

Engineering Wealth-Enhancing Democracy in Ancient Greece: Gains from Exchange versus Alignment on Public Policy

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Abstract: This paper analyzes a tradeoff articulated in Aristotle's recommendations for successful democracy: Restricting market exchange may help align voters' incentives and thereby improve the quality of collective decisions, but at the same time reduces the gains from specialization and trade. We term this "the Aristotle tradeoff." The Aristotle tradeoff implies that the best feasible policy will generally be a "second-best" result of balancing the benefits from maintaining the majority's support for socially desirable collective decisions against the costs of foregoing gains from specialization and trade (and vice versa). We use the tradeoff to explore the institutions of the famously democratic Greek *poleis*, many of which responded in differing ways, as their particular circumstances dictated. We finish with a discussion of implications for the modern world.

JEL: H1, H4, K00, N00, O1

[O]f the private land, part should be near the border, and the other near the city, so that, each citizen having two lots, they may all of them have land in both places; there is justice and fairness in such a division, and it tends to inspire unanimity among the people in their border wars. Where there is not this arrangement some of them are too ready to come to blows with their neighbors, while others are so cautious that they quite lose the sense of honor.

-Aristotle, *Politics*, Part X of Book Seven, translated by Benjamin Jowett

I. INTRODUCTION

At a time when Greece's rivals were ruled by kings or emperors, Greek *poleis* (city-states) were remarkably democratic and experienced exceptional economic growth over a period of several centuries (e.g., Ober 2015). We will argue that an important reason for the success of these pioneering democracies is the skill with which they designed institutions that aligned the incentives of citizens regarding important collective and private decisions, while balancing the opportunity cost. An implication of this argument is that differences in the nature or size of the opportunity cost will be reflected in differences in the institutions. That is what we will explore in this paper.

Consider the quotation from Aristotle with which we begin. Aristotle is analyzing border wars – wars between neighboring *poleis* – which were very common in ancient Greece. He notes that a state's ability to defend its borderlands may be undermined by disagreements resulting from differences in citizen landholdings. Specifically, owners of land near the border (most likely to be damaged or captured by an aggressive neighbor) are “too ready to come to blows” while owners of plots in the safer interior are “so cautious that they quite lose their sense of honor.” Stated less poetically, when owners of border lands hold the majority, there will be “too much” emphasis on border defense as compared to the first best, while when owners of interior landholdings are in the majority, they will be too little. How to arrive at the socially

optimal level of spending in a democratic setting? Aristotle recommends that all citizens be required to own *two* plots: one near the border and one in the interior. Incentives are thus aligned.

Aristotle's analysis is insightful (not surprisingly), and anticipates modern work on optimal public good provision. However, implementing his recommendation comes at a cost, because potentially mutually beneficial exchanges of land must then be restricted. As a result, citizens farming two non-contiguous plots (citizens were landowning farmers in the typical Greek *polis*) will have to waste time in travelling between them. Furthermore, to the degree different crops are grown on different terrain (for example, grain on the flatter interior; olive trees on the hilly borderland), gains from specialization may be foregone. And should the farmer wish to exit farming completely (say, to become a craftsman), the opportunity cost of the restriction could be higher still.

We call this the "Aristotle tradeoff." On the one hand, the more a state allows unrestricted specialization and trade, the wealthier its citizenry, but also the more heterogenous, which makes policy alignment more difficult to achieve (all else equal). On the other hand, the greater the extent to which a state pursues policies that promote homogeneity among citizens (restrictions on property holdings and investment, for example) the greater the alignment regarding policy, but also the greater the loss in terms of forgone wealth.

All democracies – modern no less than ancient – face this tradeoff. Designing successful democratic institutions depends on recognizing when the best feasible democratic decisions are second-best – because a system based on majority rule decisions cannot always support the first-

best set of policies. We argue that the *poleis* of ancient Greece were so successful because they considered this tradeoff seriously.

We illustrate our argument with a review of institutions and policies of several notable Greek *poleis*. We begin with the “typical” small *polis* – to which Aristotle referred in his border wars example.¹ The typical citizen in the typical *polis* was a smallholding farmer, who worked his own land and who also manned the *polis*’ military body: the hoplite (infantry) phalanx.² Thus, those who owned the land fought to protect it, and those who fought to protect the land were its landowners.³ How the phalanx was to be deployed (when and where to fight and when and where not to fight) was determined by vote in the *polis*’ public assembly, in which the farmer-hoplite was the median voter. Incentives regarding use of the hoplite phalanx – the typical small *polis*’ most important public good – were thus wonderfully well-aligned. *Except*, as Aristotle points out, with respect to border wars, which were what smaller *poleis* engaged in.⁴ While most *poleis* did not implement Aristotle’s recommendation regarding landholding restrictions, they found other ways of dealing with the incentive issue caused by the threat of border wars; for example, by forbidding citizens who owned border land to speak in public assembly debates regarding disputes with neighbors. These were second-best solutions.⁵

¹ While well-known *poleis* like Athens, Sparta and Syracuse (which we will discuss as well) hosted populations in the hundreds of thousands living on territories covering 1000 or more square miles, most *poleis* had perhaps a few thousand residents living on 10-20 square miles of territory. See the various references we cite throughout this paper.

² Ancient Greek warfare focused on the hoplite phalanx; see, e.g., Hanson (1983); Kagan and Viggiano (2013), as well as our discussion in Section III.

³ In fact, even poorer citizens – those unable to purchase the hoplite panoply – were required to fight, but their contribution was relatively small (they threw stones and sticks at enemy phalanx) and attacked stragglers from behind – all without armor).

⁴ Border wars were sometimes about control of contested borderlands, but could result from any one of many grievances – or even a desire to steal crops from the fields on the borders. What was clear was that damage to the crops could be extensive. See the discussion below.

⁵ The first-best, obviously, would have been to institute no restrictions on landholding or voting and yet have every citizen vote as if he owned land both on the border and in the interior – which was simply not possible.

Sparta, Athens, and Syracuse – each many times larger than the typical *polis* – faced circumstances very different to those facing the typical *polis* (and from each other) and responded in distinct ways. Sparta required not only that all citizens hold land both on the border and in the interior (just as Aristotle recommended), but also that all citizens develop and maintain the same type and level of human capital. Sparta's extraordinary emphasis on a homogeneous citizenry produced an extraordinary degree of alignment, which was judged necessary to control the conquered land and people that were the source of Sparta's wealth. Maintaining this homogeneity among citizens required forbidding market allocations not just of land and labor, but of human capital, and Sparta rendered itself largely autarkic, not able to generate wealth in the manner of a trade-oriented *polis*, such as Athens. Such was Sparta's second-best solution – which served to make Sparta Greece's dominant *polis* until the early 4th century BCE.

Athens did not have the expansive fertile fields and captive labor force that made Sparta a power, but did possess an excellent location at the center of the Aegean and several natural harbors. However, becoming a trade center (which Athens did with great success) required allowing largely unrestricted specialization and trade, and the result was that Athens had a more heterogeneous citizen body than found most elsewhere in Greece. Merchant ships and trading networks being not so easily divisible among citizens as landholdings, Athens dealt with the heterogeneity by seeking to share the benefits and costs of Athens' trade broadly among citizens. This promoted a degree of alignment among Athenian citizens that allowed the often fractious Athenian democracy – the broadest democracy in ancient Greece – to thrive (though Athenians never achieved the alignment of Sparta, or even of the typical small *polis*). Such was Athens'

second-best solution – which rendered Athens the most durable democracy on ancient Greece, and the leading Greek power in the final struggle against Macedon.

Syracuse offers striking similarities and a stark contrast to the two other large *poleis*. Like Sparta, Syracuse controlled large swathes of fertile land and (initially) a captive labor force reduced initially to serfdom. Like Athens, Syracuse was located on the coast, endowed with a large natural harbor and access to major trading routes. Unlike either Sparta or Athens, Syracuse never achieved successful citizen alignment for an extended period – indeed, by some measures, it was the least stable of any major Greek *polis*, alternating between democracy and tyranny with striking frequency.⁶ Syracuse’s combination of fields, labor force, port, and prospects for commerce may have prevented a consensus from emerging in favor of either Sparta-style homogeneity or Athens-style commerce. The unusually varied nature of the Syracusan citizen population (a mix of ethnicities, places of origin, and citizenship rules) likely made the alignment challenge even greater. Syracuse failed to address the Aristotle tradeoff, and chronic instability was the result.

