hellenistic royal court, most of it examining the court as a social, cultural, and political institution.[823] But it was also a mechanism for the mass distribution of resources, especially money, to the elites whose collaboration was a prerequisite to rule. For Hellenistic kings, it was essential to live in a sort of splendor that readily set them aside from even their wealthiest courtiers. *Tryphe*, high living, was a royal virtue.[824] Unfortunately, there is only limited evidence for the cost of maintaining such a royal lifestyle. Athenaeus reports that Alexander the Great spent 10,000 *drachmai* per night on modest feasting, with perhaps 60 or so guests.[825] While I do not think this should be seen as an accurate report of Alexander's banqueting expenditures, the order of magnitude may at the very least reflect the sort of extravagance to which successor kings aspired. At this rate, "modest" banqueting would cost roughly 3.6 million *drachmai* per year, roughly the cost of keeping four Roman legions and their allied wings in the field. In short, royal sumptuary display was expensive, and competed with military expenditure for a share of the total state budget. Indeed, kings seem to have found themselves unable to cut back on sumptuary display during wartime, if only because in times of political stress they relied even more on the support of the courtly elite.

War as profit:

It is a longstanding assumption that warfare in the ancient world was immensely profitable in the short term, thanks to accumulation of loot.[826] Some wars indeed were highly profitable, bringing in far more loot than was expended on military operations.[827] On the whole, however, warfare in the short term operated at a loss, in that it required the state to subsidize military operations with internal tax revenue to compensate for the difference between short-term profit (loot) and military expenditures.

This is not to downplay the importance of loot in the political economy of the period. It is inaccurate, however, to characterize loot as the exclusive objective of warfare,. But for every short-term raid directed at a sudden dividend of booty, there were long dragging campaigns that required protracted expenditures for supplies and pay. We are best informed for the Roman Republic, which obtained roughly 100-125 million *denarii* in loot from 200-157. A substantial sum, but only enough to cover roughly one quarter of total military expenditures. Even when indemnities are factored in, Roman warfare still ran a deficit of over 100 million *denarii* from 200-157, a deficit that had to be covered through other sources of revenue, in particular citizen taxation.

The Romans, of course, were not the only state to impose indemnities upon defeated powers as a way of recouping war costs. Indemnities are best attested outside of Rome in the Seleucid kingdom, particular under Antiochus

[823] Most notably Strootman 2014. Also Strootman 2012 and Dreyer 2011 (both on the Seleucid court) as well as Ma 2011 (the Antigonid court).
[824] On royal parties, see Murray, 1996. For Seleucid *tryphe*, see Kosmin, 2014: 160-164.
[825] Athenaeus 4.146 C
[826] For greed as a war motive in the Roman Republic, Harris 1979, also Kay 2014: for the importance of war in Hellenistic states, see Austin 1986; Aphergis 2004.
[827] Rosenstein 2011 discusses profitable Roman military operations in the second century.

III. Seleucid indemnities, however, were usually imposed on rebellious regions, and may have been primarily intended to cover tax arrears. Thus Antiochus III extorted 300 talents from the dynast of Media Atropatene, characterized as delinquent tribute owed by his rebel father.[828] Seleucid kings were also quite open to "shake-down" style indemnities. Antiochus III, for example, demanded an undisclosed payment from the Indian dynast Sophagasenus during his anabasis in exchange for peaceably leaving the Indus valley, and later indulged in an even more transparent extortion against the Gerrhae of the Arabian coast.[829]

For the Romans, indemnities were a cornerstone of war finance in the second century, part of a "three legged stool," the other two legs being *tributum* and loot. From 200-157, around 40% of all wartime expenditures were covered by the 175 million *denarii* of indemnities paid by Carthage, Macedonia, the Seleucids as well as a handful of minor states. Indemnities formed the most important aspect of Roman war finance in the early second century, bringing in more money than all of the loot paraded in triumph (c. 100 million *denarii*). Still, for every year until 167, the citizens of Rome paid direct taxes to cover the remaining c. 100 million *denarii* of military expenses. The massive indemnities could cover only a portion of the immense cost of ongoing military operations

While much has been written about the importance of war profits in the state economy, the evidence of the above chapters suggests that the exact opposite was true: war drained state wealth, while demilitarization led to revenue surplus. It was only after Rome imposed forced demilitarization upon Carthage and Macedonia that each state began to accrue an impressive surplus. Such healthy balance ledgers owed to the fact that Rome no longer permitted defeated states to expend money on large standing armies, fleets, or elephant herds. Carthage seems to have had 48 million *drachmai* on-hand in 192, while the Macedonian treasury contained roughly 35 million *drachmai* when it was finally opened in 168, after three years of intense wartime expenditures. In contrast, the treasuries of the Roman Republic barely exceeded 20 million *denarii* in 157. Most of the increased revenues of Rome's newly acquired empire in the second century were spent on the increased outlay necessary to maintain that empire.

Admittedly, I am only referring to economic motives from the point of view of an abstract "state" and its centralized institutions. War could still be profitable for individuals actors associated with the state in one way or another, including soldiers, merchants, and courtiers, etc., and some of these actors would have had motive to lobby for military actions that they thought would enrich them even if the state as a whole lost money as a result. Shatzman, for example, has noted the enormous personal wealth that accrued to members of the Roman aristocracy in the second century.[830] Nonetheless, war usually carried with it both political and fiscal opportunity cost, in that revenues expended on military operations, in principle, could have been spent on items that would have benefited various constituencies within the state, such as gifts to courtiers, public works, religious festivals, public spectacles, and so on.

---

[828] Polybius 8.23.4.
[829] Money extorted from the Indian dynast Sophagasenus, Polybius 11.34.12. Gerrhae: Polybius 13.9.5.
[830] Shatzman 1975.

For most states, therefore, loot did not produce an overall profit. Nonetheless, loot was an important component of wartime finance. A major military operation required substantial outlay for pay, equipment, and supplies. However, the income flow of states was relatively limited. Only so much agricultural surplus could be skimmed off the top, both because of the limited nature of the surplus, and also because of competition between state taxation and rents collected by the elite.[831] Productivity could not be forced to spike when military payments needed to be made. Taxes also had to be collected following the pace of the agricultural year, while armies generally required pay and supplies year-round. Even states with annual revenues that were on average sufficient to cover annual military costs might find themselves struggling to make particular military payments, owing to peaks and valleys in their own cash flow throughout the year.

The sudden spike in expenditure due to warfare could be covered through spending down reserves, although frequent wars must have limited the reserves upon which states could draw. This is where loot proved particularly important: it allowed states to smooth the spike in wartime expenditure through the revenue generated by military operations. Loot was therefore a central tool of war finance, putting a premium on military victory.

War as Investment:

Warfare seldom turned a short-term profit in the form of loot and indemnities. But military operations could ensure long-term control of tributary territories. In this sense, military activity can be seen as a form of state-level investment, with states investing tributary resources in military operations that, in the short term, never fully recouped their cost through loot or indemnities. Yet if military operations succeeded in maintaining or extending control of tributary territories, they could bring a long-term return to ancient states. As we have seen, all states operated with a long-term surplus after averaged military expenditures were accounted for, surplus which they expended on public works, royal courts, religious activities, etc.

We can crudely parse this investment into two basic types. Short-term investments involved maintaining standing military forces in tributary territories in order to maintain continuous control. Many of these soldiers might fall under the rubric of "garrison troops," although large field armies and fleets could also be retained to pacify restive tributary provinces.

Longer-term investment involved the expense of campaigns of conquest designed to expand control of new tributary resources. All of the states were themselves the beneficiaries of previous "investment": the Roman Republic by 264 benefited from a long series of wars in Central and Southern Italy in the fourth and early third centuries; Carthage secured a territorial empire in Libya in the late fourth and early third centuries as well, while all of the Hellenistic dynasties inherited the traumatic investment in blood and treasure that characterized the wars of Diadochoi from 323-272. Rome's own pan-Mediterranean conquests from 200 to 167 operated at a loss that was filled

[831] Wickham 1984 emphasizes the competition between the state apparatus and members of the elite to collect the finite surplus as either taxes to the state or rents to the elite, although he suggests that the ancient world was characterized by the predominance of taxes.

through citizen *tributum,* but these conquests laid the groundwork for the stable military tributary complex of the Late Republic and Empire.

Loans:

Public debt is the predominant fiscal mechanism in the modern world that allows states to pay for long term investment, deficit spend, and (through the use of short-term bonds) smooth over discrepancies between the ebb and flow of expenditures and the uneven collection of revenues. Despite modern-day deficit hawks, public debt is a powerful and indispensable tool for government at all levels.

The great states of our period, by contrast, made only limited use of debt. This was in no small part because of the ideology associated with debt in the ancient Mediterranean: the debtor was inevitably inferior to the creditor. As such, for a king to be in debt to another individual was to put himself in an intolerable position. It is not surprising that when an army mutiny forced Antiochus III to accept a loan from his *epi ton pragmaton* Hermeias, shortly afterwards the king had his minister assassinated, and then publically executed his entire family. There were other reasons why Antiochus took these drastic measures, but a loan meant to control and humble him must have been one of Hermeias' cardinal sins.[832] It is notable that when Philip V suffered a temporary cash shortage while campaigning in the Peloponnese, he remedied it through selling his gold tableware, rather than seeking a short-term loan from his court or his allies.[833]

If kings hesitated to accept loans from individuals, there remained the possibility of states lending to other states. Carthage sought a loan of 2000 talents from Ptolemy II towards the close of the First Punic War, which was denied in the interest of maintaining good relations with Rome.[834] The Romans obtained grain on credit from Hiero II, the King of Syracuse, a loan perhaps made palatable by the fact that Syracuse was a dramatically weaker state than Rome, which allowed the Romans to defer repayment as necessary.[835]

Ironically, perhaps the most common form of "loan" in the ancient world was simply to delay payments, particularly to soldiers. This was, however, a risky option, as army mutinies were usually tied to late military pay, including the Seleucid mutiny in 220 discussed above, as well as the mutiny of Roman soldiers in Spain in 206.[836] Perhaps the most disastrous consequences of a "forced loan" to soldiers were suffered by Carthage, as it was unpaid mercenaries who sparked the near-catastrophic Truceless War.[837]

The innovation of the medieval period which allowed for the rise of state debt was chopping debt into small pieces and distributing it widely among a large body of creditors, so that no single creditor or junta of creditors could hijack the indebted state.[838] The republican nature of the Roman state created a

[832] Polybus 5.50.1-7.
[833] Polybius 5.2.10.
[834] Appian *Sic.* 1.
[835] Loan from Heiron (on the short term of six months): Livy 23.21.4-5; extension of the loan, 23. 38.12-13.
[836] Polybius 5.2.10.
[837] Polybius 1.66.5.
[838] Stasavage 2011 on the development of public credit in Medieval Europe.

brief moment when structures of widely held public debt might have developed. The large citizen body created the possibility that debt could indeed be broadly distributed without necessarily endangering the autonomy of the state. During the dark days of the Second Punic War, the senate cut a deal with nineteen *publicani* to supply the army in exchange for promise of payment.[839] When the senate found that funds were still lacking, it ultimately converted the loans into leases of public land with the nominal rent of one *as* per *iugerum*. In theory, this contingency could have become the basis for a program of structured state debt, in which *publicani* provided services for credit, using public land as collateral. However, the credit arrangement was never repeated. This was in part due to bad blood that developed between the senate and the *publicani*, hinging on accusations that they defrauded an insurance pledge the senate had granted them through spurious claims. More importantly, the dramatic rise in revenues following the Second Punic War, especially thanks to the acquisition of the Spanish mines, negated any need for large-scale public credit arrangements.

