

THE FACE OF ROMAN BATTLE*

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I. INTRODUCTION

Our perspectives on ancient history can sometimes be significantly affected by contributions from scholars of other disciplines. An obvious example from the military field is Edward Luttwak's 1976 book on *The Grand Strategy of the Roman Empire*. Luttwak is a respected and insightful commentator on modern strategic issues, and his distinctive contribution was to analyse Roman military affairs in terms of modern concepts such as 'armed suasion' and the distinction between 'power' and 'force'.¹ His book has prompted considerable debate among specialist ancient historians, and although much of this has been critical of his ideas (largely due to the alleged anachronism of applying them in the Roman context), there is no doubt that the injection of this new dimension has helped to influence subsequent thinking on Roman imperial defence.²

Also in 1976, another modern scholar, John Keegan, published his work on *The Face of Battle*. Keegan's distinctive contribution was to move beyond the previous euphemistic discussions of battle mechanics between opposing units, and to focus in detail on the experience of individual front-line soldiers during the key phases of combat. His book did not address the ancient world at all — his first case study was Agincourt, over a millennium later. However, Keegan's basic approach inspired other scholars to turn the same analytical techniques upon ancient battle, and his work received generous acknowledgement at the start of several of their subsequent studies.³

The main benefits of this inspiration have come in our understanding of Greek hoplite battle. Scholars such as Anderson and Pritchett had already produced important modern studies of this topic, and newer contributors like Hanson and Lazenby have taken the subject even further.⁴ A lively academic controversy has developed over whether hoplite clashes took the form of a close-packed shoving match (the *othismos*), or whether they were characterized more by looser individual duelling. Closely linked to this has been extensive (though still not particularly conclusive) speculation about exactly how the depth of hoplite formations was translated into an advantage in battle, even when carried to the apparently ridiculous extreme of a Theban column fifty ranks deep at Leuctra (Xenophon, *Hell.* 6.4.12). Successive scholars have weighed in behind one theory or another on these various issues, and the result has been, if not an emerging consensus, at least a much better appreciation of the evidence and of the complex practical and psychological factors involved.⁵

Rather surprisingly, ancient historians have paid much less attention to similar combat mechanics in Hellenistic and Roman times, even though the details of Roman military organization and battle formations have attracted considerable scholarly

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¹ For examples of Luttwak's more modern writings, see his *Strategy: The Logic of War and Peace* (1987), and 'Toward post-heroic warfare', *Foreign Affairs* 74/3 (1995), 109–22.

² The debate is well summarized in E. L. Wheeler, 'Methodological limits and the mirage of Roman strategy', *Journal of Military History* 57 (1993), 7–41, 215–40.

³ See V. D. Hanson, *The Western Way of War:*

Infantry Battle in Classical Greece (1989), ix–xiii, xx; V. D. Hanson (ed.), *Hoplites: The Classical Greek Battle Experience* (1991), xvi; A. B. Lloyd (ed.), *Battle in Antiquity* (1996), vii–viii.

⁴ See J. K. Anderson, *Military Theory and Practice in the Age of Xenophon* (1970); W. K. Pritchett, *The Greek State at War*, 5 vols (1971–91); Hanson, *op. cit.* (n. 3); J. F. Lazenby, *The Spartan Army* (1985).

⁵ For excellent summaries of the contending arguments, see R. D. Luginbill, 'Othismos: the importance of the mass-shove in hoplite warfare', *Phoenix* 48/1 (1994), 51–61; A. K. Goldsworthy, 'The *othismos*, myths and heresies: the nature of hoplite battle', *War in History* 4/1 (1997), 1–26.

interest since the days of Delbruck, Kromayer, and Veith (and even earlier).⁶ Like Polybius (6.19–42) and the tactical theorists of the Imperial period, modern writers on the Roman army at war tend to focus on marching, encampment, sieges, and overall battlefield deployment rather than on the nature of combat ‘at the sharp end’.⁷ However, this neglect of the combat experience itself is now beginning to change, as several scholars (including myself) have started to address for the Romans the kind of questions highlighted by Keegan’s more ‘bottom-up’ approach, focusing on the perspective of the individual fighting-men.⁸ The literary and archaeological evidence available for such a study is certainly comparable to that which we have regarding hoplite warfare, and, once it is approached in a similarly systematic way, it allows us to draw some interesting conclusions regarding the Roman battle experience.