We can draw several parallels with the modern world. First, all successful modern democracies are “Athenian” to some extent, allowing specialization and trade while taxing and transferring in ways that promote alignment. Second, like successful *poleis*, successful modern states may respond differently to the Aristotle tradeoff. For example, some promote alignment via relatively high taxes and transfers while accepting the resultant foregone gains from trade (for example, less investment and less innovation) while others promote gains from trade via

⁶ Tyranny, like democracy, is a term passed down to us from ancient Greece, and refers to what we might today call a dictator. Andrewes (1956, 7) writes, “A tyrant, in these Greek terms, is not necessarily a wicked ruler, but he is an autocrat (and generally a usurper) who provides a strong executive.” For more on Greek tyrants, see Fleck and Hanssen (2013) and the citations therein.

relatively lower taxes and transfers at the cost of less alignment. Both are second-best solutions (as compared to an ideal but unachievable “first-best” of high alignment without restrictions), but are also quite effective at producing durable democracies. Third, the modern world also hosts many “unstable” states that, like ancient Syracuse, cycle through democracy and autocracy with alarming frequency. Can a focus on impediments to achieving an effective second-best further our understanding of why successful democracy is so difficult to attain?

This paper thus contributes to the literature on the rise of democracy and, more generally, the importance of “good” (wealth-enhancing) institutions for economic development. The findings bolster the increasing recognition that the quality of a country’s institution depends on the extent to which they align private incentives with public interests.⁷ This builds on ideas expressed in the foundations of the public choice literature (e.g., Buchanan and Tullock 1962) and in a large recent literature.⁸ We also rely heavily on the voluminous research on ancient Greece and seek to contribute to an emerging literature that explores how institutional design influenced the extraordinary economic performance of the ancient Greeks.⁹

⁷ For example, Giuliano, Mishra, and Spilimbergo (2013) find for the modern world that increases in the measured quality of democratic institutions are significantly associated with the enactment of wealth-enhancing economic reforms.

⁸ See, e.g., Lipset (1959), Fernandez and Rodrik (1991), Barro (1997), Acemoglu and Robinson (2000, 2001), Fleck (2000), Boix (2003), Johnson and Libecap (2003), Jack and Lagunoff (2006), Acemoglu, Johnson, Robinson, and Yared (2008, 2009), Falaschetti (2008), and Treisman (2012). On the conditions under which a broadening or narrowing of the group with policy-making power can move policy in a beneficial direction, see, e.g., North and Weingast (1989), Justman and Gradstein (1999), Lizzeri and Persico (2004), Llavador and Oxoby (2005), Fleck and Hanssen (2006, 2013), Gradstein (2016). On transition to stable democracy, see, e.g., Lipset (1960), Huntington (1968, 1991), Linz (1978), Przeworski et al (2000), Acemoglu and Robinson (2006), Boix (2011), Murin and Wacziarg (2014). Our paper also relates to a literature on benefit-based taxation that dates back to Adam Smith (see Weinzierl 2015).

⁹ See, e.g., Lyttkens (1992), Schwartzberg (2004), Fleck and Hanssen (2006, 2009, 2012, 2013), Kaiser (2007), Ober (2008, 2010, 2015), Morris (2010), McCannon (2010, 2011); Pitsoulis (2011), Ober and Weingast (2013), Teegarden (2014), Carugati (2015).

II. OVERVIEW

The Greek *polis* of the Classical Period (circa 480 – 323 BCE) developed in the centuries following the collapse of Mycenaean civilization around 1150 BCE. The *poleis* that arose from the remnants of bore little relation to Mycenae's highly centralized palace economies (e.g., Murray 1993, 18). Manville (1990, 53-54) describes the *polis* as follows:¹⁰

The Greek polis was a politically autonomous community of people living in a defined territory comprising a civic center with surrounding arable countryside. Its society included both agricultural and nonagricultural laborers who were organized by a centrally located authority to defend the state, contribute to its material needs, share in unified worship of the gods, and decide matters of public policy and personal disputes. Since the polis was in essence its citizens, clear boundaries between the member and nonmember existed; within the boundaries of membership, defined by a fixed constitution, the citizens had the right to participate in the community's deliberative and/or judicial functions whose exercise normally took place in a civic center.

Note the emphasis on the “surrounding arable countryside” – these were not urban communities.

Note further the equating of the state with its people. Indeed, Aristotle defines a *polis* as “a community of citizens with regards to a constitution” (Hansen and Nielsen 2004, 70). A very different notion underlies the modern nation state, which is defined largely by its territory.

Most *poleis* were small, with territories in the tens of square miles and populations in the hundreds or the thousands.¹¹ (Famous large *poleis* like Athens and Sparta hosted populations in the hundreds of thousands and controlled territories in the thousands of square miles.)

Classicists have documented the existence of a thousand Greek *poleis*, spread over an area

¹⁰ Hansen and Nielsen (2004, 17) describe the *polis* more succinctly as “a small, highly institutionalized and self-governing community of citizens ... living with their wives and children in an urban center ... and hinterland ... together with two other types of people: free foreigners ... and slaves” (and in their extended discussion they make many of the same points as Manville).

¹¹ Knowledge of population levels is sketchy; Cartledge (2009, 78) estimates that the citizenry of the typical Greek citizen numbered anywhere from 500 to 2000 men. By contrast, Sparta, Athens, and Syracuse – the three largest *poleis* – are believed to have had citizen populations in the tens of thousands, and resident populations many times that.

running from Spain in the west, to the shores of the Black Sea in the east, to the Ukraine in the north, to modern-day Libya in the south (see Hansen and Nielsen 2004 for a definitive cataloging). The earliest *poleis* developed in the lands surrounding the Aegean Sea, including Greece-proper, Anatolia, and a slew of islands. Most later *poleis* were founded through colonization.¹²

All *poleis* – be they as large as Athens or as small as the smallest *polis* – employed similar formal institutions of governance, consisting of a general assembly (to which all citizens belonged) to pass laws, a council to set the agenda for the assembly, executive offices filled on a rotating basis by citizens chosen via election or lot, and a judiciary consisting of citizens chosen randomly to adjudicate specific cases.¹³ Indeed, without such “political” – from *polis* – institutions, a state would not be a *polis*.¹⁴

Although Ancient Greece is widely recognized as the birthplace of democracy (a Greek term meaning “rule by the *demos*” or “the masses”), it is less generally appreciated that nearly all Greek regimes, including oligarchies, were remarkably representative.¹⁵ What distinguished an

¹² The process of colonization, along with the (possibly) collapse-induced diaspora to areas around the Aegean, explain the astounding geographic spread of the *polis*. It should be noted that Greek colonies were not the semi-vassal states of 19th and 20th century colonization, but rather independent states with at best a loose connection to the mother *polis*. See, e.g., Graham (1982).

¹³ See Fleck and Hanssen (2012) on the Greek judiciary. The ancestor of these political institutions are the Dark Age communities ruled by a king (*basileus*) who was advised by a council of aristocrats, with a warrior’s assembly for ratification. As the Dark Age merged into the Archaic Period (when writing was rediscovered and the Greeks were reintegrated into regional trading networks), kings largely disappeared, their power devolving to the aristocratic councils, which over time became less aristocratic and saw their power shift to the more broadly representative assembly.

¹⁴ A governing population of Greeks was not sufficient. For example, the territory of ancient Thessaly, in north of present-day Greece, never developed the *polis* form despite its Greek population, as discussed in Fleck and Hanssen (2006).

¹⁵ Hanson (1999, 203) writes that, “‘Oligarchies’, for all their ostensibly antidemocratic property qualifications, in the early Greek *polis* were still ‘rule of the people’ and ‘the people’ was the broad base of hoplite yeomanry.” Larsen (1966, 32-33) classifies *poleis* with property requirements not as “oligarchies” (rule by the few), but as “timocracies,” rule by those who own the land, and notes that this group of was broad in most Greek *poleis*. Runciman (1990, 364-5), writes “*Poleis* were all, without exception, far too democratic. Some, of course, were more oligarchic than others. But this meant only that their government was in the hands of a relatively smaller number of

oligarchy from a democracy, or a moderate democracy from a radical democracy, was not so much difference in formal institutions, but rather differences in who had what participation rights within them. For example, an oligarchy might permit its poorer citizens sit in the assembly but not to vote, or limit the issues on which they could vote. An oligarchy also typically vested more power in the less-representative council and less in the more-representative assembly. In a democracy, the assembly was always paramount, but a moderate (as opposed to radical) democracy might limit the assembly voting rights of the poorest citizens, or restrict their ability to serve on the council or to hold executive office.