[839] Livy 24.18.

Conclusion War, Finance and Empire

Table 15.1: Maximum mobilizations and Peak Revenues

	Maximum Mobilization:	Peak Revenues (Attic *drachmai*):
Rome:	175,000	13 million
Carthage	170,000	12 million
Seleucids	80,000	60 million
Ptolemies	75,000	72 million
Macedonia	45,000	12 million

Military Tributary Complexes?

The reader should be immediately struck by the significant disconnect between coercive power and economic resources. Rome and Carthage were both able to maintain enormous military mobilizations with a relatively modest resource base. Despite having revenues of upwards of five times that of Rome and Carthage, Seleucids and Ptolemies were only able to achieve half the peak strategic mobilization fielded by the two western republics. Inferior revenues correlate to inferior strategic mobilization in only one instance: Macedonia.

The notion of a stable military tributary complex, in which a military apparatus facilitates the extraction of tributary revenues, which in turn mostly go to fund military forces, would as a theoretical construct predict a strong correlation between fiscal and military resources. This would, of course, presume a completely frictionless conversion of money into military manpower. In a truly neoliberal world with an infinite supply of mercenary labor, the correlation would indeed be far more direct. But the number of mercenaries was in fact finite, and mercenaries could never prove more than a free-market supplement to pools of military manpower that had to be established, nurtured and organized by the states themselves, usually in the form of citizen manpower, as well as militarized subject populations. It was the variance in the size and flexibility of these internal manpower pools that explains the extraordinary disconnect between state fiscal resources and the scale of strategic mobilization.

The mercenary is a figure who reflects the confluence of military recruitment and state finance: a soldier who can be purchased on demand. The Hellenistic age was less an age of mercenaries than is often depicted.[840] Most powers deployed mercenaries, but there were not enough mercenaries to fill the ranks. In 217, for example there were 1200 mercenaries in the field army of Philip V, 13,000 serving under Ptolemy IV, and 7500 in the field army of Antiochus

[840] e.g. Griffith 1935.

III.[841] In this moment of intensive warfare (when every single major state was at war), there were only around 20,000 mercenaries available for service in the major field armies of the Eastern Mediterranean. Even if an equal number manned garrisons, it is highly doubtful that there were ever more than 40,000 mercenaries available for service at any given time in the Eastern Mediterranean.

While mercenaries were in fact quite effective on the battlefield, there were simply not enough of them. This negated what would seem like an obvious geopolitical advantage for states with superior fiscal resources, in particular the Ptolemaic and Seleucid dynasties. These states could not automatically convert money into men, especially since during a time of war the demand for mercenary labor strained the limited supply. Thus even wealthy states saw the size of their armies limited by the size of their internal sources of manpower, namely citizens, cleruchs, and militarized subject people, that could at best supplemented by mercenary manpower.

Exploitation in Cash, Exploitation in Men:

The Romans achieved Mediterranean hegemony in part through an enormous strategic mobilization from the Italian population. The Romans primarily exploited their Italian allies for military service (albeit self-finance by the communities sending troops), rather than for direct tributary payments. Exploiting subject peoples for their military resources had distinct advantages, namely that it contributed to an exceptionally large pool of military manpower.

There was however, a significant downside: armed subjects could be dangerous, since unlike citizens, enmeshed in webs of obligation, participation, privilege, and identity, subjects were usually aware of their subpar status. Sufficiently armed and organized, they might either use force to lobby for an improved position within the state, or attempt to rebel from it. Polybius, for example, directly linked the Ptolemaic experiment in arming Egyptian peasants to the revolts that shook the upper Nile.[842] In 187, Elamite fighters killed Antiochus the Great while he tried to despoil a native temple, three years after thousands of Elamite archers had served in his army at Magnesia. The Libyan revolt of 241, sparked by unpaid mercenaries, nearly destroyed the city of Carthage.[843] The defection of allies during the Second Punic War posed a serious threat to Rome, although not as grave as the rebellion of militarized *socii* that broke out in 91.[844]

Militarized subjects also maintained a degree of bargaining power over taxation, even if often tacit, which likely resulted in lower overall tax rates. The Romans did not require *tributum* from her *socii*. While Italian communities did self-finance the units they dispatched to Rome, this burden was made lighter by the fact that Rome provided rations to allied contingents.

Nonetheless, all of these risks were outweighed by the rewards of subject manpower. Even the two states that made the least use of subject manpower, the Antigonids and Ptolemies, were moving towards increased mobilization of

[841] Philip's mercenaries in 217: Polybius 5.2.10. For mercenaries in Antiochus' and Ptolemy's armies, see above, pp. 71 and 80.
[842] Polybius 5.107. There is still much debate as to whether Polybius' analysis is indeed correct.
[843] On the Libyan revolt and the "Truceless War" that followed, see Hoyos 2007.
[844] On the Social War, see Dart 2014.

subjects as the second century progressed. Perseus' army contained Gauls, Thracians, Paeonians and Illyrians, most of which were not mercenaries, but rather inhabitants of extended Macedonian frontiers. While Polybius claimed it was folly to arm the Egyptian phalangites, the defeat of the Ptolemaic cleruchs at Panion may have sped the transition towards paramilitary units of *machimoi* that become increasingly common over the second century.[845]

A Theory of State Failure and Success:
Randall Collins provides four interlocking factors that influence state success, and his analysis is relevant to the destinies of the five great powers we have been discussing. Collins himself sought to explain the sudden collapse of the Soviet Union in 1991, but was informed by other historical examples, including Rome and Carthage (although he ignored the Hellenistic powers).[846]

1. Logistical Load: By this, Collins defined the administrative effort required to rule territory and extract resources. States with high logistical loads are disadvantaged in interstate competition compared to those able to operate with a more economical footprint. Collins was informed by the heavy bureaucracy of the Soviet state. Looking back to the Mediterranean, the Romans enjoyed a surprising light logistical load, and Collins' concept certainly explains why the Romans were so hesitant to annex territory, which would bring increased administrative burdens and further strain manpower resources with additional occupation requirements. The need to lighten logistical loads also explains the preference for tax farmers for both Italian *vectigal* and provincial revenues, even if citizen *tributum* was collected through Rome's limited state structures.[847] Jonathan Prag has noted that the Romans kept relatively secure provinces such as Sicily almost devoid of Roman troops, relying instead on local levies summoned by the governor.[848] On the other end of the spectrum, the Ptolemaic dynasty was straddled with an intensive and expensive administrative system, which consumed a fair share of the extensive tax revenues of the region. Furthermore, the need to maintain control over the Egyptian *chora* meant that Ptolemaic kings hesitated to fully mobilize their cleruchs, the most effective aspect of their army, for external operations. The logistical load of occupying and administering Egypt hampered further territorial expansion. We know little about the mechanics of Carthaginian imperialism, but aside from recruiting officers in Spain and Libya, the Carthaginian administrative footprint seems to have been quite light. Macedonia and the Seleucid kingdom hold a middle ground here. The Macedonian kings farmed out a great deal of administrative busy-work to the civic structures within the kingdom, a decentralized administrative apparatus that seems to have worked quite well, especially given the modest geographical scope of the Macedonian kingdom. But limited Macedonian resources made it difficult to militarily occupy and administer territory outside of Macedonia proper, which explains the basic strategic

[845] On Egyptian *machimo*i, Fischer-Bovet 2014: 162-166.
[846] Collins 1995: 1554-1560.
[847] On the development and use of *publicani*, see Badian 1972. See Levi 1988 for additional discussion of tax farming in a comparative framework.
[848] Prag 2007, 2010.

modality of garrisoning key strategic points in Greece as a regional hegemon, rather than more direct forms of administration and control. The establishment of cities was the primary method by which Seleucid kings controlled and administered territory, applying the Macedonian strategy of administrative decentralization though subject cities to the vast expanses of Seleucid space. Ultimately, however, the enormous territorial expanse of the Seleucid kingdom meant that the overall logistical load was in fact extremely high. Indeed, the vast majority of attested Seleucid military operations involved not external conquest, but rather trying to maintain or regain territorial control threatened by invasion, succession or rebellion.

2. Marchland vs. Interior: Collins uses the term "marchland" to describe states that have strong natural borders that reduce their exposed frontiers, as opposed to what he terms "interior" states that have extended and geographically open frontiers that require more resources to actively defend. In this mode of analysis, we see a marked advantage for Rome. Italy was defined by coastal frontiers, and however much the Mediterranean produced connectivity between merchants and caboteurs, the sea was still a barrier for an army. It took a sophisticated force capable of coordinating seaborne transport and logistics to launch an invasion. There was only one major seaborne invasion of Italy, that of Pyrrhus in 280; his armada was scattered by a sudden storm, and he regrouped his shaken troop transports only with some difficulty.[849] The Alps formed significant, if not impenetrable, obstacles to land invasion. Cato referred to the Alps as *muri vice tuebantur Italiam* "like walls that protect Italy."[850] This did not mean that the northern frontier lacked significant threats, and during the late third and early second century, the Romans were forced to devote significant forces to the region, which of course was also Hannibal's daring invasion route. But it was the only major frontier the Romans needed to worry about, freeing up military resources for expeditionary operations.

The Ptolemies, so long as they could hold Koile Syria, also had limited exposed frontiers, and might therefore best meet Collins' criteria of a "marchland." Indeed, during the third century, core territories in Egypt proved inviolate. In contrast, Roman Italy suffered three major invasions during the same period (Pyrrhus, the Gauls, and Hannibal). The loss of Koile Syria, largely though the defection of the forces garrisoning the region removed many of the natural choke-points that had separated the core of the Ptolemaic kingdom from the armies of their Seleucid rivals, and paved the way for the near catastrophe of the Sixth Syrian War.

Deserts provided some stability to Carthage's Libyan core, although the open frontier with Numidia was ultimately a profound vulnerability that contributed to the defeat in the Second Punic War and sparked the disastrous events of the Third. The various Numidian chiefs along the western frontier were at once potential allies, but also potential threats.

Macedonia was much closer to an "interior state" in large part because of an exposed northern frontier, which left the kingdom vulnerable to the raids of various tribal peoples. The required Macedonian kings to devote considerable

[849] Plutarch *Pyrrhus* 15. 1-5.
[850] Servius *Ad. Verg. Aen.* 10.12.

resources, including citizen manpower, to guarding their own boundaries, which distracted from imperial operations elsewhere. Antigonus Doson, for example, was forced to rush away from his victory at Sellasia before he had settled affairs in the Peloponnese in order to deal with a sudden northern incursion.[851]

3. State Fragmentation: The most impacted "interior" state was without question the Seleucid kingdom, and this leads us to Collins' third principle, an extension of the "Interior State" principle, which suggests that interior states, hampered by extensive threats along extended (and often overextended) frontiers, tend to fragment. No Hellenistic state would seem to illustrate this principal better than the far-flung Seleucid kingdom, out of which at least four major independent states emerged: Bactria, Parthia and Pergamon in the third century, and the Hasmonean Kingdom in the mid-second.[852] By the second century, individual cities were fissioning away, usually in the context of civil war.[853] The result was that while the Seleucid state remained a powerful state after the Battle of Magnesia, it was structurally fragile.