Although the title of the present article is deliberately reminiscent of Keegan’s pioneering work, I will not attempt in such a short compass to cover anything like the range of topics which he addressed in relation to his three selected battles. Ancient historians applying Keegan’s techniques to hoplite clashes as a *generic phenomenon* have been able to do so only through paucity of evidence and through the comparative simplicity of such clashes, and even then they can be accused of downplaying changes over time and the contribution of other troop types. The much larger Roman field engagements involved far more complex tactical and grand tactical manoeuvres (including the enigmatic operation of multiple infantry lines), to the point where it is even possible to analyse individual engagements like Cannae and Cynoscephalae as free-standing case studies.⁹ Roman battles also entailed more significant employment of combined arms tactics than in traditional hoplite warfare, and there is no space here to do as Keegan did and survey all the possible combat interactions of one arm against another, especially since Roman cavalry warfare has already received significant attention from other scholars.¹⁰

Instead of trying to cover all these different aspects, I will focus more narrowly on the Roman counterpart of the *othismos* debate, namely on the question of what form close range clashes between massed heavy infantry took in the Roman period. Although other factors like skirmishing and grand tactical encirclements had become more prominent than in hoplite times, the decisive element in the great majority of Roman battles remained the confrontation between the legionaries and their infantry opponents. Since legionaries fought enemies as diverse as Celtic swordsmen and Greek pikemen, as well as engaging in the symmetrical confrontations more characteristic of the hoplite era, one must expect to find significant variation in battle mechanics. However, important common themes do emerge, and by synthesizing the evidence which we have of these diverse engagements, primarily from the many classic battles of the middle and late Republic, I will attempt to show that Roman infantry combat must have taken a very different form than either the *othismos* image of hoplite warfare or the dramatic and chaotic sword duels of Hollywood epic might suggest.

II. SOURCES OF EVIDENCE

Sadly, we do not possess for Roman battles anything like the ‘soldier’s eye view’ which memoirs give us for more recent military history. Battle poetry, like that by

⁶ See H. Delbruck, *History of the Art of War*, 1, *Warfare in Antiquity* (trans. 1975); J. Kromayer and G. Veith, *Heerwesen und Kriegführung der Griechen und Römer* (1928).

⁷ See, for example, J. Peddie, *The Roman War Machine* (1994); C. M. Gilliver, *The Roman Army at War* (1999).

⁸ See, in particular, A. K. Goldsworthy, *The Roman Army at War, 100 BC–AD 200* (1996), chs 4–6; P. A. G. Sabin, ‘The mechanics of battle in the Second Punic War’, in T. J. Cornell, N. B. Rankov and P. A. G. Sabin (eds), *The Second Punic War: A Reappraisal*, BICS Supplement 67 (1996), 59–79;

A. D. Lee, ‘Morale and the Roman experience of battle’, in Lloyd, op. cit. (n. 3), 199–217; A. Zhmodikov, ‘Roman Republican heavy infantrymen in battle (IV–II centuries BC)’, *Historia* 49/1 (2000), 67–78.

⁹ See M. Samuels, ‘The reality of Cannae’, *Militär-geschichtliche Mitteilungen* 47 (1990), 7–29; N. G. L. Hammond, ‘The campaign and battle of Cynoscephalae (197 BC)’, *JHS* 108 (1988), 60–82.

¹⁰ See K. R. Dixon and P. Southern, *The Roman Cavalry* (1992); A. Hyland, *Equus: The Horse in the Roman World* (1990); eadem, *Training the Roman Cavalry: from Arrian’s Ars Tactica* (1993); Goldsworthy, op. cit. (n. 8), 228–44.

Homer and the lyric poets or by the anonymous bards of the Celtic and Germanic peoples, can sometimes provide similar vivid anecdotes, but surviving Roman examples are too stylized to be of much help.¹¹ However, we do have several more indirect types of sources, which in combination cast significant light on the experience involved.