A. Border Wars

What wars there were, were all against neighboring states: the Greeks did not send armies far from their own borders on wars of conquest. . . . Instead, neighboring states made war on each other. (Thuc. 1.15)

It is important to recognize that the border wars that Aristotle uses in his example (see quotation at start of paper) were very different from famous large-scale and extended conflicts like the Persian Wars or the Peloponnesian War. Border wars involved a clash of neighbors that featured perhaps a few hundred hoplites. Such clashes were exhausting and bloody, but only lasted an hour or so – the action was too intensive and the armor too heavy for much more than that (Hanson 1999, 303).¹⁶ The defeated side fled and was generally not pursued, and attention

relatively richer citizens, rather than a relatively larger number of relatively poorer ones. In terms of a close concentration of economic, ideological, and coercive power in the hands of a compact, self-reproducing elite, no Greek polis came anywhere near the degree of oligarchy of both Rome and Venice during the period of their achievement of world power status.”

¹⁶ Osborne (1987, 138) writes, “Most fighting in Archaic and Classical Greece was between neighboring cities in disputes over border lands. Much of this fighting was not so much warfare as piratical raiding not intended to threaten human life.” De Ste. Croix (1972, 219-20) states, “Quarrels about the ownership of land, especially border land between the two states, were the principal causes of war between the Greek states and were universally recognized as such.” Hanson (1999, 220) states, “the original purpose of . . . [hoplite] infantry . . . was not to storm cities, not to gain advantage over foreign troops, not to protect the Greek polis from outside challengers. . . . but to fight each other, [hoplite] farmer against [hoplite] farmer, and thereby protect their property and community.”

turned to the spoils (crops, abandoned arms); uninjured combatants could be working again on their farms the same day.¹⁷ Even if rankling grievances led to repeated clashes, these might take place over years or decades, and seldom degenerated into systematic warfare aimed at conquest.

All this is *not* to say that border wars were unimportant. As Hanson (1983, 3-4) writes

For nearly 300 years war in Greece was shaped by a struggle to destroy, or to protect, grain, vines, and olive trees. Most armies of invasion uniformly entered the level ground of their enemy, and either threatened, or began, to ravage their cropland. To save their farms, defenders felt they were obliged either to capitulate and thereby submit to terms, or to engage in pitched battle and thereby drive the invader away. Why this strategy of crop devastation was able to determine the very nature and character of Greek warfare has been the subject of considerable discussion. The answer seems to lie in a combination of topographical, economic, and social factors unique to Classical Greece.

A state unable to protect itself would inevitably emerge the loser in disputes with neighbors; indeed, it might lose some or all of its territory. Furthermore, many *poleis* were formed originally through a process known as *synoikismos* (“coming to live together”) – the amalgamation of Dark Age or Archaic period villages under a single political center (Pomeroy et al 1999, 84-7).¹⁸ While *synoikismos* was often peaceful, in some cases it was forced upon unwilling territories. A *polis* unable to defend its borders would not survive as an independent entity.

¹⁷ Hanson (1999, 266) writes that “Nearly always both groups accepted the verdict of battle and felt no need to prolong the bloodletting,” and quotes Plutarch: “It was not a Greek custom to murder those who had already yielded in battle” (*Mor.* 228F30). Osborne (1987, 13) states that “War is endemic in the Greek city; but it took place only over a very limited campaigning season . . . Long campaigns may be more cost-effective, but keeping him [the hoplite] from his fields is counter-productive.”

¹⁸ The history of ancient Greece is typically divided into the Mycenaean period (1600-1150 BCE), the Dark Age (1150-800 BCE), the Archaic Period (800-480 BCE) and the Classical Period (480-323 BCE).

III. ENGINEERING DEMOCRACY: THE TYPICAL *POLIS*

We begin in this section by discussing the “typical” *polis*, which we will also call the “hoplite” *polis* for reasons that will become clear. It was the subject of Aristotle’s example and thus provides a benchmark to which we can compare to the three “atypical” *poleis* we will examine in the next section (Sparta, Athens, and Syracuse).

A. The Hoplite *Polis* – Soldiers Defending their Own Land

The typical *polis* had a citizen body of a thousand or so, and the typical citizen was a smallholding farmer who cultivated a plot of perhaps 10 acres (Hanson 1983, 37). In times of war, these same farmers served as soldiers in the *polis*’ most important military body: the hoplite (infantry) phalanx. Scholars have long proposed that a reason for the broadening of political rights in ancient Greece was the shift from combat by a cavalry of aristocrats on horseback to combat by an infantry of massed smallholding hoplites.¹⁹ For example, Aristotle writes that “once the *poleis* grew and those with hoplite armor became stronger, more people shared in government” (*Pol.* 4.1297b16-24, 28).

Source of wealth: Small farms

Grain was the Greek staple, but only a few *poleis* (such as Sparta and Syracuse) were endowed with extensive fertile fields suitable for large-scale grain production. In most *poleis*, land was hilly and uneven, plains were not large, and small farms predominated, usually put to the cultivation of the Greek triad of grain, olives, and grape vines. Yet the farmers were not poor, because as Hanson (1999, 26) writes,

The soil is rocky but rich, the harnessing of water possible but only through ingenuity and toil. The growing season is long, predictable, and dry. . . . Winters are cold, not

¹⁹ For a review of the debate over the role of the hoplite in the development of the *polis*, see the essays in Kagan and Viggiano (2013), especially Viggiano, Chapter 6.

harsh, and so provide critical dormancy for trees and vines. . . . True, mountains and hills predominate, but slopes are more often gentle than jagged.

Osborne (1987, 36) states, “There is much evidence that most cities of Greece aimed at a general self-sufficiency in staples. The practice of growing a little of everything is true of cities as a whole and of individual farmers and plots of land.”

Alignment

There were no full-time soldiers in the typical *polis*; instead *all* a *polis*’ citizens would take arms in the face of a military threat. The hoplite phalanx consisted of all citizens sufficiently wealthy to purchase hoplite weapons and armor.²⁰ These were the smallholding farmers; Hanson (1999, 240) writes, “Nearly all Greek landowners were . . . hoplites; most hoplites of the early phalanx were in turn landowners.” Armored hoplites were arranged in a tightly grouped body, row upon row, each hoplite holding a short thrusting spear in his right hand and a shield on his left shoulder (the word “hoplite” comes from *hoplon*, the name for the shield); the enormous shield sheltered both his own left side and his comrade’s right. Packed rows of hoplites would meet on open plains, with the goal of routing the opponent. Skill mattered less than endurance as the opposing phalanxes sought to push each other back; Xenophon says of the crowded and chaotic hoplite clashes, “There is little chance of missing a blow” (Cyr. 2.1.16-18). Victory was achieved when one side broke and

²⁰ The panoply consisted of shield, helmet, greaves, sword, and spear, at a cost of perhaps 100 drachma, roughly the price of an agricultural slave (and most farmers owned a slave or two). Very wealthy horse-owning citizens might make up a cavalry, while the poorest citizens – lacking the wealth to purchase the hoplite panoply – skirmished without armor as “the naked” or “the light”, harassing enemy hoplites by throwing stones and flailing with sticks.)

ran, leaving its adversary to ravage the countryside, stealing and destroying crops (Hanson 1999, 242).²¹ Cartledge (1998, 61) states,

By 600 BCE at the latest, hoplite phalanx warfare between massed ranks of heavily armed infantrymen had become the norm in mainland Greece. Battles took place on and over the farmland, on which each city depended for its independent existence. Some of the richest citizens continued to fight on horseback, or at least had themselves transported to the battlefield on horseback. At the other end of the social spectrum, the poorest fought as light-armed support troops on land, or crewed the warships of maritime cities. But the hoplite, standing his ground in solidarity with his fellow-phalangites, became the dominant figure of the era, both politically and socially as well as militarily.

The hoplite's position as "the dominant figure of the era" reflects not only his military importance, but the fact that he comprised the majority of the citizen population in most *poleis*.²² This meant that the farmer/hoplites of the typical *polis* were the median voters in the popular assembly, where laws were made and wars declared. Those lacking the means to buy arms and armor and thus fight in the phalanx enjoyed lesser citizen rights.²³

A well-functioning system by design

In sum, in the typical *polis*, the voters both farmed and fought to defend the land they farmed. Comprising half the citizen population, these farmer-hoplites had very good incentives when it came to voting to go to war: they received the benefits of well-defended borders in the

²¹ Osborne (1987, 13) writes that "Heavily armed hoplite soldiers may be of no use off the more or less level plains, but when it is the plains which it is most important for the city to defend hoplites are the best instrument available."

²² Pomeroy et al (1999, 96-7) estimate that the citizen body in the typical *polis* was made up of 12-20 percent wealthy, 20-30 percent poor, and about 50 percent middle – the "middle" group were the smallholding farmers. Only males were enfranchised; that is to say, allowed "a share in the public life" (Aristotle's definition of citizenship; see Pomeroy et al 1999, 97). Female citizens had various non-political rights and protections. Slaves also comprised a portion of the population in most *poleis* and enjoyed no protections of any kind.