4. Based on his first three principles, Collins concludes that "cumulative processes bring periodic long-term simplification, with massive arms races and showdown wars between a few contenders." As we have seen, this was certainly the case in the third century Mediterranean. We do see the naval version of an "arms race," with Hellenistic powers out-doing each other to build bigger and more ostentatious warships.[854] Hegemonic warfare claimed Carthage and Macedonia, and substantially reduced the territory and power of the Ptolemaic and Seleucid dynasties. Collins notes that these hegemonic wars show "the highest level of ferocity." There is no question that the wars of the period were extremely violent. Notable was the willingness of combatants to engage in massive pitched battles, like Zama, Raphia, Cynoscephalae, Magnesia, Pydna, etc. which resulted in massive casualties.

5. In the confrontation of the few remaining major powers, Collins suggests that overextension of military resources (both in terms of manpower and money), can lead to "rapid unraveling of military power." This mode of analysis perhaps applies better to states that unravel on their own (or with the slightest of nudges from external pressures, such as Western Rome in the fifth century AD and the Soviet Union in the 20th). Carthage and Macedonia were defeated at the height of their military prowess. Antiochus III led a restored empire that was the strongest it had been since the glory days of its founder when he was defeated by L. Scipio. If anything, this postulate does describe the decline of Seleucid power on the Iranian plateau in the second century; as the Seleucids went from triumphing in the Sixth Syrian War in 171-168, to abject defeat by the Parthians in the 140s and 130s. If any power became over-extended, however, it was Rome. With the grueling wars in Spain in the late second century, characterized by setbacks and

[851] Polybius 2.70.5.
[852] On Seleucid dissolution: Lerner 1999.
[853] Kosmin 2014: 222-251.
[854] Murray 2012.

outright defeat, Rome appears as an imperial state maturing under ongoing military and logistical pressures--but still a good 600 years away from collapse.

Stalemate and lack thereof:

Collins notes that hegemonic warfare often ends in stalemate, simply because rival powers are often closely matched in terms of resources. This certainly occurred between the Seleucids and Ptolemies, both powers with revenues from 60-75 million (Attic) *drachmai*, and land forces of roughly 70-80,000, based around cleruch phalanxes equally around 20-30,000 strong. The stalemate of the Syrian Wars reflects the basic equity of resources between the two powers, although it was exacerbated by the geographic bottleneck of Koile Syria. Most of the advantages either power managed to obtain during the third century were based on temporary internal problems, namely the Seleucid succession crisis in the 240s and Ptolemaic dynastic crisis in the last years of the 200s.

Rome and Carthage were also quite equally matched, in terms of the size of strategic deployments and also in the general level of finances (although Carthage was likely better off fiscally during the First Punic War, and for much of the Second, which Rome struggled to finance. Warfare between them was indeed characterized by long periods of stalemate: the First Punic War lasted twenty-two years; the Second lasted sixteen. For comparison, despite the stalemate in the trenches, World War I lasted only four. Indeed, had it lasted as long as the Second Punic War, it would have only ended in 1936! The entire sixty-three years of evenly matched Romano-Punic confrontation from 264-201 exceeded the protracted face-off between the United States and the Soviet Union, a mere forty-six years from 1945-1991. The stalemate between Carthage and Rome was largely broken by contingency, namely the fact that one leading Roman aristocrat, Scipio Africanus, was a vastly superior strategic thinker, diplomat, and tactical commander than most of his equally well-resourced Carthaginian counterparts. [855]

So hegemonic warfare between evenly resourced powers did indeed produce long stalemates in the ancient Mediterranean. But Roman victories in the east were by comparison shockingly decisive. There were of course some minor setbacks: Philip V's phalanx repelled Roman besiegers in the Thessalian town of Atrax, and Perseus badly mauled a Roman cavalry detachment at Callinicus.[856] But any stalemate lasted only a few years. In the Second and Third Macedonian Wars, a single crushing victory sufficed to end the war.

It would seem superficially that Rome's massive resource superiority over its Macedonian and Seleucid rivals was sufficient to break through the stalemate. After all, in 190, the Romans mobilized 175,000 troops, when Antiochus III could only manage perhaps 80,000. But Roman resource superiority was never actually brought to bear on either kingdom. The Romans only sent two legions and alae against directly against Philip and Perseus, and likewise against Antiochus the Great. In these wars, the Romans did not have a decisive manpower advantage at either the theater or tactical level. Indeed, they often operated from a position of distinct manpower inferiority.

---

[855] Scullard 1970 remains the standard work on this important figure.

[856] Atrax: Livy 32.17-18 see also Eckstein, 2006: 202. Defeat at Callinicus: Livy 42.58-60.

Nonetheless, had it been the Roman army annihilated at Cynoscephalae (or Pydna), as it very almost was, this would probably not have ended the war. Rome would have had the ability to tap into its deep (if certainly not endless) reserve of manpower, raise new legions, and carry on the war if it so chose, just as it had recovered from the naval disasters of the First Punic War and the land disasters of the Second. But the consistency with which the Roman army won close battles in the East suggests that quantitative superiority was not the only factor behind Rome's hegemonic triumph. By the Second century, Rome had developed a highly effective military organization, with a flexible and durable tactical system embodied in the manipular legion, backed by a ferociously effective logistical support apparatus. Even in the hands of commanders like T. Flamininus, Lucius Scipio and Aemilius Paullus, competent but not necessarily inspired military men, the institutional quality of the Republican army (still a citizen's militia, but drawn from pool of very experienced citizens) was itself a central factor in explaining the decisive Roman interventions against Macedonia and the Seleucid kingdom.

Alliance and Stalemate:

It is notable that the Mediterranean powers seldom combined their resources, in the manner that the United States, Great Britain and Soviet Union did against Germany during World War II. The only time that Rome faced a coalition of two major powers was during the Second Punic War, when Macedonia linked itself, tentatively, to Carthage through a treaty of friendship (but not a reciprocal military alliance). The discovery of the treaty eventually led to a desultory war between Rome and Macedonia, but Philip made no attempt to invade Italy's Adriatic coast, and devoted most of the war defending himself against Roman naval raids and the assaults of Rome's proxy ally, the Aetolians. It was unlucky for Carthage that he did not engage in a more active policy: if his 30,000 or so strong army had combined their efforts in a concerted way with Carthage's 170,000 troops, it would have given Carthage a modest if definite advantage in terms of strategic manpower.

Philip V proved open to alliance with Antiochus the Great against the Romans in the 190s. Again, this had the possibility of altering the strategic dynamic: even a medium sized Macedonian field army, if combined with Antiochus' 10,000 strong expeditionary force, might have matched the size of the 22,000 strong consular army dispatched by Rome, negating the need for Antiochus' desperate stand at Thermopylae. But Philip V joined the Roman coalition instead when he believed that Antiochus might attempt to replace him with a pliant client.[857]

Ironically, rather than unite to oppose Rome, the great powers were more likely to support Roman imperialism. Ptolemy IV provided financial support for the Romans during the Second Punic War.[858] Carthage provided grain to the Romans during the Second Macedonian war, and contributed a small naval contingent to serve in the Syrian War, fulfilling its treaty obligations. Having sided against Antiochus in 192, Philip V provided the Romans with mercenaries

[857] Livy 36.8.

[858] Meadows, 1998 suggests the gold-eagle issue of Roman coins was minted on bullion obtained as a gift from Ptolemy IV.

and grain, and improved infrastructure in Macedonia and Thrace to facilitate the Roman movement to the Hellespont. [859]

Admittedly, most of this aid took place after the powers had been defeated by the Romans. But a counterfactual second century coalition of Macedonia, Carthage and the Seleucids certainly could have united to stop the rise of Rome: together such a coalition might have a maximum strategic deployment of roughly 300,000 troops, far in excess of the 175,000 ceiling for the Roman mobilization. Their combined fiscal resources might have approached 100 million *drachmai* p.a.

Such a coalition is not a mere flight of alternative history: Carthage and Macedonia had been allies in the 210s; the Antigonids and Seleucids were traditionally friendly. This relationship was briefly formalized in the "so-called pact between the kings."[860] Following Seleucid control of the Phoenician coast after the Fifth Syrian War, links between Carthage and the Phoenician cities could certainly have facilitated state-to-state diplomacy. Hannibal, for example, fled into exile to Tyre, the ancestral homeland of the Carthaginians, and then made his way to the Seleucid court. His last military command was as a Seleucid admiral.

My point in making this counterfactual is not to argue that it was serious possibility. It is in fact relatively easy to provide historical reasons why this counterfactual did not happen. Part of the answer must be the tenacity with which Rome went on the offense from 210-197; Carthage and Macedon were both degraded from the status of great powers. Furthermore, the peace that Rome imposed on each state was in fact relatively generous: Carthage kept her possessions in Africa, while Philip V maintained his kingdom, leaving both states with enough that it was perhaps not worth trying to kick the Roman hornets' nest and in the process risk losing more. Indeed, Philip V seems to have decided the concessions he could obtain from Rome in exchange for cooperation outweighed any benefits derived from collaboration with Antiochus. Finally, the third party to my counterfactual alliance, Antiochus III, seems to have been overconfident, having just beaten Ptolemy V and assumed the title "Great King." He tepidly courted Philip V, but seems to have decided to replace him with a more pliant candidate (Philip of Megalopolis, to whom he entrusted the burial of the Cynoscephalae dead).[861] Antiochus furthermore seems to have distrusted the exile Hannibal; if Hannibal had any suggestions of a grand war against Rome (as presented in the fervid imaginations of the annalistic tradition), Antiochus dismissed them, only giving Hannibal command of a secondary fleet, likely because he spoke the same language as many of the Phoenician sailors who manned it.[862] As simple a contingency as Antiochus' own arrogant and uncreative statesmanship might explain (in part) why the resources of Rome's opponents never were never united.

---

[859] Grain from Carthage: Livy 36.3.1. Ships from Carthage: Livy 36.42.2. Philip offers aid: Livy 36.4.1.

[860] On the existence of such a pact, Eckstein 2008: 124-180.

[861] Livy 36.8.3-5.

[862] Livy 36.7 has Hannibal advocate an invasion of Italy to Antiochus. While Livy's imagines Hannibal as a trusted advisor to Antiochus, Appian *Syr*. 14 suggests that the Great King felt distrust and envy towards his unexpected guest.

Indeed, the most active alliance between two major powers was none other than Rome and Carthage in the 270s, against Pyrrhus.[863] While coordination seems to have been relatively limited, the combination of Roman land power and Carthaginian naval prowess exceeded Pyrrhus' own dwindling resources.

Nonetheless, to a degree, *tyche* must account to a degree for Rome's rise. When a centrally placed power in 19th and 20th century Europe sought an expansive hegemony, the powers surrounding it allied to stop it, so that in both World Wars, Germany was stuck in the devastating position of fighting on two fronts, and ultimately partitioned between the victors.

The Five Powers: Contenders for Pan-Mediterranean Dominance?

The Antigonids

Macedonia was the state that created the Hellenistic world. But the achievement of Alexander the Great was ultimately an historical anomaly, contingent on the unusually well organized Macedonian army and the command skills of Alexander himself.[864]

Macedonia as reconstituted under the Antigonids was the least resourced of the five major powers. It had the smallest overall population (c. 300,000), and the smallest strategic mobilization capacity (c. 45-50,000 in 171-168, usually much lower). Financially, Macedonia likely enjoyed an income of approximately 12 million *drachmai* in the mid-third century: respectable when compared to the financial resources of contemporary western republics (Rome in the third century may have only had an income of 5 million *drachma* equivalents, and Carthage perhaps 12 million), but paltry in respect to the revenues of peers in Antioch and Alexandria, who were each bringing in five times as much. These financial resources were stretched by the cost of maintaining the great garrisons at the "fetters," as well as the expenses of the royal court.