Most important are the many 'battle pieces' contained within ancient literary accounts of Roman history. Some of these, such as Livy's descriptions of fourth-century engagements, are of highly dubious provenance, and may have simply been invented for literary or patriotic effect.¹² However, others seem to be based on much more reliable evidence, either tracing back ultimately to eye-witnesses of the battles concerned or else written by an eye-witness, most crucially of course Caesar himself. One must never discount the possibility of literary distortions in even the most plausible battle piece, but a greater problem for our present purposes is that, apart from occasional anecdotes, the writers rarely go into detail on the actual tactical mechanics of the fighting. They resort instead to euphemisms, of the kind which have been used throughout military history and which Keegan tried to deconstruct for later battles when he analysed exactly what processes such as 'driving back' the enemy really involved.¹³

One might hope for more specific details from a different category of literary sources, namely the various tactical treatises produced in the Roman era. Unfortunately, the writers often had limited military experience and produced derivative compilations based as much on Hellenistic as on Roman military practice. Our most detailed first-hand account of the deployment of a Roman army — Arrian's battle order against the Alans — describes a special circumstance in which the Roman infantry formed a continuous 'phalanx' to counter enemies who were mounted rather than on foot.¹⁴ Although there are some useful snippets in the works of theorists such as Onasander and Vegetius, these writers do not clearly elucidate the low level tactical details of infantry combat any more than the historians do.¹⁵

Archaeology contributes to our understanding of Roman infantry battle by giving us a clear idea of the arms and armour involved. Far more equipment has survived from Imperial than from Republican times, but since the basic pattern of legionaries protected by an open helmet, body armour, and tall curved shield and armed with heavy javelins and a short sword persisted throughout, this does not matter too much for present purposes.¹⁶ Much has been made of how Greek hoplite equipment like the closed Corinthian helmet and the unwieldy round shield projecting off to the bearer's left made frontal charges by a massed phalanx the only way to fight, but even this interpretation depends on literary evidence like Thucydides' famous account of the first battle of Mantinea (5.66–74) as much as on equipment analysis alone.¹⁷ Roman equipment was clearly much more flexible than that of hoplites or of Hellenistic pikemen (cf. Polybius 18.30–2), making it even harder to deduce actual fighting methods from the static remnants we possess. However, the depiction of combat on reliefs like those from Adamklissi and Trajan's Column offsets this problem to some extent, and when used in combination with other sources, the archaeological evidence does help us to tackle the overall jigsaw puzzle.¹⁸

The final relevant category of source material consists of extrapolations from more recent experience. It is obviously perilous to draw comparisons with the much better

¹¹ See H. van Wees, 'Heroes, knights and nutters: warrior mentality in Homer', in Lloyd, op. cit. (n. 3), 1–86; P. A. G. Sabin, 'Maldon AD 991', *Slingshot* 181 (1995), 26–31.

¹² See P. G. Walsh, *Livy: His Historical Aims and Methods* (1961); T. J. Cornell, *The Beginnings of Rome* (1995), 1–30.

¹³ For an excellent survey of the impact of different styles of analysis among ancient writers, see J. E. Lendon, 'The rhetoric of combat: Greek military theory and Roman culture in Julius Caesar's battle descriptions', *Classical Antiquity* 18/1 (1999), 273–329.

¹⁴ See E. L. Wheeler, 'The legion as phalanx', *Chiron* 9 (1979), 303–18.

¹⁵ A useful discussion of the treatises as a *genre* is B. Campbell, 'Teach yourself how to be a general', *JRS* 77 (1987), 13–29. See also Gilliver, op. cit. (n. 7).

¹⁶ See M. C. Bishop and J. C. N. Coulston, *Roman Military Equipment* (1993).

¹⁷ See J. K. Anderson, 'Hoplite weapons and offensive arms'; V. D. Hanson, 'Hoplite technology in hoplite battle', in Hanson, op. cit. (n. 3, 1991), 15–37, 63–84.

¹⁸ See Goldsworthy, op. cit. (n. 8), 217–19; P. Connolly, 'The Roman fighting technique deduced from armour and weaponry', in V. A. Maxfield and M. J. Dobson (eds), *Roman Frontier Studies 1989* (1991), 358–63.

documented infantry clashes of the gunpowder era, since military technology has changed so much over the intervening centuries. However, the instincts and psychological pressures affecting massed formations of troops in close proximity to similar opposing formations are unlikely to have changed anything like as much over what is an insignificant interval in evolutionary terms. Hence, several recent scholars have made good use of modern findings regarding the psychology of men in battle as a contribution to their analyses of ancient morale.¹⁹ When a pattern emerges from the ancient evidence about human behaviour in combat, it has greater credibility and resonance if it chimes with modern experience — Caesar's description of men slipping away from the rear of his hard-pressed cohorts at the Sambre (*BG* 2.25) is a case in point, since this accords exactly with how Napoleonic infantry columns seem to have broken from the back rather than the front.²⁰

Even in combination, these various types of sources do not paint a clear picture of what Roman infantry combat involved (any more than the equivalent Greek evidence conclusively supports or refutes the *othismos* theory, or shows exactly why formation depth was such an asset). However, the sources do provide enough clues to enable us to reconstruct the overall parameters of Roman infantry clashes, and thereby to set up certain yardsticks against which contending models may be tested. To use a scientific analogy, ancient infantry combat is rather like a black box — we cannot discern its internal workings directly, but by observing different inputs and outputs, we may construct and evaluate various hypotheses about what is going on inside. I will now explore the outward features of the black box by discussing several key parameters about which the ancient evidence is reasonably clear.