²³ Hanson (1999, 246) notes that both Aristotle and Plato would have regarded as bizarre or Utopian the idea that those who work the soil are not those who fight to protect it, and writes of those who could not afford the hoplite panoply, "They could not engage as meaningful combatants, and could thus have less to say – as Aristotle saw – in the management of the polis itself."

form of more secure landholdings, and bore the costs in terms of a casualty rate from a hoplite clash of perhaps 10 percent (Cartledge 1998, 172; Pomeroy et al 1999, 104).

A breakdown in alignment: Border lands

As Aristotle noted, border lands create an alignment difficulty, because citizens farming near the border faced a greater likelihood of losing their crops (or even their land) to a raiding neighbor.²⁴ Hence, Aristotle's observation that citizens whose landholdings lay near the border were "too ready to come to blows with their neighbors," while citizens whose land lay exclusively in the interior were "so cautious that they quite lose their sense of honor."

Aristotle's prescription for the correct incentives regarding warfare was that each citizen owns a farm in both places. As a practical matter, that would have been costly, if for no other reason than that farmers would have had to travel between non-adjacent properties perhaps lying miles apart. Furthermore, successful craftsmen, for whom farming was perhaps a part-time occupation, also served in the hoplite phalanx and strictly following Aristotle would have required that these men devote themselves to full-time farming, with a concomitant loss in gains from specialization.

Yet the issue Aristotle raised was recognized and solutions sought. For example, as Aristotle discusses, some *poleis* simply forbid citizens living near the border to speak in the assembly during debates over border wars (*Pol.* VII.10). Such rules were second-best – less efficient than a world where perfect alignment can be magically achieved, yet the best one can do given real-world information costs and incentive compatibility constraints.

²⁴ Chapter 4 in Hanson (1983), titled "Methods of Agricultural Destruction", details the extensive means and special tools employed by victorious troops to ravage what they could not steal, by trampling crops, uprooting vines, girdling or even cutting down trees (of limited effectiveness with essentially indestructible olive trees), and burning.

IV. ENGINEERING DEMOCRACY: THREE ATYPICAL *POLIS*

We now turn to Sparta, Athens, and Syracuse, three *poleis* many times larger than the typical *polis*, with populations in the hundreds of thousands and territories covering a thousand square miles or more. Yet, although we term them “atypical”, it is important to recognize that these larger *poleis* began as hoplite *poleis*, and even at the height of their Classical Period powers, employed formal political institutions that were largely the same as those employed by the typical small *polis* (popular assembly, advisory council, executive officeholders and judicial bodies chosen by lot). However, the opportunities these atypical *poleis* faced for wealth creation were much different than those facing the typical *polis*, and the potential wealth involved much greater, rendering their craftings of responses to the Aristotle tradeoff correspondingly more challenging.

A. Sparta – Enforced Homogeneity

Sparta was the *polis* that took Aristotle’s dictum most literally, requiring each citizen to own land “on the border” (i.e., within conquered neighboring territory) and “in the interior” (i.e., Sparta’s home territory). The requirement was one of many restrictions placed on what the Spartans did, how they lived, and even what they ate. Yet this overt, state-sponsored suppression of differences among citizens was designed and carried out by the very citizens upon whom it was imposed.

The source of wealth: Fertile land and captive labor

Much of classical Sparta’s power was financed by the grain production of a neighboring territory, Messenia, which Sparta conquered circa 700 BCE. Messenia possessed the largest and

most fertile grain fields on the Peloponnesian peninsula.²⁵ The Messenians rebelled about thirty years later in what is known as the Second Messenian War, probably timing their revolt to correspond to a Spartan military defeat at the hands of Peloponnesian rival Argos (Murray 1993, 157). At great cost, Sparta crushed the rebellion and reduced the Messenians to serfdom.²⁶ The victory provided the Spartans with two very valuable assets – the most fertile land in the region and a captive labor force to work it. But those assets would generate wealth only if the Spartans incurred the very large cost of maintaining control of them.

Alignment

The Spartans divided the fruits of the conquest with remarkable equality: Messenian agricultural land was split into similarly sized estates and parceled out among Spartan citizens. There was no market in land in Sparta; Spartan estates changed hands only through inheritance or as part of dowries (this contrasts with Athens, where agricultural land could be sold).²⁷ The result was that each Spartan owned an estate on the frontier (i.e., in Messenia) and an estate in the interior (i.e., in native Laconia, where Sparta was located), just as Aristotle had recommended.²⁸

²⁵ Semple (1921, 55) writes that the Messenian grain fields “enjoyed a rare reputation for productivity from very early days.” The reasons for the initial attack on Messenia are uncertain, but it occurred at a time when many *poleis* were sending citizens to found colonies; some scholars have referred to the Messenian conquest as internal colonization (Forrest 1969, 38).

²⁶ The Messenian serfs were known as helots; Forrest (1969, 31) suggests that the word “helot” derives from the root *hel-*, implying seizure or capture.

²⁷ See Fleck and Hanssen (2009) for a contrast of Athenian and Spartan inheritance rules. Spartans were unique in allowing women to inherit land.

²⁸ Sparta was presumably the inspiration for the Aristotle quotation that opens our paper. The “interior” estates (in Sparta’s native Laconia) were also farmed by serfs; scholars such as Jameson (1982) posit that in most Greek *poleis*, farming was initially done by serfs, although in only a few places did serfdom survive into the Classical period (Sparta, Thessaly, and Crete). Unlike the Messenian helots, the native Laconian serfs never rebelled or appeared to pose much military threat. See, e.g., Cartledge (1987, 15).

Before the conquest of Messenia, there was little in the Spartan system that set it off from the rest of the Greek world.²⁹ Sparta followed the conquest with a wholesale re-design of its constitution, known as the Lycurgan reforms (after a legendary Spartan leader).³⁰ Under the reforms the very equal allocation of the assets from conquest was matched to a very equal division of the (mostly military) costs of maintaining control of those assets.³¹ Whereas citizens in other *poleis* engaged in a variety of occupations (farming, trading, crafts, manufacturing), periodically taking up arms as members of the hoplite infantry, Sparta required its citizens to engage in *full-time* soldiering. As a result, Sparta possessed the only full-time army in ancient Greece.³²

The Spartans called themselves the *homoioi*, “those who are alike.”³³ Engineering homogeneity began at birth, when all male infants were examined by a public commission to determine whether they should be allowed to live.³⁴ At the age of 7, each Spartan boy was taken

²⁹ Murray (1993, 155) writes of the early Spartans, “They seem originally to have differed little from other early Greek communities.” Osborne (1987, 150) says that “Many Spartan institutions can be paralleled to some degree in other cities, but the Spartans turned these institutions to radically different ends.”

³⁰ Scholars dating back to Thucydides have attributed Sparta’s unique institutions to its conquest of Messenia (see, e.g., Cartledge 2001, 89).

³¹ Xenophon (*Hell.*3.3.4-11), an Athenian who frequently visited Sparta, said of the Messenian serfs, “They would gladly eat the Spartans raw.” The Messenians rose in rebellion numerous times over the centuries that followed the Spartan conquest, often timing their revolts to coincide with other problems faced by Sparta. For example, the Messenians revolted when Sparta suffered a major earthquake in 465 B.C. (Freeman 1999, 198). The threat of revolt was serious: Although the Messenians lacked weapons, they greatly outnumbered the Spartans. See, e.g., Cartledge (1987, 174); Jameson (1992, 136).

³² Spartans hoplites fought similarly to hoplites elsewhere in Greece, but trained more intensively. Hanson (1999, 301) writes, “Outside of Sparta, hoplites [Greek infantrymen] spent little time training for war.” By contrast, in Sparta, as Hanson (1999, 385) writes, “Males did not farm. They trained constantly for battle.” Finley (1975, 175-6) writes that the Lycurgan reforms produced “a state ruled by an elite of Spartiates whose prime concern was military preparedness.” Plutarch recounts a Spartan general calling out to his combined Spartan-allied army various trades and requesting each to rise until nearly the whole crowd was standing, “but of the Lacedaemonians [Spartans] not one. For they were forbidden to work at a craft and to learn servile occupations” (quoted in Anderson 1970, 243).

³³ See, e.g., Freeman (1999, 97) and Hanson (1999, 385).

³⁴ Plutarch (*Lyc.*16.1-2) writes, “The father did not decide whether to raise a baby; rather he took it and carried it to some place called Lesche where the elders of the tribe sat and examined the infant, and if it were well-built and sturdy, they ordered the father to rear it.”

from his family and enrolled in the *agoge*, a system of public education that required him to live, eat, and sleep with other boys until he reached the age of 20.³⁵ The enforced homogeneity in human capital supported a system of enforced (and equal) contributions to public good production: From age 20 through age 60, all Spartan males drilled continually, constantly ready for battle, living communally until marriage (at roughly age 30) and eating communally (in military messes known as *sussitae*) until age 60. Each Spartan also contributed a fixed amount of food to his military mess.