One victim of these overtaxed resources was the Antigonid navy, which deployed sporadically during the third century. Antigonus Gonatas fielded an effective fleet in the 250s, and successfully challenged Ptolemaic dominance. But the Macedonian fleet did not remain a persistent presence in the Aegean, and fiscal constraints had much to do with this. All the other ingredients for naval hegemony were present in Macedonia, including ample timber resources and the recruitment of experienced sailors from the Greek coast. The modest fleets of Philip V do not approach the 100+ ships deployed by Rome, Carthage, the Ptolemies or the Seleucids. The largest attested Macedonian fleet, at Chios in 201, contained only 53 ships of the line (*cataphractoi*), although these were accompanied by a number of smaller vessels (*lemboi*, *pristeis*).[865] By Mediterranean standards, this was no great armada: Philip V was outnumbered by the 65 ships of the line deployed by Attalus, king of a second-rate power. Money was likely a key limiting factor. Even the modest fleet at Chios could

[863] Polybius 3.25.3-5. For positive relations between Rome and Carthage, see Palmer 1997.
[864] On the leadership of Alexander the Great see Ma 2013.
[865] Polybius 16.2.9.

have cost around 5 million *drachmai*---a level of mobilization that Macedonia's annual revenues could not sustain for long.

The Antigonid kings retained an effective citizen army throughout the period, one that the Romans defeated with great difficulty. This army allowed Macedonia to remain a player in the Eastern Mediterranean in spite of a slender resource base that might have relegated it to the ranks of mid-tier powers such as Pergamon and Syracuse. Yet it was never an expeditionary army—at least not after the great anabasis of Alexander, and there was never an indication that a Macedonian army might land in Italy or Alexandria.

Perhaps the greatest impediment to deploying large expeditionary forces was the constant threat to the northern border, which inevitably flared up as kings mobilized their troops for other operations. Alexander's campaigns north of the Danube had been more than heroic posturing: he was preparing the region for his projected absence. Even Antigonus Doson's modest expeditionary force to the Peloponnese, with around 18,000 Macedonian troops, triggered an Illyrian invasion in 221, and the king was forced to leave the Peloponnese with his victorious field army.[866] Thus, while the Macedonian army was clearly effective, the citizen manpower base proved too sparse to defend the frontier and engage in long-term expeditionary operations at the same time. The citizens in the field army also represented a significant portion of the young men of Macedonia. A single defeat could have severe demographic implications, and the heavy losses at Cynoscephalae and Pydna forced swift capitulation in the Second and Third Macedonian Wars.

Ultimately, Antigonid Macedonia had too little money to become an Eastern Mediterranean naval power, and too few men to return to the expeditionary glories of Alexander the Great. On the offense, Antigonid Macedonia limited herself predominantly to second-rate opponents: the Athenians, Achaeans, Aetolians, Attalids, Spartans, Illyrians, etc. Indeed, while Macedonia looms large in the narrative of Roman imperialism in the second century, it was perhaps more of a powerful regional hegemon than a true competitor in the broader Mediterranean arena. While the Romans might have feared that either Philip V or Perseus reassert Macedonian imperialism, the resource foundation of the Macedonian state was only sufficient to maintain its status as the hegemon of Greece, the Balkans and the Northern Aegean.

Consider the ease with which the Romans defeated Macedonia's local opponents. The Achaean league, for example, was a local Peloponnesian power that frustrated the spread of Macedonian control past the Isthmus. Yet when the Achaeans seized the Acro-Corinth in 243, they held it for twenty years; it did not seem to be an option for a Macedonian king to simply annihilate the League. Yet the Romans did just this in 146, deploying 23,000 troops to defeat the Achaean army of 14,000 near Corinth.[867] Whatever the motivations for Rome's policy towards Achaea from 150-146, they had the resources to act in a way that Macedonian kings could not.

[866] Polybius 2.70.5.
[867] Achaean and Roman strength in the final phase of the Achaean War: Pausanias 7.15.7-16.3.

The Ptolemies and Seleucids

The resources of the Ptolemies and Seleucids were quite evenly matched. Both had similar maximum mobilizations between 70-80,000 troops. The largest attested Ptolemaic army was 75,000 strong; the largest attested Seleucid field force 72,000. Ptolemaic revenues are reported as 70 million Attic *drachmai* in the early third century, and I estimate the peak annual revenues of the Seleucid dynasty at approximately 60 million *drachmai.*

The military history of the Syrian Wars confirms this parity between the two powers. The six wars between 270-168 were characterized by overarching stalemate. When one power won a decisive victory (Ptolemy III in the Third Syrian War, Antiochus III in the Fifth, and Antiochus IV in the Sixth), dynastic strife explains much of the success. Antioch welcomed Ptolemy III in the middle of a succession crisis driven by the queens Berenice and Laodice; Antiochus III snatched Koile Syria during the dysfunctional regency of Ptolemy V, and Antiochus IV triumphed over the botched regency of the joint kings Ptolemy VI and VIII. For two powers evenly matched with respect to finances and military power, disparities in political stability proved the decisive factor in military victory.

Yet at several moments it appeared that the Seleucid dynasty might conquer Egypt, or that a Ptolemaic king could secure key territories in the Seleucid Near East. Ptolemy III planned to rule Syria and even Mesopotamia after the Third Syrian War, and even installed a governor in Babylon.[868] Prior to Roman intervention, Antiochus IV was crowned the king of Egypt in Memphis.[869] Later, Ptolemy VI was crowned the king of the Seleucid kingdom in Daphne, although he quickly ceded this claim to Demetrius II.[870] In short, the political unification of Seleucid and Ptolemaic territories and resources was a real historical possibility, yet it never came to pass. Fearing a native revolt, Ptolemy III withdrew his forces. Facing Roman demands, Antiochus IV stepped out of the circle in the sand and withdrew his forces from Egypt. Ptolemy VI died in battle near Antioch. But such a union would not be a geopolitical anomaly; traditional large states organized along a Syria-Mesopotamia-Iran axis have also exerted control over Egypt, as the Achaemenid Empire had done before and the Caliphate would afterward.

If these kings had succeeded in conquering the other's holding and integrating them into an effective unified state, the combination would have certainly resulted in a formidable Mediterranean power. The combined manpower, c. 150,000, would have rivaled the mobilizations of Rome and Carthage. Combined revenues of c. 150 million *drachmai* would provide a potent fiscal base. Though historically plausible, this hybrid state did not emerge.

Yet even if this counterfactual state had formed, geographic realities suggest that it could never control the entire Mediterranean basin. No Eastern Mediterranean power, not the Achaemenids, the Umayyads, or even the Ottomans, succeeded in doing so. Walter Scheidel has recently argued, based on

[868] BCHP 11; OGIS 54; Polyaenus 8.50; Justin 27.1.9. For the Ptolemaic governor in Babylon, a former trierarch under Ptolemy III, see Hauben 1990.
[869] Jerome *Commentary on Daniel* 11.24; P. Tebt. 698. Kosmin 2014: 140-41.
[870] Josephus *AJ* 13. 113.

a computer model of ancient transport costs, that the increasing cost of transport from near coast to far coast was substantial.[871] This meant that a power based on one of the far coasts of the Mediterranean faced higher logistical costs in projecting their power further and further longitudinally. Scheidel concludes that the geographic realities of transportation meant that the powers with the highest potential to create a pan-Mediterranean empire were those located in the central part of the sea, along an Italy-Sicily-North African axis.

The Runner Up: Carthage

There was only one other great power on this axis: Carthage. It is not an outrageous counterfactual to posit that Carthage, had Hannibal achieved victory in the Second Punic War, had the potential to achieve pan-Mediterranean dominance. Barcid-era Carthage certainly had the manpower, mobilizing 170,000 Iberians, Libyans, Numidians, Sardinians, and mercenaries in 215. And Carthage also had the resource base: Africa alone brought Carthage roughly 9 million drachmai a year, and the additional resources of Spain, especially mines, meant that Carthage in the late third century enjoyed similar revenues to Rome in the early second century. By the metrics of men and money, Carthage enjoyed parity with Rome, evidenced by two long and grinding wars.

Yet whether or not Carthage would have pursued a policy of pan-Mediterranean dominance is but idle speculation. As Erich Gruen has noted, Rome's rise to power was the result of contingency, uncertain policy, and unintended consequences.[872] But behind the diplomatic vagaries and missteps lies the fact that Rome possessed the resources needed to win war after war. So too did Carthage.

The structure of Carthaginian manpower suggests that even had Hannibal bested Rome, Carthage would have been a less effective conquest state than Rome ultimately proved to be. Unlike Rome, Carthage's political core- the city itself- was demilitarized. Barcid-era Carthage drew its manpower from its peripheries. While Carthage was able to draw on enormous manpower from the regions of Libya, Numidia, and Iberia, these recruitment patters created a fundamental imbalance between political power in the city and the military power recruited and stationed in the peripheries. It is even possible to view Hannibal less as a servant of the state and more as a semi-autonomous dynast. The unstable nature of Carthage's militarized peripheries was most evident during the Truceless War. The rise of powerful Numidian kings in the late third century was an ominous emblem of how Carthaginian exploitation of peripheral manpower might inadvertently develop the political clout of these very regions. Massinissa, after all, began his career as a cavalry commander in Carthaginian service. Similarly, the mass defections of Iberian tribesmen from Hannibal's army in 219-218, dramatically reduced his fighting strength and were evidence of the potential fragility of Carthage's peripheral manpower.

The lack of a large, militarized, and politically engaged Carthaginian citizen body was the greatest impediment to imperial success. The subjects and mercenaries deployed by Carthage were tactically effective and typically loyal,

[871] Scheidel 2014.
[872] Gruen 1984.

but there was no guarantee they shared the same vision as citizens and leaders in the city itself.

An Exceptional City, and Exceptional Empire

Like the Carthaginians, the Romans struggled with unruly subjects. A Campanian legion had to be violently dislodged from Rhegium in 275. Falerii revolted in 241, shortly after the end of the First Punic War. The revolt or unrest in so many Italian communities during the Second Punic War represented a mortal danger to Rome.[873] But even so, Rome still had a population of c. 300,000 citizen males to deploy against external enemies and to keep Italian subjects in line. The Campanians were dislodged from Rhegium, and the revolt of Falerii was crushed in six days.[874] With greater difficulty, Rome brought defecting states back into the fold during the Hannibalic War, just as it would later defeat the rebel coalition during the Social War.

The enormous citizen pool made Rome unique among other city-states. No ancient city-state came close to a citizen body of this magnitude.[875] Each of the three great Hellenistic kingdoms had a status analogous to citizenship: the *Makedones* of the Antigonid kingdom, and the cleruchs of the Seleucid and Ptolemaic realms. In my analysis, I treated these designations as roughly equal: all were enmeshed in reciprocal ties of legal privilege and obligations, and all were used militarily as the heavy infantry and cavalry. But there were significant qualitative differences between the "citizens" of the Hellenistic dynasties and the *cives* of the Roman Republic: most notably, Roman citizens could participate in the politics of the "public thing."