III. OVERALL CHARACTERISTICS

Four features in particular set the context for any attempt to explain the mechanics of Roman infantry combat. These are the duration of the clashes, the casualties inflicted on both sides, the mobility of the two fighting lines, and the role played by supporting ranks behind those initially engaged. I will discuss each of these four features in turn.

As regards duration, Roman infantry clashes were sometimes decided very quickly by one side giving way at (or even before) the first shock. Livy describes this happening to the Romans themselves at the Allia and Herdonea, and to their enemies at Ibera and Agrigentum (5.38, 23.29, 25.21, 25.40). Goldsworthy cites several similar instances from late Republican and early Imperial times, and argues that such quick decisions were commoner in these periods than in earlier or later eras of Roman history.²¹ More usually, however, Roman infantry battles involved a drawn-out engagement before either side finally broke and ran. The crucial question is, was the duration of these more prolonged engagements generally measured in minutes or in hours?

Our sources certainly speak in terms of the latter. Livy explicitly describes particular Roman battles as lasting several hours (e.g. 22.6, 23.40, 24.15, 25.19, 27.2, 27.12), Plutarch (*Aem.* 22) says that Pydna was decided unusually speedily in just one hour, and Vegetius (3.9) claims that battles were usually resolved in two or three hours. One might suspect that these statements by later writers are ill-informed, or include other phases such as preliminary skirmishing as well as the actual heavy infantry clash. However, Caesar makes very clear in his account of Ilerda (*BC* 1.45–7) that an isolated contest between several cohorts of legionaries could indeed last as long as five hours.

Even more conclusive is the evidence from the 'internal clock' provided in a significant number of Roman battles by manoeuvres at the grand tactical level. To take just the most striking examples, it must have taken at least an hour, and probably a lot longer, for the Gallic and Spanish cavalry at Cannae to beat the Roman cavalry, ride

¹⁹ See, in particular, the various essays in Lloyd, *op. cit.* (n. 3).

²⁰ See J. Keegan, *The Face of Battle* (1976), 171–4.

²¹ See Goldsworthy, *op. cit.* (n. 8), 201–6; *idem*, 'Legionaries and warbands: an historical overview', *Slingshot* 199 (1998), 9–14.

round to the other wing to see off the Italian cavalry, and then to take the Roman infantry in the rear (Polybius 3.113–16). The same applies to Nero at the Metaurus, moving his infantry from the Roman right wing round the back of his own army's left to assail the Punic right from behind (Polybius 11.1), or to Labienus at the Sambre, who beat the Atrebatas and Viromandui, went on to seize the Gallic camp, and then sent the Tenth Legion back to relieve Caesar's hard-pressed forces (Caesar, *BG* 2.18–27). Throughout these extensive manoeuvres, frontal combat between heavy infantry was raging without decision in another part of the field.

It is interesting to note that we can be far more certain about Roman infantry clashes lasting for such long periods than we can about Greek hoplite engagements. Pritchett has catalogued numerous references to hoplite battles lasting 'a long time', but this is a hopelessly relative measure and could simply mean that neither side broke at once as was often the case.²² Certainly the 'internal clock' is far less useful in this instance, since hoplite battles rarely involved such complex grand tactical manoeuvres, and even when they did, hoplites usually routed their frontal opponents before other enemies could wheel round against them, as at the first battle of Mantinea, Nemea, and the second battle of Coronea (Thucydides 5.66–73; Xenophon, *Hell.* 4.2.14–23, 4.3.16–19). As I will show later on, our greater certainty that Roman heavy infantry engagements could drag on for an hour or more is a key factor in developing a model of the kind of fighting involved.

The second important characteristic of Roman infantry battles concerns the respective casualties inflicted. Krentz has studied casualty statistics for hoplite engagements, and has concluded that the victors lost an average of 5 per cent and the defeated side an average of 14 per cent of their strength.²³ Casualties among the losers in Roman battles were frequently far heavier, with over half the defeated army often being killed or taken prisoner according to our sources.²⁴ For example, Polybius tells us that the Carthaginians at Zama suffered 20,000 dead and almost as many captured, only a few escaping, while at Cynoscephalae, 8,000 were killed and 5,000 taken prisoner out of Philip's 25,500 strong force (Polybius 15.14, 18.27; Livy 33.4).