Spartans took the goal of homogeneity seriously enough that they were willing to expel potential citizen-soldiers from their ranks, and forgo exchanges that could have generated wealth that (at least in principle) would have been used to strengthen the military, in order to keep Spartan incentives regarding use of the military (a *sine qua non* for maintaining control of Messenia) well aligned. For example, a Spartan who lacked sufficient wealth to pay the tax that funded the military mess was stripped of his citizenship – even though a Spartan’s major contribution to the public good was his fighting, not mess contribution. Also stripped of his citizenship was a Spartan who participated in a non-military activity, such as commerce, regardless of the potential gains that resulted (Freeman 1999, 97; Hanson 1999, 385).³⁶

³⁵ The *agoge* (meaning “upbringing”) separated those aged 7 to 17 (the *paides*, or “boys”) from those aged 18 to 20 (the *paidiskoi*, or “youths”). For both groups, however, the physical aspect of the training was rigorous, designed to develop tough, brave men with the ability and mental preparedness to attack and kill Messenians (e.g., Cartledge 2001).

³⁶ Sparta was also unique in the way it treated women. Spartan women could inherit property, and, as a result, they held a substantial amount of Sparta’s wealth (e.g., Pomeroy 2002). Fleck and Hanssen (2009) provide an economic analysis of women’s rights under the Spartan system, and argue that women’s rights played an essential role in providing incentives to manage estates. Note that this, combined with assortative marriage (i.e., wealthy Spartan women marrying wealthy Spartan men) probably made it more difficult to maintain of relatively evenly distributed wealth – but that, in turn, is another reason for Spartans’ to have such great concern with homogeneity. It is also important to note that (i) Spartan girls attended public schools, (ii) Spartan women were expected to engage in activities (such as managing estates) that helped Sparta maintain control and extract rents from the helots, and (iii) Spartan women were discouraged from engaging in many activities (such as commerce) that might have shifted the

A well-functioning system by design

In short, Sparta enforced homogeneity in the manner Aristotle prescribed. First, by ensuring that citizens had similar holdings of land, captive labor, and human capital, and by restricting opportunities to engage in commerce, the Spartans achieved substantial alignment regarding use of the hoplite infantry for which it was famous.³⁷ Second, the main public good was defense and each Spartan was a full-time soldier, so that the cost of the public good was shared among citizens with remarkable equality. As a result, the Spartans could – and did – rely on a majority rule system that allocated power in an exceptionally egalitarian manner.³⁸

A breakdown in Spartan alignment: The loss of Messenia

If we are interpreting the factors behind Sparta's unique institutions correctly, we should find that the loss of Messenia, by changing the benefits and costs of enforced homogeneity brought about a corresponding change in institutions. And indeed this was so. When Thebes and its allies defeated Sparta at Leuctra in 371 BCE, Sparta was stripped of its Messenian estates. Although detail is somewhat sketchy for the post-Leuctra period, it appears that Sparta's constitution became more like those of other Greek *poleis*.³⁹ First, there is some evidence a reform in the system of land ownership; specifically, an abandonment of the rigid inheritance

efforts in other directions. As a result, it was not just Spartan men, but Spartan households, that held similar endowments of human capital.

³⁷ Manufacturing and trade in ancient Sparta were in the hands of the *perioikoi* ("dwellers around"), local populations who were neither serf nor citizen, but were allowed limited self-government, except with respect to foreign policy (they were required to provide military service). See, e.g., Katz (in Cartledge 1998, 128-9).

³⁸ All citizens belonged to the assembly, in which they all had equal say. Sparta also had an advisory council, known as the *Gerousia*, whose membership was drawn exclusively from certain important families, and a dual kingship – Aristotle called the Spartan kingship "hereditary generalship for life" (*Pol.* 3.1285b). (Athens, by contrast, elected its generals to annual terms.) See, e.g., Forrest (1969).

³⁹ Spartan history for this period is not well-documented; Forrest (1969, 142) writes, "No connected account of Spartan history is possible for this period." Cartledge and Spawforth (2002, 9) write that "The lack of . . . a competent narrative account of Spartan and Greek history between 359 and 338 is lamentable."

rules intended to maintain equality in landholdings (Cartledge 1979, 167-9; 1987, 167). Second, the strict prohibition against non-military activities ceased to be enforced, as the rules regarding military obligations changed (Anderson 1970, 229-51). Cartledge and Spawforth (2002, 15) write, “we now hear for the first time of Spartans turning their own hands perforce to the plow.”⁴⁰ From the perspective of the Aristotle tradeoff, the rules that had kept thus voters’ incentives so closely aligned, were no longer worth the opportunity cost of lost gains from trade (including, of course, specialization in the labor market).

B. Athens – The Commercial Powerhouse

Athens also faced the Aristotle tradeoff. However, while Sparta enforced homogeneity in order to align votes on collective decisions, Athens allowed trade and specialization and accepted the resulting citizen heterogeneity, seeking instead to align incentives by sharing broadly the costs and benefits of commerce, in large part through taxes and payments linked to operating the Athenian navy (the public good on which commerce depended). Athens chose differently because its source of wealth was different.

The source of wealth: Commerce

Athens was Classical Greece’s preeminent commercial power – as Morris (2005, 24) states that, “Athens became the Aegean’s economic central place.” Thousands of goods shipped from hundreds of states passed through Athens’ huge port at Piraeus and were available for sale in the Athenian marketplace; hundreds of Athenian craftsmen and workshops prepared goods for

⁴⁰ The Spartans also developed a new source of wealth: Acting as mercenaries for rulers about the Mediterranean. Forest writes, “To mend the poverty Spartans from time to time would use the mercenary market to their advantage and even Spartan kings appear in foreign service. Agesilaos [a Spartan king] died in 360 returning from two years as a mercenary captain in Egypt with 230 talents for the Spartan treasury.” Although mercenaries require military skills, the old Spartan institutions no longer would have been optimal, because the gains from such specialization now exceeded the potential benefits from enforced homogeneity.

local and foreign consumption (Johnstone 2011; Hale 2009, xxvii). Athens's busy commercial courts adjudicated contracts of remarkable complexity.⁴¹

Like elsewhere in Greece, many of Athens' citizens were smallholding farmers (like most other *poleis*, Athens lacked the large fertile fields that Sparta controlled). Yet Athens enviable position on the coast, well-placed to access the most thriving parts of the region, and large natural harbor pointed it toward commerce. Nonetheless, it was not inevitable that Athens would become ancient Greece's "central economic place." Indeed, at the start of the Classical period, Athens was engaged in fierce competition for *local* commercial preeminence with the neighboring – and relatively small – *polis* of Aegina (Meiggs 1972, 98; Haas 1985; Raaflaub 2007, 102-3).

Athens could exploit its natural advantages of location and harbor only by engaging in complementary investments. In common with the rest of the Greek world, defense was Athens' paramount public good. But whereas the typical hoplite *polis* needed only an infantry sufficient to defend its borders, Athens' commercial success depended on naval power (warships and rowers) sufficient to keep the seas safe for merchant shipping. As Kagan (1995, 24) writes,

The power and prosperity of the Athenian democracy depended on its command of its great maritime empire, which was centered on the Aegean Sea, of the islands in it, and of the cities along its coast.

Athens development into the Aegean's preeminent naval power began with the fortuitous discovery of a rich vein of silver in its mines at Laurion (near Athens) in 483 BCE.⁴² The

⁴¹ See Fleck and Hanssen (2012) for an analysis of the Athenian legal system and a discussion of contracting.

⁴² Cartledge (1998, 180) writes, "There been some sort of Athenian navy since at least the 7th century, and in the 6th there may have been a fixed procedure for raising taxes in order to support a sea force – easily the costliest instrument of ancient warfare. Nevertheless, as late as the 490s Athens was still obliged to lease warships from Corinth, a pioneer and long-time leader in Greek naval architecture."

Athenian assembly (i.e., the citizenry) debated whether the wealth should be distributed equally among citizens (the standard practice with mineral finds, which were owned by the state), or instead used, as the statesman Themistocles argued, for the construction a fleet of specialized warships known as *triremes*.⁴³ Threatened by another invasion by the Persians (who had invaded in 492 BCE), the Athenian assembly voted in favor of Themistocles' proposal, and voters were vindicated by the navy's decisive victory over the Persian navy in the Battle of Salamis three years later. With the exception of a brief interlude following the loss of its fleet to Sparta at the end of the Peloponnesian War, Athens was the Aegean's preeminent naval power through the fifth and fourth centuries.