Even if we do not accept the more extreme arguments of Fergus Millar on "Roman democracy," and if we admit that Roman popular politics were less vigorous than those of Classical Athens, it still is impossible to deny the role of Roman citizens in determining the politics of their state.[876] It was Roman voters who rewarded worthy aristocrats with offices, priesthoods and triumphs, and punished unworthy ones with trials. Roman voters decided whether to declare war or approve a peace. The men who served in the legions had a chance to elect every echelon of their chain of command, from consuls to military tribunes to centurions. [877]

It is easily noted that the prosopographical results of these elections seem rather monotonous: the predictable dominance of a handful of aristocratic families.[878] But the electoral efforts of Roman citizens had other valuable benefits to the Roman state. Firstly, election was a powerful means of regulating the behavior and ethos of the aristocracy. Young aristocrats seeking election had to display values shared by the community (particularly military valor) if they

[873] Campanian Legion: Polybius 1.7.7-13; Livy *Per.* 12.
[874] Livy *Per.* 20.
[875] Ando 1999 on the disparities between the Roman conception of citizenship when compared to Greek poleis.
[876] See above for secondary literature on participatory politics in the Roman Republic, especially note 635.
[877] Polybius 6.23-24.
[878] E.g. Gelzer 1966.

hoped for higher office. Jon Lendon has noted the reckless valor displayed by young Roman aristocrats during the period, particularly at Pydna, where Cato the Censor's son Marcus went to great lengths to recover a gore-stained sword that slipped, and the young Scipio Aemilianus rode so far out that he was feared dead, only to return drenched in the blood of enemies.[879] Both men were performing the cultural expectations of contemporary aristocrats, but the voters in Rome consistently shaped these expectations.[880]

David Pritchard argues that democracy also made the Athenians more militant and effective militarily, in large part because the democracy forced would-be office holders to articulate their military values and prowess before the people who elected the generals, cavalry commanders and other civic offices.[881] In the process, Pritchard argues, the people began to internalize the military values of the (often aristocratic) candidates, a fact that lead to grass-roots militarism and the desire of common Athenians to emulate aristocratic military values.

A strong argument can be made that a similar dynamic was at work in the participatory politics of the Roman Republic. Not only did Roman voters force aristocrats to display military values, but the audience of citizens internalized the militarism articulated before them. Young Marcus Cato may have been ashamed that losing his sword at Pydna might prove embarrassing when running for the next rung of the *cursus honorum*. Yet common soldiers had internalized the aristocratic shame of losing a weapon, so that Polybius reports that "men who have lost a shield or sword or any other arm often throw themselves into the midst of the enemy, hoping either to recover the lost object or to escape by death from inevitable disgrace and the taunts of their relations."[882] Participatory politics may have been a key factor in producing a broadly militarized citizenry. This is not to suggest that the Romans were more militaristic or savage than many of their ferocious opponents.[883] But a deeply shared ethos was forged by the political relationships between mass and elite, which helps to explain why Rome endured in the dark days after Cannae, and continued aggressive military deployments even after the victory at Zama.

Harriet Flower has argued that frequent voting during the Roman Republic produced a deep and meaningful consensus across a wide band of the citizen body.[884] This consensus does not mean that every citizen approved of each magistrate or policy, but rather that the elections produced a sense of coherent institutional direction supported by common citizens. In this sense, elections were meaningful in part because they allowed citizens to coalesce around certain leaders even as they selected them. While modern critics have argued that consensus in the Republic was window dressing for oligarchic rule, Flower argues that the consensus produced by Roman participatory mechanisms was widely shared, deeply felt, and from an institutional standpoint, extremely

[879] Marcus Cato: Plutarch *Aemilius* 21.1-4. Scipio *Aemilianus:* 22.1-7. Lendon 2005: 193-211.
[880] Rosenstein 1990 notes that defeat in battle was not a major impediment to electoral success, with the important caveat that the defeated were expected to comport themselves well—displaying appropriate martial values even in the face of adversity.
[881] Pritchard 2015.
[882] Polybius 6.38.13 (Paton).
[883] Contra Harris 1979.
[884] Flower 2014.

successful.[885] The ability to vote, even if not regularly exercised, may have made Roman citizens more likely to take part in the more onerous burdens of citizenship: the census, paying tributum, and most importantly, military service.[886]

Finally, many of the arguments concerning Athenian democracy in Josiah Ober's *Democracy and Knowledge*, also apply to the participatory elements in the Roman system.[887] Ober argues that debate creates knowledge, so that frank and public discussion drives more effective state policies and state organizations. While the Roman system was far less democratic than Athens, the process of debate before an audience of citizens—whose composition both in terms of political sympathy and socio-economic class was unpredictable—was a central feature of the Roman Republic. A sampling of speech titles of Cato the Elder indicate policies that were subject to vigorous and public debate: *de re histriae militari, de tribunis militium, de macedonia liberanda, pro rhodiensibus, de rege attalo et vectigalibius asiae,* etc. The titles and surviving fragments reflect only a small fraction of the vigorous public debate on how Rome conducted its imperial policy. That debate extended to the military camp itself. A general was expected to heed the advice of his military counsel, which included elected tribunes and the first centurion elected from each legion.[888] Soldiers themselves spoke freely to their commanders, so much so that Aemilius Paullus became exasperated by the barrage of advice he received on how best to defeat Perseus.[889]

The Roman citizen body was a critical repository for institutional knowledge. The Roman army during the middle Republic was an amateur militia with little in the way of formal training for either officers or common soldiers. There were no standing units as mechanisms to preserve and replicate institutional knowledge in the way that, for example, the modern 82nd Airborne preserves military lessons and technical skills acquired from World War II onward. This stands in stark contrast to the elite units of the Hellenistic dynasties (standing units like the Agema, Peltasts and Royal Cavalry) that preserved and promulgated knowledge and traditions for new generations of recruits.

Despite a complete lack of professional structures, the Roman army performed remarkably well. It could fight set-piece battles using complex tactics, build fortified camps, conduct extended sieges, and keep itself resupplied over land and sea. Such complex expeditionary operations would be impossible without the diffusion of technical knowledge diffused through the army's citizen body base. This knowledge was created from frequent warfare that encompassed all able-bodied male citizens, with most eligible citizens serving at least six years, and some for many more. The result was the citizen-body as the repository for the institutional knowledge that permitted the amateur structures of a citizen's militia to operate with efficiency. The combination of size, civic engagement, and technical skill was indeed exceptional for a citizen body in the ancient world, and must go a long way toward explaining the unparalleled geopolitical accomplishment of the Roman Republic: the political unification of the

[885] On consensus as a veneer over oligarchic rule, Hölkeskamp 2010: 98-106.
[886] For the interactions of citizen and state in the Republic, Nicolet 1980.
[887] Ober 2008.
[888] Polybius 6.24.1. On the military council in the mid-Republic, Johnston 2008.
[889] Livy 44.34; Chrissanthos 2004.

Mediterranean Basin. The poet Ennius, himself likely a veteran of the Second Punic War, was thus not too far from the mark when he sang *moribus antiquis res stat Romana virisque*.[890]

[890] Cicero *Res Publica* 5.1.

Bibliography:

Alston, R. 1994. "Roman Military Pay from Caesar to Diocletian." *JRS* 84: 113-123.

Ameling, W. 1993. *Karthago: Studien zu Militär, Staat und Gesellschaft.* Munich.

---. 2011. "The Rise of Carthage to 264" in Hoyos 2011: 39-57.

Anderson, J. 1976. "Shields of Eight Palms' Width," *California Studies in Classical Antiquity* 9: 1-6.

Ando, C. 1999. "Was Rome a *polis*?" *Classical Antiquity* 18: 5-35.

Anson, E. 1981. "Alexander's Hypaspists and the Argyaspids." *Historia* 30: 117-120.

---. 1985. "Macedonia's Alleged Constitutionalism." *Classical Journal* 80: 303-316.

Aphergis, M. 2001. "Population-production-taxation-coinage: a model for the Seleucid economy" in Archibald et al. (eds.) 2001: 69-102.

---. 2004. *The Seleukid Royal Economy.* Cambridge.

Archibald, Z., J. Davies, V. Gabrielsen and G. Oliver (eds.). 2001. *Hellenistic Economies*. London and New York.

Armayor, O. 1978. "Herodotus' Catalogues of the Persian Empire in the Light of the Monuments of the Greek Literary Tradition." *TAPA 108*: 1-9.

Ashton, R. 2013. " The Use of the Cistophoric Weight Standard Outside the Pergamene Kingdom" in Thonemann 2013: 245-64.

Astin, A. 1978. *Cato the Censor.* Oxford.

Austin, M. 1986. "Hellenistic Kings, War, and the Economy." *Classical Quarterly* 36: 450-466.

---. 2006. *The Hellenistic World from Alexander to the Roman Conquest.* Cambridge.

Badian, E. 1972. *Publicans and Sinners: Private Enterprise in the Service of the Roman Republic.* Ithaca.

Bagnall, R. 1976. *The Administration of the Ptolemaic Possessions Outside Egypt.* New York.

---. 1984. "The Origin of Ptolemaic Cleruchs." *Bulletin of the American Society of Papyrologists* 21: 7-20.

Baronowski, D. 1993. "Roman Military Forces in 225 B.C. (Polybius 2.23-4)." Historia 42: 181-202.

---. 2011. *Polybius and Roman Imperialism*. London.

Beck, H., A. Dupla, M. Jehne and F. Pina Polo (eds). 2011. *Consuls and Res Publica.* Cambridge.

Beloch, J. 1889. *Die Bevölkerung der griechisch-römischen Welt*. Leipzig.

Bickerman, E. 1938. *Institutions des Séleucides*. Paris.

Billows, R. 1990. *Antigonus the One-Eyed and the Creation of the Hellenistic State.* Berkeley.

---. 1995. *Kings and Colonists: Aspects of Macedonian Imperialism Under the Kings.* Leiden.

Bispham, E. 2007. *From Asculum to Actium. The Municipalization of Italy from the Social War to Augustus.* Oxford.

Boren, H. 1983. "Studies Relating to the Stipendium Militum." *Historia* 32: 427-460.

Bowman, A. 1986. *Egypt after the Pharaohs: 332-642 BC*. Berkeley.

Bowman, A. and A. Wilson. 2013. *The Roman Agricultural Economy: Organisation, Investment, and Production.* Oxford.

Bowman, A. and D. Rathbone. 1992. "Cities and Administration in Roman Egypt." *JRS* 82: 107-127.

Briant, P. 2002. *From Cyrus to Alexander: A History of the Persian Empire.* Winona Lake.

Bringmann, K. 1993. "The king as benefactor: some remarks on ideal kingship in the age of Hellenism." In A. Bulloch et al. (eds.) Berkeley: 7-24.

---. 2001. "Grain, Timber and Money" in Archibald et al. 2001.

---. 2005. "Königliche Ökonomie im Spiegel des Euergetismus der Seleukiden." *Klio* 87: 110-115.

Briscoe, J. 1981. *A Commentary on Livy: Books XXXIV-XXXVII.* Oxford.

---. 2008. *A Commentary on Livy, Books 38-40.* Oxford.

---. 2012. *A Commentary on Livy Books 41-45.* Oxford.

Broadhead, W. 2007. "Colonization, Land Distribution, and Veteran Settlement" in Erdkamp 2007: 148-163.

Brown, T. 1961. " Apollophanes and Polybius, Book 5." *Phoenix* 15: 187-195.

Brunt, P. 1971. *Italian Manpower.* Oxford.

Buraselis, K. 1996. "*Vix Aerarium Sufficeret*: Roman Finances and the Outbreak of he Second Macedonian War." *Greek Roman and Byzantine Studies* 37: 149-172.

Buraselis, K., M. Stafanou and D. Thompson. 2013. *The Ptolemies, the Sea and the Nile: Studies in Waterborne Power.* Cambridge.