Such figures may contain some understandable exaggeration by the victors, but the difference from the earlier situation is readily explicable in terms of what happened after one side broke. In hoplite clashes, the victors were hard pressed to catch fleeing adversaries who had thrown away their heavy shields, even had they wished to do so once clear superiority in the *agon* had been established (cf. Thucydides 5.73). After Roman battles, by contrast, defeated troops sometimes found themselves encircled and incapable of flight (as at Cannae), while others were subjected to a drawn-out pursuit like those after Pydna or the defeat of Ariovistus, in which they were mercilessly slaughtered from behind by faster enemy cavalry (Plutarch, *Aem.* 21–2; Caesar, *BG* 1.53). The many sculptural depictions of Roman cavalry riding down defeated foes illustrate the importance placed on following up a victory in this way (cf. Caesar, *BG* 4.26, 35; Josephus, *Bj* 3.13–21).

What is more interesting is to examine how heavily the victors suffered during Roman infantry clashes which went on for a considerable time before one side broke. Sometimes their losses could be severe, as in the proverbial 'Pyrrhic victories' of the early third century B.C. (Plutarch, *Pyrrh.* 17, 21), but this was very much the exception rather than the rule. Polybius gives figures for engagements during the Punic Wars which suggest that the average death toll for the victors was around 5 per cent, the same as for the winners in Greek hoplite clashes (1.34, 3.74, 3.84–5, 3.117, 9.3, 15.14).²⁵ In subsequent Roman battles, the victors are said to have escaped even more lightly — only 700 dead at Cynoscephalae, 350 at Magnesia, 100 at Pydna, 230 at Pharsalus, and 1,000 at Munda (Polybius 18.27; Livy 37.44; Plutarch, *Aem.* 21; Caesar, *BC* 3.99; *BHisp* 31).

²² See Pritchett, *op. cit.* (n. 4, vol. 4, 1985), 47–51.

²³ P. Krentz, 'Casualties in hoplite battles', *GRBS* 26/1 (1985), 13–20.

²⁴ See R. A. Gabriel and K. S. Metz, *From Sumer to Rome: The Military Capabilities of Ancient Armies* (1991), 83–91.

²⁵ The 5,700 dead which Hannibal suffered at Cannae represented 11 per cent of his force, but this is easily explicable in terms of the effort needed to annihilate a much larger Roman army.

Clearly these figures need to be taken with a pinch of salt, and there would be many wounded in addition, but the overall picture of a much greater asymmetry of losses than in hoplite warfare is clear.

One of two conclusions seems inescapable — either the losses during the fighting itself were heavily one-sided, with one antagonist's troops being killed without being able to make effective reply, or else *both* sides suffered relatively limited overall casualties before the rout, with the real danger for the losing troops (especially those incapacitated by wounds) coming only *after* they turned and fled. These two models in fact represent two ends of a spectrum, and the likeliest interpretation is that different clashes could fit virtually anywhere along that spectrum.

We know from Cannae that troops with no option but to stand and fight could nevertheless be slaughtered without inflicting similar casualties in return, and there are several other instances where bodies of men chose to stand heroically and were massacred (cf. Plutarch, *Aem.* 21; Caesar, *BG* 2.27). Conversely, there were other cases in which casualties during the fighting were much more symmetrical. In the five hour clash at Ilerda, Caesar's cohorts are said to have suffered 70 dead and 600 wounded, compared to 200 killed and an unspecified number of wounded on the Pompeian side (Caesar, *BC* 1.46). Josephus (3.150–4) records a similar clash which went on all day after a Jewish sortie at Jotapata, in which the Romans suffered 13 dead and many wounded, compared to 17 killed and 600 wounded on the Jewish side. Whatever the balance in individual cases, the key point is that even the most prolonged of Roman infantry contests did not usually produce greater *mutual* slaughter than in the (possibly much briefer) clashes of the hoplite era.