Alignment

Maintaining commercial predominance required continued alignment regarding use of the navy, which became, in effect, the Aegean's police force.⁴⁴ Yet Athens could not proceed as Sparta had done – trade networks or merchant ships cannot be divided evenly among citizens in the manner of conquered land. The emphasis on specialization and trade resulted in much greater differences among Athenian citizens than found in most other *poleis* (much less Sparta), and varying interests across groups of citizens can undermine alignment regarding important public decisions.⁴⁵ The Athenian solution was to establish policies that shifted rents from

⁴³ The design that made *triremes* deadly at war rendered them nearly useless for carrying cargo or passengers (such as armored hoplites) – they were highly unstable and had little open deck or cargo space.

⁴⁴ Meiggs (1972, 267) writes, "Aegean trade needed a strong fleet to suppress piracy and the sea lanes were probably more secure during the period of Athenian empire [i.e., the fifth century] than at any other time in the ancient world except perhaps during the first two centuries of the Roman empire." Rhodes (2013, 205) adds that "From the Persian Wars onwards Athens was exceptional in the size of its navy; and, although almost all of that was lost at the end of the Peloponnesian War, it was built up again in the fourth century, until in the 320s Athens had more ships than ever before."

⁴⁵ For examples, traders with interest to the east will support a navy that sales in the east while those with interests to the west will support a navy that sales in the west; olive growers (Athens was an exporter of olive oil) will support a

seaborne commerce to citizens who otherwise would have benefitted only indirectly, and focused costs on those who benefitted the most directly from the trade network.

There were three major costs to maintaining a navy. First, although a well-maintained trireme could remain in active service for twenty-five years (Hale 2009, 25), ships had to be replaced on occasion. Athens continued to use the silver from its mines to finance the building of ships. The alternative use of those funds (as noted) was distribution across citizens. In effect, the building of ships was funded by a flat tax.

Second, ships had to be repaired and outfitted before embarking. Given that wealthy citizens benefitted disproportionately from trade (in both increased wealth and a broadened set of consumption goods), proper alignment required that they bear corresponding costs. Athens responded by establishing a system whereby those designated the wealthiest in Athens were made responsible for the outfitting of triremes; a man so charged was titled the *trierarch* of the particular ship.⁴⁶ The expense was considerable, although an associated claim on captured booty could make the charge profitable on occasion. There was no particular wealth level that rendered an Athenian citizen liable; rather, if there were 200 ships to be kitted, the 200 wealthiest citizens were chosen. Of course, wealth levels can be observed only imperfectly, and arguments over ‘who is wealthier than whom’ can undermine funding systems. The Athenians developed a dispute resolution process known as *antidosis*, or “exchange.” Any citizen who felt he had been

navy that protects exports while grain growers (Athens was a grain importer) will support policies that limit imports; and so on.

⁴⁶ The vast majority of Athenians paid no income-related taxes; see, e.g., Ober (2015b), Fawcett (2016). A similar system was used to finance religious festivals – liturgies – another important public good. These liturgies were ostensibly voluntary; the occasion for a wealthy Athenian to demonstrate his public-spiritedness, and, indeed, some Athenians did volunteer, perhaps from civic-mindedness or (as scholars have suggested) as a means of cultivating political influence; Lyttkens (1992) argues that wealthy citizens used the liturgical system to signal their eligibility for public office.

called upon unfairly to serve as trierarch could offer to exchange assets with a not-called-upon citizen who, in turn, could either accept the exchange, accept the trierarchy, or demand a trial.⁴⁷ The process helped ensure that the operation of the fleet was funded by – or at least perceived to be funded by – the wealthiest of the Athenians.

Third, the ships had to be rowed, often into battle (with Persians or pirates), a difficult and dangerous task. Triremes were fast, very maneuverable, and designed for ramming, making them lethal in battle – *if* manned by skilled rowers.⁴⁸ An improperly rowed trireme was highly unstable, the result of the same design features that made a properly rowed trireme so mobile. It was here that Athens' poorer citizens played a role; as Rhodes (2007, 30) writes, "Rowing the Athenian navy's ships was primarily the responsibility of the poorer citizens, the *thetes*, those too poor to be able to equip themselves to fight as hoplites."⁴⁹ By contrast, in most *poleis*, citizens with insufficient wealth to purchase the hoplite panoply skirmished as "the naked" or "the light," using "slavish weapons" (Xenophon's phrase) like javelins, slings and bows.

Of course, having *thetes* serve as rowers required establishing corresponding benefits. Athens's *thete* rowers received two forms of payment: a daily rowing wage financed by levies on trade, and a share of the booty from individual naval expeditions.⁵⁰ Furthermore, whereas

⁴⁷ See e.g., Christ (1990, 2007) and Fawcett (2016). Kaiser (2007) models the *antidosis* as a revelation game.

⁴⁸ Of operating a trireme, Thucydides tells us that, "Seamanship, just like anything else, is an art. It is not something that can be picked up and studied in one's spare time" (quoted in Hale 2009, 77). Cartledge (1998, 179) states, "Triremes have been described as glorified racing eights; built for speed and maneuverability rather than strength. This meant that lightness of construction had to be combined with coordination of muscle-power and expert helmsmanship for maximum effectiveness."

⁴⁹ The Athenian navy consisted of 200-400 triremes, and each trireme required 170 rowers to man the three tiers of oars (e.g., Hale 2009).

⁵⁰ In the fifth century, the levies took the form of payments by member states of the Delian League (an anti-Persian defensive alliance) intended to fund the League navy, which was basically the Athenian navy. In the fourth century, after the dissolution of the League, the levies took the form of harbor duties charged at Piraeus, Athens' principal port. For an analysis of how this change affected Athenian political institutions, see Fleck and Hanssen (2019).

landless citizens in other *poleis* possessed limited political rights (as noted, full citizenship, soldiery, and land ownership were part of the same bundle in the typical *polis*), Athenian *thetes* possessed equal political rights as wealthier citizen classes. Cartledge (1998, 151) writes,

Aristotle's model of political development, whereby constitutional change tended to follow military innovation, would lead us to expect that Athens' naval imperialism would have a significant constitutional impact, and such indeed occurred. In the late 460s Ephialtes with his junior adjutant Pericles persuaded a now-radicalized Athenian Assembly to pass a package of reforms that effectively converted the moderate democracy of Cleisthenes into a full-blown government of the people.

Aristotle classified the constitution of Athens as "a democracy based on triremes (Hale 2009, xxvii). Whereas the median voter in most *poleis* was a hoplite, in Athens he was a *thete*.⁵¹ Arguably, the *thete* rower, both bearing the costs of, and receiving the benefits from, naval expeditions, had the best incentives regarding socially beneficial uses of the navy of any Athenian citizen.⁵²

A well-functioning system by design

Aristotle wrote, "The Athenian democracy was strengthened by the masses who served in the navy and who won the victory [over the Persians] at Salamis, because the leadership that Athens then gained rested on sea power."⁵³ Because everyone shared in the costs and benefits of the navy and wealth-enhancing commerce it permitted, Athenian democracy worked well

⁵¹ The *thetes* may have comprised as much as two-thirds of the citizen body (Ober 2015; Rosivach 1985), so full enfranchisement had profound consequences.

⁵² Non-rowing *thetes* also benefitted, as revenues from trade flows were used to fund the construction of public works (such as the Parthenon) that employed many laborers (Meiggs 1972, 258; Rhodes 2007, 30). Morris (2005, 40) writes that much of the trade-based revenues "ended up in the pockets of the poorer Athenian citizens." Rhodes (2013, 228) writes ". . . although these payments were not focused specifically on the poor (as in modern states many welfare payments and other benefits are not means-tested) the overall result was a considerable transfer of funds to the poorer citizens, at the expense of the richer citizens."

⁵³ Relatedly Galpin (1984, 107) writes, "The progressive completion of democratic institutions [in Athens] was simultaneous with the development of an extensive system for the distribution of public funds" primarily through payments to *thete* rowers.

despite the large differences across citizens in occupation, income, and so forth that resulted from putting few limits on specialization and trade. Indeed, even the landowning farmers who manned the hoplite phalanx benefitted from trade – they grew olives and Athens was an olive oil exporter.