Burns, M. 2003. "The Homogenisation of Military Equipment Under the Roman Republic." Digressus S1 (Romanization?): 60-85.

Burstein, S. 1985. *The Hellenistic Age from the Battle of Ipsos to the Death of Kleopatra VII.* Cambridge.

Buttrey, T. 1989a. "Morgantina and the Denarius" in T. Buttery, K Erim, T. Groves and R. Holloway (ed.) *Morgantina Studies* 2. Princeton.

---. 1989b. "The Morgantina Excavations and the Date of the Roman Denarius" in *Morgantina Studies 2*.

---. 1993. "Calculating ancient coin production: facts and fantasies." NC 153: 335-351.

---. 1994: "Calculating ancient coin production II: Why it cannot be done." *NC* 154: 341-252.

Cary, M. 1926. "Notes on the History of the Fourth Century." *Classical Quarterly* 20: 186-191.

Champion, C. 2004. *Cultural Politics in Polybius's Histories.* Berkeley.

Chaniotis, A. 2005. *War in the Hellenistic World: A Social and Cultural History.* Malden.

Chrissanthos, S. 2004. "Freedom of Speech and the Roman Republican Army" in I. Sluiter and R. Rosen *Free Speech in Classical Antiquity*. Leiden/Boston.

Chrysafis, C. 2014. "*Pyrokausis*: Its meaning and function in the organization of the Macedonian army." *Klio* 96: 455-468.

Clark, J. 2014. *Triumph in Defeat.* Oxford.

Clarysse W. and C. Fischer-Bovet. 2012. "A military reform before the battle of Raphia?" *Archiv für Papyrusforschung* 58: 26-35.

Clarysse W. and E. Lanciers. 1989. "Currency and the Dating of Demotic and Greek papyri from the Ptolemaic Period." *Ancient Society* 20: 117-132.

Clarysse W. and D. Thompson. 2006. *Counting the People in Hellenistic Egypt, vol. ii: Historical Studies*. Cambridge.

Coale, A. and P. Demeny. 1983. *Regional Model Life Tables and Stable Populations.* 2nd Edition. New York.

Cohen, G. 1978. *The Seleucid Colonies: Studies in Founding, Administration and Organization.* Wiesbaden.

---. 1995. *The Hellenistic Settlements in Europe, the Islands and Asia Minor.* Berkeley.

---. 2006. *The Hellenistic Settlements in Syria, the Red Sea Basin and North Africa*. Berkeley.

---. 2013. *The Hellenistic Settlements in the East from Armenia and Mesopotamia to Bactria and India.* Berkeley.

Collins, R. 1995. "Prediction in Macrosociology: The Case of Soviet Collapse." *American Journal of Sociology* 100: 1552-1593.

Crawford, M. 1964. "War and Finance." *JRS* 54: 29-32.

Coşkun, A. 2012 "Deconstructing a Myth of Seleucid History: the So-Called 'Elephant Victory' over the Galatians Revisited."*Phoenix* 66: 57-73.

---. 1974. *Roman Republican Coinage.* Cambridge.

---. 1985. *Coinage and Money in the Roman Republic: Italy and the Mediterranean Economy.* Berkeley.

Crawford, M. and F. Coarelli. 1977. "Public Building in Rome between the Second Punic War and Sulla." *Papers of the British School at Rome* 45: 1-23.

Chaniotis, A. 2002. "Foreign Soldiers-Native girls? Constructing and Crossing Boundaries in Hellenistic Cities with Foreign Garrisons" in A. Chaniotis and P. Ducrey (eds.) *Army and Power in the Ancient World.* Stuttgart: 99-113.

Christ, M. 2007. "The Evolution of the *Eisphora* in Classical *Athens*." *Classical Quarterly* 57: 53-69.

De Callataÿ, F. 1995. "Calculating Ancient Coin Production: Seeking a Balance." NC 155: 289-312.

---. 1997. *L'histoire des guerres mithridatiques vue par les monnaies.* Wetteren.

---. 2013. "The Coinage of the Attalids and their Neighbors" in Thonneman 2013: 207-244.

De Grassi, A. 1954. *Fasti Capitolini*. Turin.

Del Hoyo, T. 2007. "The Late Republican West: Imperial Taxation in the Making?" in O. Heckster et al. *Crises and the Roman Empire: Proceedings of the Seventh Workshop on the International Network Impact of Empire*. Leiden/Boston: 219-32.

DeLigt, Luuk. 2012. *Peasants, Citizens and Soldiers*. Cambridge.

Derow, P. 1979. "Polybius, Rome, and the East." *JRS* 69: 1-15.

---. 2014. *Polybius, Rome, and the East* (A. Erskine and J. Crawley eds.). Oxford.

Dart, C. 2014. *The Social War, 91-88 BCE: A History of the Italian Insurgency against the Roman Republic.* Burlington.

Dmitriev, S. 2011. The Greek Slogan of Freedom and Early Roman Politics in Greece. Oxford.

Doyle, M. 1986 *Empires.* Ithaca.

Duncan-Jones, R. 1962. "Costs, Outlays and Summae Honoriae from Roman Africa." *Papers of the British School at Rome* 30: 47-115.

---. 1990. *Structure and Scale in the Roman Economy.* Cambridge.

Eckstein, A. 1995. *Moral Vision in the Histories of Polybius*. Berkeley.

---. 2006. *Mediterranean Anarchy, Interstate War, and the Rise of Rome.* Berkeley.

---. 2008. *Rome Enters the Greek East: From Anarchy to Hierarchy in the Eastern Mediterranean.* Malden.

---.2010. "Macedonia and Rome, 221-146 BC" in Roisman and Worthington 2011: 225-250.

Eadie, J. 1967. "The Development of Roman Mailed Cavalry." *JRS* 57: 161-173.

Edson, E. 1958. "*Imperium Macedonicum*: The Seleucid Empire and the Literary Evidence." *Classical Philology* 53: 153-170.

Eich A. and P. Eich. 2005. "War and State-building in Roman Republican Times." *Scripta Classica Israelica* 24: 1-33.

Eichberg, M. 1987. *Scutum: Die Entwicklung einer italisch-etruskischen Schildform von den Anfängen bis zur Zeit Caesars.* Frankfurt.

Erdkamp, P. 1998. *Hunger and the Sword: Warfare and Food Supply in Roman Republican Wars.* Gieben.

---.2006. "Late Annalistic Battle Scenes in Livy (Books 21-44). " *Mnemosyne* 59: 525-563.

--- (ed.). 2007. *A Companion to the Roman Army*. Malden.

---. 2008. "Polybius II.24: Roman Manpower and Greek Propaganda" *Ancient Society* 38: 137-152.

---. 2011. "Soldiers, Roman Citizens, and Latin Colonists in Mid-Republican Italy." *Ancient Society* 41: 109-146.

Erskine, A 1995. "Culture and Power in Ptolemaic Egypt: The Museum and Library of Alexandria." *Greece and Rome* 42: 38-48.

---. 2013. Polybius and Ptolemaic sea power" in K. Buraselis et al. 2013: 82-96.

Fagan, G. and Trundle, M. 2010. *New Perspectives on Ancient Warfare.* Leiden.

Fariselli, A. 1999. "The Impact of Military Preparations on the Economy of the Carthaginian State" in G. Pisano Phoenicians and Carthaginians in the Western Mediterranean. Rome: 59-68.

Faucher, T. and C. Lorber. 2010 "Bronze Coinage of Ptolemaic Egypt in the Second Century BC." *AJN* 22: 35-80.

Feugère, M. 2002. *Les Armes des Romains de la République à l'Antiquité tardive,* Paris.

Fink, R. 1971. *Roman Military Records on Papyrus.* Cleveland.

Finley, M. 1973. *The Ancient Economy.* Berkeley.

Fischer-Bovet, C. 2011. "Counting the Greeks in Egypt: Immigration in the First Century of Ptolemaic Rule" in C. Holeran and A. Pudsey *Demography and the Graeco-Roman World: New Insights and Approaches*. Cambridge: 135-154.

---. 2013. "Egyptian Warriors: The *Machimoi* of Herodotus and the Ptolemaic Army." *The Classical Quarterly* 63: 209-236.

---. 2014. *Army and Society in Ptolemaic Egypt.* Cambridge.

Fischer-Bovet, C. and W. Clarysse. 2012. "A Military Reform Before the Battle of Raphia?" *Archiv für Papyrusforschung und verwandte Gebiete* 58: 26-35

Flower, H. 2014. "Consensus and Community in Republican Rome." *Todd Memorial Lecture* 20. Sydney.

Foxhall, L. and H. Forbes. 1982."*Sitometreia." Chiron* 52: 41-90.

Frank, T. 1932. "The Public Finances of Rome: 200-157 BC" *American Journal of Philology* 53: 1-20.

---. 1933. *An Economic Survey of Ancient Rome, Vol. 1: Rome and Italy of the Republic*. Baltimore.

Frier, B. 1982. "Roman Life Expectancy: Ulpian's Evidence." *Harvard Studies in Classical Philology* 86: 213-251.

Fronda, M. 2010. *Between Rome and Carthage: Southern Italy during the Second Punic War*. Cambridge.

Gabrielsen, V. 1994. *Financing the Athenian Fleet: Public Taxation and Social Relations.* Baltimore.

---. 2002. "Socio-economic Classes and Ancient Greek Warfare" in J. Skydsgaard and K. Ascani (eds.) *Ancient History Matters: Studies Presented to Jens Erik Skydsgaard on his Seventieth Birthday*. Rome: 213-219.

---. 2013. "Rhodes and the Ptolemaic kingdom: the commercial infrastructure" in Buraselis 2013: 66-81.

Gaebler, H. 1935. *Die antiken Münzen Nord-Griechenlands 3, Makedonia und Paionia, i-ii.* Berlin.

Galili, E. 1978. "Raphia, 217 B.C.E. Revisited." *Scripta Classica Israelica* 3: 52-126.

Garnsey, P. and D. Rathbone. 1985. "The Background to the Grain Law of Gaius Gracchus." *JRS* 75: 20-25.

Gelzer, M. 1966. *The Roman Nobility* (Trans. R. Seager). Oxford.

Gomme, A. 1937. *Studies in Greek History and Literature.* Oxford.

Gordon, R. 1985. "The gladius hispaniensis and Aramaic ʾispānîqê." *Vetus Testamentum* 35: 496-500.

Grangier, J. 1990. *The Cities of Seleukid Syria.* Oxford.

---.2002. *The Roman War of Antiochus the Great*. Leiden.

---. 2010. *The Syrian Wars.* Leiden.

Grainger, D. "Macedonia and Thessaly" in Roisman and Worthington 2010.

Green, P. 1990. *From Alexander to Actium: The Historical Evolution of the Hellenistic World*. Berkeley.

Griffith, G. 1935. *Mercenaries of the Hellenistic World*. Cambridge.

Gruen, E. 1984. *The Hellenistic World and the Coming of Rome*. Berkeley.

Hammond, N. 1989. "Casualties and Reinforcements of Citizen Soldiers in Greece and Macedonia." *JHS* 109. 56-68.

Hammond, N. and F. Walbank. 1988. *A History of Macedonia* 3. Oxford.

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

Harl, K. 1996. *Coinage in the Roman Economy, 300 B.C. to A.D. 700.* Baltimore.

Harris, W. 1979. *War and Imperialism in Republican Rome.* Oxford.

---. 2006. "A Revisionist View of Roman Money." *JRS* 96: 1-24.

Hatzopoulos, M. 1996. *Macedonian Institutions Under the Kings: A Historical and Epigraphic Study.* Athens.

---. 2001. *L' Organisation De L'Armee Macedonienne Sous Les Antigonides.* Athens.

Hauben, H. 1981. "A Neglected Detail of Philopator's Policy." *L' Antiquité Classique* 50: 398-403.

---. 1990. "Triérarques et triérarchie dans la marine des Ptolémées." *Ancient Society* 21: 120-139.

Hin, S. 2013. *The demography of Roman Italy. Population dynamics in an ancient conquest society, 201 BCE-14 CE*. Cambridge.

Hölkeskamp, K. 2010. *Reconstructing the Roman Republic*. Princeton.

Holleran, C. and A. Pudsey. 2011. *Demography and the Graeco-Roman World.* Cambridge.

Hollstein, W. 2000. (ed.) *Metallanalytische Untersuchungen an Münzen der Römischen Republik.* Berlin.

Hopkins, K. 1980. "Taxes and Trade in the Roman Empire: 200 BC-AD 400." *JRS*, 70: 101-125.

---. 1995/6"Rome, Taxes, Rents and Trade." *Kodai* 6/7: 41-75.

Hoyos, D. 2003. *Hannibal's Dynasty. Power and politics in the western Mediterranean, 247-183 BC.* London.

---. 2007. *The Truceless War: Carthage's Fight for Survival, 241-237 BC.* Leiden.

---. 2010. *The Carthaginians.* New York and London.

--- (ed.). 2011. *A Companion to the Punic Wars.* Malden.

---. (ed.) 2013. *A Companion to Roman Imperialism*. Leiden.

---. 2015. *Mastering the West: Rome and Carthage at War.* Oxford.

Houghton, A., C. Lorber and B. Kritt. 2002. *Seleucid Coins: A Comprehensive Catalogue* 1. New York.

Howgego, C. 1990. "Why did Ancient States strike Coins?" *Numismatic Chronicle* 150: 1-25.

---.1995. *Ancient History from Coins.* New York.

Hunt, P. 1988. *Slaves, Warfare and Ideology in the Greek Historians*. Cambridge.

Huss, W. 1985. *Geschichte der Karthager*. Munich.

Jones, A. 1949. "The Roman Civil Service (Clerical and Sub-Clerical Grades)" *JRS* 39: 38-55.

Jones, G. 1980. "The Roman Mines at Rio Tinto." *JRS* 70: 146-165.

Juhel, P. 2002. "'On Orderliness in Respect to the Prizes of War': The Amphipolis Regulation and the Management of Booty in the Army of the Last Antigonids." *The Annual of the British School in Athens*, 97: 401-12.

Juhel Pierre and Nicholas Sekunda. 2009. "The agema and 'the other Peltasts' in the late Antigonid Army, and in the Drama/Cassandreia Conscription diagramma." *ZPE* 170: 104-108.

Jehne, M. 2006. "Who Attended Roman Assemblies?: Some Remarks on Political Participation in the Roman Republic" in F. Simon, F. Pina Polo and J. Remesal Rodriguez (eds.) *Republicas y Ciudadanos: Modelos de Participacion Civica in el Mundo Antiguo.* Barcelona.

Jenkins, G. 1984. "Varia Punica" in A. Houghton et al. (eds) *Festschrift fur Leo Mildenberg.* Wetteren: 127-136.

Jenkins, G. and R. Lewis. 1963. *Carthaginian Gold and Electrum Coins.* London.

Johnston, P. 2008. *The Military Concilium in Republican Rome.* Piscataway.

Kahrstedt, U. 1913. *Geschichte der Karthager Von 218-146.* Berlin.

Kay, P. 2014. *Rome's Economic Revolution.* Oxford.

Knapowski, R. 1961. *Der Staatshaushalt der römischen Republik.* Frankfurt.

Knapp, R. 1977. *Aspects of the Roman Experience in Iberia, 206-100 BC.* Valladolid.

Kondratieff, E. 2004. "The Column and Coinage of C. Duilius: Innovations in Iconography in Large and Small Media in the Middle Republic." *Scripta Classica Israelica* 23: 1-39.

Kosmin, P. 2014. *The Land of the Elephant Kings.* Cambridge MA.

Laird, A. 1921. "The Persian Army and Tribute Lists in Herodotus." *Classical Philology* 26: 305-326.

Lancel, S. 1999. *Carthage: A History.* Malden.

Laroche, R. 1977. "Valerius Antias and His Numerical Totals: A Reappraisal." *Historia* 26: 358-368.

Lazenby, J. 1978. *A Military History of the Second Punic War.* Oxford.

Lendon, J. 2005. *Soldiers and Ghosts: A History of Battle in Classical Antiquity.* New Haven.

Le Rider, G. 1993. "Les Resources financières des Séleucus IV (187-175) et le paiement de l'indemnité." *Cahiers du Centre Gustave Glotz* 4: 23-24.

Le Rider, G. and F. De Callataÿ. 2006. *Les Séleucides et les Ptolémées*. Champollion.

Lesquier, J. 1911. *Les institutions militaires de l' Égypte sous les Lagides.* Paris.

Lerner, J. 1999.*The Impact of Seleucid Decline on the Eastern Iranian Plateau.* Stuttgart.

Levy, M. 1988. *Of Rule and Revenue.* Berkeley.

Liampi, K. 1998. *De Makedonische Schild.* Bonn.

Lo Cascio, E. 1991. "I togati della formula togatorum*." Annali dell' Instituto Italiano per gli Studi Storici* 12: 309-28.

---. 1994. "The Size of the Roman population: Beloch and the meaning of the Augustus census figures." *JRS* 84: 23-40.

---. 1999. "The population of Roman Italy in town and country," in J. Bintliff and K. Sbonias (eds.) *Reconstructing past population trends in Mediterranean Europe (3000 BC-AD 1800).* Oxford: 161-71.

Ma, J. 1999. *Antiochos III and the Cities of Western Asia Minor*. Oxford.

Ma, J. 2000. "Fighting poleis of the Hellenistic world," in H. Van Wees (ed.) *War and Violence in Greek Society.* London: 337-376.

---. 2008. Review of M. Aphergis, *The Seleukid Royal Economy*. *Hermathena* 182: 182-188.

---. 2011. "Court, King and Power in Antigonid Macedonia" in R. Lane Fox (ed.) *Brill Companion to Macedonia*. Leiden: 522-43.

---. 2013. "Alexander's decision-making as historical problem." *Revue d'Études Militaires Anciennes* 6: 113-25.

MacMullen, R. 1980. "How Many Romans Voted." Athenaeum 68: 454-57.

Mahaffy, J. 1898. "The Army of Ptolemy IV at Raphia." *Hermathena* 10: 140-152.

Manfredi, L. 1999. "Carthaginian Policy Through Coins" in G. Pisano *Phoenicians and Carthaginians in the Western Mediterranean.* Rome.

Mann, M. 1986. *The Sources of Social Power, Vol. I: A History of power from the beginning to A.D. 1760.* Cambridge.

Manning, J. 2003. *Land and Power in Ptolemaic Egypt.* Cambridge.

---. 2010. *The Last Pharaohs: Egypt Under the Ptolemies, 305-30 BC*. Princeton.

Matasovic, R. 2009. *Etymological Dictionary of Proto-Celtic.* Leiden and Boston.

Mayerson, P. 2002. "The Pharaonic Crops in Ptolemaic Egypt" *ZPE* 141: 210-213.

Meadows, A. 1998. "The Mars/eagle and thunderbolt gold and Ptolemaic involvement in the Second Punic War" in Burnett, A. et al. (eds.) *Coins of Macedonia and Rome: Essays in Honour of Charles Hersh*. London: 125-134.

McCall, J. 2002. *The Cavalry of the Roman Republic.* New York.

Millar, F. 1984. "The Political Character of the Classical Roman Republic, 200-151 BC." *JRS* 74: 1-19.

Millet, P. 2011. "The Political Economy of Macedonia" in J. Roisman and I. Worthington (eds.) *A Companion to Ancient Macedonia.* Malden: 472-504.

Mineo, B . 2014. *A Companion to Livy*. Malden.

Mittag, P. 2008. "Blood and Money: On the Loyalty of the Seleucid Army." *Electrum* 14: 47-55.

Momigliano, A. 1929. "Il Decreto Trilingue in Onore di Tolomeo Filopatore" *Aegyptus* 10: 180-189.

Momigliano, A. and P. Fraser. 1950. "A New Date for the Battle of Andros? A Discussion." *The Classical Quarterly* 44.3/4: 107-118.

Monson, A. 2012. *From the Ptolemies to the Romans: Political and Economic Change in Egypt* Cambridge.

---. 2014a. "Harvest Taxes on Cleruchic Land in the Third Century BCE" *Pap. Congr.* 17: 1-11.

---. 2014b."Landholders, Rents, and Crops in a Ptolemaic Village: P. Heid. Dem. inv. 46" in A. Dodson, et al. *A Good Scribe and an Exceedingly Wise Man: Studies in Honour of W.J. Tait*. London: 229-40.

Morstein-Marx, R. 2004. *Mass Oratory and Political Power in the Late Roman Republic.* Cambridge.

Mouritsen, H. 2006. "Caius Gracchus and the 'Cives Sine Suffragio." *Historia* 55, 418-425.

Muhs, B. 2011. *Receipts, scribes and collectors in early Ptolemaic Thebes*. Leuven.

Murray, W. 2012. *Age of Titans: The Rise and Fall of the Great Hellenistic Navies*. Oxford.

Newell, E. 1941. *The Coinage of the Western Seleucid Mints from Seleucus I to Antiochus III.* New York.

---. 1938. *The Coinage of the Western Seleucid Mints from Seleucus I to Antiochus III.* (New York, 1938).

Nicolet, Claude. 1976. *Tributum: recherches sur la fiscalite directe sous la republique romaine*. Bonn.

---. 1980. *The World of the Citizen in Republican Rome.* Berkeley.

Ober, Josiah. 2008. *Democracy and Knowledge: Innovation and Learning in Classical Athens.* Princeton.

O'Brien, J. 1992. *Alexander the Great: The Invisible Enemy.* London.

O'Connor, S. 2013. "The Daily Grain Consumption of Classical Greek Sailors and Soldiers." *Chiron* 43: 327-356.

Orlin, E. 1997. *Temples, Religion and Politics in the Roman Republic.* Leiden.

Palmer, R. 1997. *Rome and Carthage at Peace.* Stuttgart.

Pfeilschifter, R. 2007. "The allies in the Republican army and the Romanization of Italy" in R. Roth and J. Keller (eds.) *Roman by Integration*. Portsmouth.

Potter, D. 2004. "The Roman Army and Navy" in H. Flower (ed.) *The Cambridge Companion to the Roman Republic*. Cambridge.

Prag, J. 2007."*Auxilia* and *Gymnasia*: A Sicilian Model of Roman Imperialism." *JRS* 97: 68-100.

---. 2010. "Troops and Commanders: *auxilia externa* under the Roman Republic," *Hormos* 2: 101-113.

---. 2013. "Sicily and Sardinia-Corsica: The First Provinces" in Hoyos 2013, 53-65.

Préaux, C. 1938. *L'Économie royale des Lagides*. Paris.

Preisigke, F. 1920. *Griechische Papyrus der Kaiserlichen Universitäts- und Landesbibliothek zu Strassburg, vol. ii.* Leipzig.

Pritchard, D. 2012. "Costing Festivals and War: Spending Priorities of the Athenian Democracy." *Historia* 61: 18-65.