Of course, one cannot argue that Athens achieved the alignment of the typical small *polis*, much less that of Sparta. Prominent Athenians frequently expressed concern about political divisions and a great fear of resultant demagoguery. Both Plato and Aristotle had strong reservations about the ability of a democracy to produce good policy. Such views notwithstanding, Athenian democracy was in fact very stable – one of the world’s most long-lived democracy until the modern era. The point is not that the Athenians eliminated political disagreement – they clearly did not – but that they established rules and procedures that allowed them to manage it.⁵⁴ And those rules and procedures helped make the average Athenian very well-off.⁵⁵

A breakdown in Athenian alignment: The Trial of the Generals

Finally, the Aristotle tradeoff suggests a conjecture as to why the Athenian assembly expressed so much anger during the famous “Trial of the Generals,” held late in the Peloponnesian War (e.g., Bauman 1990, 69). The trial occurred when the Athenian assembly

⁵⁴ Our discussion has mostly emphasized the navy, which was by far the most important – and expensive – of Athens’ commerce-related public goods. However, as an advanced commercial society, Athens also required a well-functioning legal system – sufficient to enforce complex contingent contracts – and an administrative framework that would lower the transactions costs of engaging in large-scale trade (among people across the Mediterranean). Athens took a design approach similar to that it used for the navy: large numbers of citizen were employed – with daily compensation – to adjudicate disputes, and to manage the markets and the city. Such tasks were both made necessary by and funded by commerce. Once again, such payments were unique to Athens (e.g., Galpin 1984, 101).

⁵⁵ Ober (2015a, 96) estimates that the average Athenian enjoyed a wage roughly equivalent to that of the average citizen of Holland in the 17th century.

charged several generals with treason for having failed after a sea battle to pick up crew members who had been thrown into the sea (survivors and corpses both), as required. The generals excused themselves on the grounds that rough seas had threatened the fleet. The excuse was disregarded, as was the fact that the sea battle had been won, and the generals were executed.

Athenian voters thus chose to kill victorious generals during wartime – a potentially disastrous action. Bauman (1990, 73) asks, “Why were they [the *demos*] so indifferent to public morale as to demote the greatest naval victory of the war to the level of a rescue operation?” Thucydides blamed demagogues, Cicero blamed ignoramuses, and modern classicists generally explain the decision as an example of assembly overreach, of a kind that would inspire the establishment of checks and balances in the following decades (e.g., Fleck and Hanssen 2019 and the citations therein). We suggest a different explanation: Managing the Athenian navy well under majority rule required a commitment to keep the benefits and costs of naval sorties shared in a manner that aligned voters’ incentives. Late in the Peloponnesian War, rowers were dying at twice the rate of hoplites (Hanson 1999, 368). Rowers accepted the risk of death, but that acceptance was conditional on naval officers following the agreed upon rules – such as the required rescuing of rowers thrown into the sea *even in stormy weather*. These rules influenced how the costs were allocated among citizens. Thus, breaking the rules was not just a threat to rowers, but a threat to the success of the Athenian system. And so it was punished severely.

C. Syracuse – Failure to Align

Syracuse, located on the island of Sicily, provides a useful contrast to the two other atypical *poleis*. It was founded in the mid-eighth century by colonists from Corinth, making it a

much newer state than either Athens or Sparta.⁵⁶ Syracuse shared Sicily with several other *poleis* (founded by several other mainland Greek states), but as Cartledge (2009, 119) writes

[Syracuse] grew to be the largest, most wealthy, and powerful of all Sicilian Greek cities, commanding the second largest territory in the entire Greek world and the forced labor of large numbers of the local native Sicel population, whom – somewhat along Spartan lines – they reduced to a form of serfdom called Cillyriis.

In the Classical period, Syracuse was second only to Sparta in size of its territory, and was equal to Athens in population. Like Sparta, it controlled large and fertile fields that produced copious amounts of grain, and like Athens, it was situated on the coast with splendid access to trading lanes and an excellent natural harbor. But like neither, it did *not* achieve successful alignment among voters – democracy and tyranny alternated in Syracuse with striking frequency over the fifth and fourth centuries. The details of Syracuse’s constitutions (it had many) are not as well-known as those of Athens and Sparta, but the rise and fall of its democracies are relatively well-documented. In this sub-section, we will suggest several reasons why one would have expected achieving democratic alignment to have been more difficult in Syracuse than in Athens or Sparta.

Source of Wealth: Fertile Fields *and* Commerce

Sparta had fertile fields suitable for large-scale grain production and Athens had a natural harbor and an enviable position relative to major trading routes; Syracuse had both. Syracuse was one of the breadbaskets of ancient Greece (Athens’ ill-conceived invasion in 415 BCE was aimed at capturing Syracuse’s grain fields), while its port supported vigorous commerce – De

⁵⁶ “Colonization” had a very different connotation in ancient Greece than in the modern world, implying at most a loose alliance between colony and home territory, and possibly not even that. For a detailed discussion of Greek colonization during the Archaic Period, see Graham (1982), who provides a table listing 139 colonies founded by Greek *poleis* between 800 and 500 B.C.E., including mother city and date of colonization (60-62).

Angelis (2016, 101) writes, “The Sicilian Greek *poleis* seem to have been oriented toward external trade from the start.”

Alignment

Syracuse’s polity was probably the least aligned among the many Greek *poleis*, and Syracuse alternated between democracy and autocracy like a modern Latin American state: Three or four democratic interludes and four or five episodes of tyranny span the 150 years starting in 500 BCE.⁵⁷ Two factors suggest themselves as reasons for such instability. First, the citizens of Syracuse possessed *both* large fertile fields and a captive labor force *and* a coastal location and natural harbor suitable to a major commercial power (i.e., it faced the challenges that confronted *both* Sparta and Athens). Second, Syracuse’s history resulted in a mix of citizen rights and citizen ethnicity (which was very unusual for a Greek state) that would have made achieving alignment regarding socially beneficial collective decisions difficult in even the best of circumstances.

We will begin with the land and harbor. Syracuse was famous for its grain fields, and those few parts of Greece that boasted large and fertile fields (such as Sparta, Crete, Thessaly) relied extensively on captive labor.⁵⁸ Syracuse was no exception – the newly arrived Greek colonists took the land from the native *Sikels* and reduced them to serfdom, much as Sparta had done in Messenia. But whereas the Spartan helots vastly outnumbered Spartan citizens (which made them a strategic challenge, but also of tremendous value to Sparta), Sicily was sparsely

⁵⁷ Over the same period, Sparta’s constitution was essentially unchanged while Athens’ dynamic democracy evolved and flourished (the brief interlude following ultimate defeat in the Peloponnesian War excepted). Our data on regime changes is drawn from the Hansen and Nielsen *Inventory* (2004, 1338), which tracks constitutions of Greek *poleis* from 800 to 323 BCE. See Fleck and Hanssen (2018) for a description and analysis of the *Inventory*’s constitutions data.

⁵⁸ See Fleck and Hanssen (2006) and the citations therein for a review of serfdom in ancient Greece.

populated prior to the Greek arrival (De Angelis 2016, 53). As a result, Sicilian serfs were neither as large a threat nor as valuable a resource as the Messenian helots. Perhaps this explains why Syracuse never established Spartan-like institutions to create and support a military force to suppress serf revolts. Comeuppance came in the early fifth century, when the serf class revolted and expelled the wealthy landowners from the *polis*.⁵⁹ Evidently lacking a military force sufficient to counter the revolt, Syracuse's disenfranchised wealthy turned to the tyrant Gelon and his army of mercenaries, and Gelon became tyrant of Syracuse in 485 BCE. The wealthy received their land back but not their serfs, and native *Sikels* were henceforth counted as citizens, though with precisely what rights was subject of many disputes in the decades that followed (Lintott 1982; Cartledge 2009, 121; De Angelis 2016). The tyranny Gelon founded lasted for the next quarter century, under three different tyrants.

Just as Syracuse never created a Sparta-like infantry despite controlling rich grain fields, it never created an Athens-like navy (or even a navy such as those of the islands of Chios, Lesbos, and Samos) despite possessing an excellent and well-positioned natural harbor. Syracuse's location on the eastern coast of Sicily gave it easy access to Greece, Anatolia, the Middle East, and the North African coast, and Syracuse was a major exporter, and not merely of grain, although grain was its principal export. Yet, as De Angelis (2016, 259) notes, there is little evidence that Syracuse, except when under attack, put a navy to sea at any time during the fifth century, thus ceding control of maritime traffic to others.

⁵⁹ De Angelis (2016, 182) writes that Gelon intervened "with the civil strife that broke out 491/90 BC. The Killyrioi [serfs] expelled the *gamoroi* [wealthy citizens] and in their place established a democracy, in which they gave themselves citizenship." But democracy was "chaotic and weak, according to Aristotle," and when it sought support Gelon's support, he recalled the *gamoroi* and re-established them on their lands

The second challenge facing Syracuse was a citizenry much more ethnically fragmented than that of either Athens or Sparta – or indeed, any other *polis* in ancient Greece. As noted in Section II above, a *polis* was defined not by its territory but by its citizenry, so that nearly all *poleis* restricted access to citizenship tightly. In essence, the only way to become a citizen was to be born one. By contrast, admissions to Syracuse’s roll of citizens multiplied over time with the various regime changes, the citizenry eventually including not only the descendants of the original colonists, but the native *Sikels* (non-Greeks as citizens was unheard of most elsewhere), the citizens of other Sicilian *poleis* who migrated to Syracuse, and the mercenaries and their descendants granted rights by the various tyrants who employed them. Lintott (1982, 189) writes that

Aristotle seems to regard the admission of men from other cities and ex-mercenaries as a cause of the trouble [instability in Syracuse], . . . We can . . . with confidence assume confusion over land assignments since, through the changes in population under the tyranny and the allocations to new arrivals and returned exiles, many people would have had rival claims to the same piece of land.