---. 2015. "Public Finance and War in Ancient Greece." *Greece and Rome* 62: 48-59.

---. 2015. "Democracy and War in Ancient Athens." *Greece and Rome* 62, forthcoming.

Pritchett, K. 1971. *Ancient Greek Military Practices, Part I.* Berkeley.

Purcell, N. 1983. "The Apparitores: A Study in Social Mobility." *Papers of the British School at Rome* 51: 125-173.

---. 2005. "The ancient Mediterranean: the view from the customs house" in W. Harris (ed.) *Rethinking the Mediterranean.* Oxford: 200-32.

Quesada-Sanz, F. 1997. '*Gladius Hispaniensis*: an archaeological view from Iberia' *Journal of Roman Military Equipment Studies* 8: 251-270.

---. 2006. "Not So Different: Individual Fighting Techniques and Small Unit Tactics of Roman and Iberian Armies." *Pallas* 70: 245-63.

Raaflaub, K. (ed.) 1986. Social Struggles in Archaic Rome: New Perspectives on the Conflict of the Orders. Berkeley.

Rathbone, D. 1990a. "Villages, land and population in Graeco-Roman Egypt" *Proceedings of the Cambridge Philological Society* 216: 103-42.

---.1990b. "The Census Qualifications of the assidui and the prima classis" in F. Meijer and H. Plecket (eds.) *De Agricultura*. Amsterdam.

---. 2003. "The Control and Exploitation of *Ager Publicus* in Italy under the Roman Republic." in J. Aubert (ed.) *Taches Publiques et Entreprise Privee dans le Monde Romain.* Geneva: 136-178.

Rathbone, D. and S. Von Reden. 2015. "Mediterranean grain prices in classical antiquity" in R. van der Spek, et al. *A History of Market Performance: From Ancient Babylonia to the Modern World.* New York and London.

Rattenbury, R. 1942. "An Ancient Armored Force." *Classical Review* 56: 113-116.

Rawlings, L. 2010. "The Carthaginian Navy" in G. Fagan and M. Trundle 2010: 253-288.

Rice, E. 1983. *The Grand Procession of Ptolemy Philadelphus*. Oxford.

Rich, J. and G. Shipley. 1995. *War and Society in the Roman World*. New York and London.

Richardson, J. 1976. "The Spanish Mines and the Development of Provincial Taxation in the Second Century BC." *JRS* 66: 139-152.

---. 1986. *Hispaniae: Spain and the Development of Roman Imperialism, 218-82 BC.* Cambridge.

Richter, W. 1961. "Zum Bauprogramm der censoren des Jahres 174 v. Chr." *Rheinisches Museum für Philologie*: 256-266.

Rosenstein, N. 1990. *Imperatores Victi: Military Defeat and Aristocratic Competition in the Middle and Late Republic*. Berkeley

---. 2002. "Marriage and Manpower in the Hannibalic War: 'Assidui,' 'Proletarii' and Livy 24.18.7-8." *Historia* 51: 163-191.

---. 2004. *Rome at War: Farms, Families, and Death in the Middle Republic.* Chapel Hill.

---. 2010. "Phalanges in Rome?" in Fagan and Trundle 2010: 289-303.

---. 2011. "War, Wealth, and Consuls" in Beck et al. 2011: 133-158.

Roisman, J. and I. Worthington (eds.). 2010. *A Companion to Ancient Macedonia.* Malden.

Rostovtzeff, M. 1941. *The Social and Economic History of the Hellenistic World* Oxford.

Roth, J. 1994. "The Size and Organization of the Roman Imperial Legion." *Historia* 43: 346-362.

---. 1999. *The Logistics of the Roman Army at War (264 B.C.-A.D. 235).* Boston and Leiden.

Scullard, H. 1951. *Roman Politics, 220-150 B.C.* Oxford.

---. 1970. *Scipio Africanus: Soldier and Politician.* London.

Schalit, A. 1960. "The Letter of Antiochus III to Zeuxis regarding the Establishment of Jewish Military Colonies in Phrygia and Lydia." *Jewish Quarterly Review* 50: 289-318.

Scheidel, W. 1996. "Finances Figures and Fiction" *Classical Quarterly* 46: 222-238.

---. 2001. *Death on the Nile: Disease and the Demography of Roman Egypt*. Leiden.

---. 2013. "Explaining the maritime freight charges in Diocletian's Price Edict." *Princeton-Stanford Working Papers*.

---. 2014. "The shape of the Roman world: modeling imperial connectivity." *JRA* 27: 7-32.

---. (ed.) 2015. *State Power in Ancient China and Rome.* Oxford.

Schmitt, H. 1965. *Untersuchungen zur Geschichte Antiochos des Grossen und seiner Zeit.* Wiesbaden.

Schwartz, A. 2009. *Reinstating the Hoplite: Arms, Armor and Phalanx Fighting in Archaic and Classical Greece*. Stuttgart.

Schwartz, D. 2008. *2 Maccabees.* Berlin and New York.

Sekunda, 1996. N. *The Republican Roman Army: 200-104 BC.* Oxford.

---. 2001. *Hellenistic Infantry Reform in the 160s BC.* Gdansk.

---. 2007. "Land Forces" in *The Cambridge History of Greek and Roman Warfare*, ed. P. Sabin, H. Van Wees and M. Whitby, Cambridge, 325-357.

---. 2012. "The Ptolemaic Guard Cavalry Regiment." *Anabasis* 3: 93-108.

---. 2013. *The Antigonid Army*. Gdansk.

Shatzman, I. 1975. *Senatorial Wealth and Roman Politics*. Brussels.

Sherwin-White, A. 1980. *The Roman Citizenship*. Oxford.

Sherwin-White, S. 1982. "A Greek Ostrakon from Babylon of the Early Third Century BC." *ZPE* 47:51-70.

Sherwin-White, S. and A. Kuhrt. 1993. *From Samarkhand to Sardis: A New Approach to the Seleucid Empire.* Berkeley.

Siani-Davies, M. 1997. "Ptolemy XII Auletes and the Romans." *Historia* 46: 306-340.

Spyridakis, S. 1977. "Cretans and Neo-Cretans," *The Classical Journal* 72: 299-307.

Stasavage, D. 2011. *States of Credit: Size, Power, and the Development of European Politics.* Princeton.

Stefanou, M. 2013. "Waterborne recruits: the military settlers of Ptolemaic Egypt" in K. Buraselis et al. 2013: 108-131.

Stiebel, G. 2004. "A Hellenistic gladius from Jericho" in E. Netzer (ed.) *Hasmonean and Herodian Palaces at Jericho, Vol. II, Final Reports of the 1973-1987 Excavations.* Jerusalem.

Strootman, R. 2012. "Hellenistic Court Society: The Seleukid Imperial Court Under Antiochos the Great, 223-187 BCE" in J Duindam, T. Artan, M. Kunt (eds.) *Royal Courts in Dynastic States and Empires: A Global Perspective.* Leiden.

---. 2014. *Court and Elites in the Hellenistic Empires.* Edinburgh.

Swan, M. 1970. "'Apparitores' at Ostia and Urbo." *Latomus* 29: 140-141.

Tarn, W. 1909. "The Battles of Andros and Cos." *JHS* 29: 264-285.

---. 1913. *Antigonos Gonatas.* Oxford.

---. 1930. *Hellenistic Military and Naval Developments*. Cambridge.

Taulbee, L. 1998. "Mercenaries and citizens" A comparison of the armies of Carthage and Rome." *Small Wars & Insurgencies* 9: 1-16.

Taylor, M. 2014a. "Roman Infantry Tactics in the Mid-Republic: A Reassessment." *Historia* 63: 301-322.

---.2014b. "Sacred Plunder and the Seleucid Near East." *Greece and Rome* 61: 222-241.

---. 2014c "Visual Evidence for Roman Infantry Tactics." *Memoirs of the American Academy in Rome* 59: forthcoming.

Thiel, J. 1946. *Studies on the History of Roman Sea-Power in Republican Times.* Amsterdam.

Thomas, C. 2011. "The Physical Kingdom" in Roisman and Worthington 2011: 65-81.

Thompson, D. 1997. "The Infrastructure of Splendour: Census and Taxes in Ptolemaic Egypt" in P. Cartledge, P. Garnsey, and E. Gruen (eds.) *Hellenistic Constructs: Essays in Culture, History and Historiography*. Berkeley: 242-258.

---. 2013. "Hellenistic royal barges" in K. Buraselis 2013: 185-196.

Trundle, M. 2004. *Greek Mercenaries from the Late Archaic Period to Alexander.* London and New York.

Turner, E. 1975. "Four obols a day men at Saqqara" in J. Bingen, G. Cambrier and G. Nachtergael (eds.) *Le Monde Grec. Pensée, literature, histories et documents. Hommages à Claire Préaux*. Brussels: 573-577.

Tusa, S. and J. Royal. 2012. "The landscape of the naval battle at the Egadi Islands (241 BC)," *JRA* 25: 7-48.

Van Wees, H. 2004. *Greek Warfare: Myth and Realities.* London.

Vaahtera, J. 1993. "The Origin of Latin suffragium." *Glotta* 71: 66-80.

Vervaet, F. 2014. *The High Command in the Roman Republic.* Stuttgart.

Viola, M. 2010. *Corpus Nummorum Punicorum.* Rome.

Vishnia. R. 1996. *State, Society, and Popular Leaders in Mid-Republican Rome, 241-167 B.C.* New York.

---. 2002. "The *Lixae* and the Roman Legions." *ZPE* 139: 265-272.

Visona, P. 1998. "Carthaginian Coinage in Perspective." *AJN* 10: 1-27.

Von Reden, S. 2007. *Money in Ptolemaic Egypt.* Cambridge.

---. 2010. *Money in Classical Antiquity.* Cambridge.

Walbank, F. 1940. *Philip V of Macedon.* Cambridge.

---. 1957-1979. *A Commentary on Polybius.* (3 Vols.). Oxford.

---. 1972. *Polybius.* Berkeley.

---. 1996. "Two Hellenistic Processions: A matter of self-definition." *Scripta Classica Israelica* 15: 119-30.

Wallerstein, I. 1974. *The Modern World-System. Capitalist Agriculture and the Origins of the European World Economy in the Sixteenth Century*. New York.

Warmington, B. 1993. *Carthage.* New York.

Wells, C. 1934. *Royal Correspondence in the Hellenistic Period: a Study in Greek Epigraphy*. New Haven.

Wickham, C. 1984. "The Other Transition: From the Ancient World to Feudalism." *Past and Present* 103: 3-36.

Wilcken, U. 1899. *Griechische Ostraka aus Aegypten und Nubien.* Leizpig and Berlin.

Williams, R. 1978. "The Role of "Amicitia" in the Career of A. Gabinius (Cos. 58)." *Phoenix* 32: 195-201.

Whittaker, C. 1978. "Carthaginian Imperialism in the Fifth and Fourth Centuries" in C. Whittaker and P. Garnsey (eds.) *Imperialism in the Ancient World.* Cambridge: 59-90.

Woods, R. 2007. "Ancient and early modern mortality: experience and understanding." *Economic History Review* 60: 373-99.

Woolf, G. 1990. "World-systems analysis and the Roman empire." J*RA* 3: 44-59.

Yakobsen, A. 1999. *Elections and Electioneering in Rome.* Stuttgart.

Ziolkowski, A. 1986. "The Plundering of Epirus in 167 B.C.: Economic Considerations." *Papers of the British School at Rome* 54: 69-80.