De Angelis (2016, 172, 178) says that the population of Syracuse was,

. . . eclectic from the beginning. . . made up of people from various parts of the Greek homeland, from the Sicilian hinterland, from the Phoenician world, and from some other regions, especially Italy . . . Herein lies the origins of Sicily’s oft-observed multifarious society and frequent civil strife: society’s heterogeneous base, encouraged by the frontier, created more intense conditions for factionalism.

Syracusan democracy collapsed more-or-less for good in the late fifth century, when power passed to the autocratic tyrant Dionysius.⁶⁰

⁶⁰ Dionysius was the epitome of Aristotle’s feared democracy-ending demagogue – seen seldom elsewhere – wooing the poor through speeches in the Assembly that played on their grievances (Lintott 1982). Tyranny proved very durable, lasting beyond Dionysius’ death in 367 (after 38 years of rule), through several successor tyrants.

In sum, with an underlying source of conflict and concomitant uncertainty about who would be the future voters, the circumstances in Syracuse would likely have precluded either Spartan-style homogeneity or Athenian-style commitments to a navy and a legal system that could support the growth of trade. This presumably made alternatives to democracy – notably tyranny – more attractive to at least some segments of the population.

A poorly functioning system by circumstance

Whereas a landed power with a captive labor force needed a powerful infantry (like Sparta's) to protect its lands and labor, and a commercial power engaged in maritime trade needed a powerful navy (like Athens') to protect its trade networks, Syracuse had neither and was neither. Becoming the former would have required giving disproportionate political influence to large land owners and reducing the masses to serfdom, which, though the norm in Syracuse's early history, the masses quite understandably resisted. Becoming the latter would have required fully enfranchising the masses, which the large landowning classes (presumably fearful for their holdings) resisted. Either approach would have required a stable definition of the citizen body. The results as was that although Syracuse rivaled Athens and Sparta in size and wealth, it never exercised any power beyond the shores of Sicily. When the last battles were fought to determine which *polis* would be the Greek hegemon (e.g., Morris 2009), the competition had narrowed to Athens, Sparta, and Thebes.⁶¹ Syracuse was nowhere in the running.

⁶¹ Thebes was neither very large nor exceptionally wealthy, but headed a regional confederation of *poleis*, the Boeotian League. See, e.g., Cartledge (2009, chapter 10).

A breakdown in Syracusan alignment: *Staseis*

Hansen and Nielsen (2004, 124, 1361) provide a count of the number of instances of *stasis* – a Greek term translated variously as “factionalism,” “civil discord,” and even “civil war” – reported over the Archaic and Classical periods. *Stasis* was considered an existential threat to regime stability; Plato’s skepticism of democracy resulted largely from his belief that it increased the likelihood of *stasis*.⁶² The *Inventory* identifies 122 *poleis* that experienced at least one reported instance of *stasis*; among these, the per-*polis* mean is 2.3 *staseis* and the median and mode are 1. Syracuse is the extreme outlier with 19 reported instances of *stasis*, nearly double the number of the next most *stasis*-prone *polis* (Mytilene), and seven standard deviations from the mean.⁶³

V. LESSONS FOR MODERN DEMOCRACY

The Aristotle tradeoff is equally relevant to modern democracy. For example, consider the two great democratic “revolutions” of the 18th century: the American and the French. The American Revolution led to a durable, wealth-enhancing democracy, the French did not. What explains the difference? A possibility suggested by our analysis is that the nature of the resource endowment differed in ways that made aligning incentives regarding wealth creation easier in

⁶² References to *stasis* abound in Greek literature, running from Homer through the writers of the Classical (and post-Classical) period; see, e.g., Finley (1962); Berent (1998) for discussions. *Stasis* literally means “to take a stand,” and Finley (6) writes “I believe there must be deep significance in the fact that a word which has the original sense of ‘station’ or ‘position’ and which, in abstract logic, could have an equally neutral sense when used in a political context, in practice does nothing of the kind, but immediately takes on the nastiest overtones. A political position, a partisan position – that is the inescapable implication – is a bad thing, leading to sedition, civil war, and the disruption of the social fabric.”

⁶³ Mytilene was located on the Aegean island of Lesbos, which was also known in Classical times for both its wheat fields (Douma et al 2016) and its commerce – Bresson (*La cite marchande* 2000, 107) concludes “In the long term, it was exchange . . . that was the decisive factor in the evolution of the cities on Lesbos.”

democratic American than in democratic France. In the 18th century, agricultural land and labor were critical sources of a society's wealth. The American continent stretched to the west with an apparently unlimited quantity of unclaimed land available to voting citizens (the land was inhabited, of course, but not by voting citizens). This large supply of land for the taking – the frontier – made it relatively easy to gain voter support for a legal system that credibly enforced property rights: Why fight your fellow citizens for land when there is always more beyond the horizon? As a result, although American land holdings were never distributed anywhere nearly as equally as the Spartans', the typical American citizen had little to gain and much to lose from a decision to weaken the protection of property rights. In post-Revolution France, by contrast, the only way to increase one citizen's landholding was to decrease that of another citizen. Bloody conflict was put to an end only by the rise of an autocrat (Napoleon) – the first of several who would govern for the next century. And the notion that "property is theft" would prove very durable. In sum, 18th and 19th century France looks much more like ancient Syracuse than like either Athens or Sparta.

The importance of the wealth creation process is further illustrated by an alignment issue that the American founders failed to resolve: slavery. A North focused on commerce and operating an effective navy was matched with a South focused on agriculture carried out by captive labor (i.e., an Athenian north and a Spartan south). Furthermore, in contrast to the even distribution of helots among Spartans, the distribution of slaves among the American citizenry was very unequal, so that an Aristotle-style solution requiring an equal distribution of slaves among the free, enfranchised population would not have worked either.⁶⁴ The United States

⁶⁴ The cost of reallocation (whether compensated or not) would have been enormous, and the reallocation of slave labor would likely have reduced output enormously given that some types of land (e.g., land suitable for plantations)

never did manage to align voters' incentives over policies to enforce slave holders' claims to slave labor. Instead, it fought a civil war in which two-to-three percent of the population perished. Lack of alignment indeed!

VI. CONCLUSION

Aristotle, in the quotation with which we begin this paper, notes that restricting land sales may help align voter incentives and thereby improve the quality of important collective decisions. Yet such restrictions inevitably reduce the gains from exchange. We refer to this as the Aristotle Tradeoff. We examine several Greek *poleis* for evidence on how they managed – or not – a second-best balancing of the benefits of alignment with the costs of forgoing gains from trade (and vice versa). The key to being a successful democracy in ancient Greece, it would appear, was to tailor the tradeoff to one's circumstances, and to recognize the optimality of the second-best, rather than seeking an unachievable first-best.

Just as Greek *poleis* differed in their approaches to this tradeoff, so do modern states. In a sense, all successful modern democracies are Athenian, focused on promoting commerce, and taxing and redistributing some of the gains in a manner that (may) promote alignment. But they vary in extent. To put things loosely, one might think of the United States as Athens' closest modern exemplar, providing stronger incentives for investment and innovation than found in most democracies, and becoming richer as a result, but also more fractious (as were the Athenians) – the additional wealth comes at a cost. By contrast, although Sweden (for example) is fundamentally Athenian, it is more Spartan than the US, putting greater emphasis on

were assets complementary to slave labor (e.g., plantation land), while other land (notably on the frontier) was not. Indeed, many free citizens opposed slavery because they saw slave labor as a substitute for free labor.

promoting homogeneity through various restrictions (including higher tax and transfer rates). As a result, Sweden is less fractious than the US, but also somewhat less wealthy – the additional alignment comes at a cost.⁶⁵

All that said, by almost any standard, the US democracy is very stable and the Swedish democracy is very wealthy – they have each chosen effective second-best approaches. The same is not true of the many modern states that appear to cycle between democracy and dictatorship with distressing frequency, just as Syracuse cycled between democracy and tyranny. One might argue that Syracuse's circumstances doomed it to instability. Let us hope the same is not true of their counterparts in the modern world.

⁶⁵ This is somewhat in the spirit of Acemoglu, Robinson, and Verdier (2012).

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