The third important characteristic of Roman infantry engagements concerns the mobility of the fighting lines. We know that infantry formations could give ground during combat, either by deliberate choice or under irresistible enemy pressure, without fleeing altogether. At Cannae, the Punic infantry centre was transformed from a convex into a concave formation under the Roman onslaught, thereby trading space for time and helping to suck the legionaries into Hannibal's trap (Polybius 3.113–15). At Cynoscephalae and Pydna, the Romans themselves were forced back by the Macedonian phalanx, thereby sealing its doom by drawing it onto poor terrain or exposing its vulnerable flank to other Roman forces (Livy 33.8–9; Plutarch, *Aem.* 20). Polybius described this vulnerability of the phalanx to differential advances and retreats as a key generic weakness compared to the more flexible Roman forces, but it is clear from his account of Sellasia that even Macedonian pikemen could sometimes recover and go on to win after being pushed back by the enemy (2.68–9, 18.31–2).

To have such grand tactical significance, these retrograde movements must have involved hundreds rather than tens of yards (cf. Plutarch, *Cleom.* 28). Caesar (*BG* 1.25–6) writes that the Helvetii fell back no less than a mile after getting the worst of the initial clash, before resuming fierce resistance from their new uphill position. Exactly *how* the withdrawals were carried out is difficult to reconstruct. Some descriptions of Celtic retirements suggest that the troops simply turned and ran, and then rallied once they had temporarily outdistanced pursuit (Livy 22.47; Caesar, *BG* 2.23). However, it is hard to envisage more heavily equipped troops succeeding with such an approach in the face of an active opponent, and other sources describe a more measured withdrawal in which forces stepped back gradually while still facing the enemy (cf. Polybius 2.68–9; Appian, *BC* 4.128).

The actual means by which troops were 'pushed back' by their adversaries is especially hard to discern, given the possible confusion between metaphor and reality.²⁶ Appian evocatively wrote that Octavian's troops at Philippi 'pushed back the enemy's line as though they were revolving a heavy mechanism' (*BC* 4.128), but, as in the *othismos* debate, the question of what was really going on in practice depends critically on our model of infantry combat as a whole.

Before considering this issue, I will discuss the final key characteristic of Roman infantry clashes, namely the role played by supporting ranks behind those initially

²⁶ See Lendon, *op. cit.* (n. 13).

engaged. Sometimes such troops were simply used to add depth to the main fighting formation, as had been the norm in hoplite warfare. This applied particularly to the adversaries of the Romans, and especially to Hellenistic pikemen, as in the deployment of the Seleucid phalanx at Magnesia no less than thirty-two ranks deep (Livy 37.40). However, the Romans themselves rarely used supporting ranks in this manner, and when they did employ unusually deep infantry formations against Xanthippus in 255 B.C. and against Hannibal at Cannae, the disastrous outcome was quite the opposite of what Epaminondas achieved at Leuctra (Polybius 1.33–4, 3.113–17). Nor were deep formations particularly successful against Roman troops themselves, as shown by the repeated victories of legionaries over phalangites and by the fact that Pompey's ten deep lines at Pharsalus were overcome by Caesar's much shallower formations (Caesar, *BC* 3.88–94; Frontinus, *Strat.* 2.3.22).

The Roman alternative to forming a single battle line many men deep was, of course, to deploy their infantry in multiple lines, be it within the mid-Republican framework of *hastati*, *principes*, and *triarii* or in the famous *triplex acies* of the later cohort legion (Polybius 6.21–4; Caesar, *BC* 1.83). There is no space here to go into the many complex issues surrounding the tactical and grand tactical employment of this distinctive multiple-line system — such an analysis would require a long article in its own right.²⁷ For our present purposes, namely to understand the face of Roman battle at the front line itself, it will suffice to highlight two significant consequences of the multiple-line system for any model we might consider.

First, since the Romans clearly thought it more worthwhile to use multiple lines than to form one single deep formation as was the norm in other ancient armies, our model of Roman infantry combat must explain this preference. Multiple lines were employed in many ways, including for wide-ranging grand tactical manoeuvres by troops from the supporting lines as in battles at the Metaurus, the Great Plains, Zama, Cynoscephalae, Second Chaeronea, and Pharsalus (Polybius 11.1, 14.8, 15.14, 18.26; Plutarch, *Sulla* 19; Caesar, *BC* 3.89–94). However, the primary purpose of the multiple-line system seems to have been to allow fresh troops to replace or reinforce tired ones in the front line itself. Livy describes this process clearly for the manipular legion (8.8), albeit in an anachronistically early context, and Caesar speaks of fresh cohorts replacing tired ones at Ilerda and Pharsalus (*BC* 1.45–6, 3.94).²⁸ The ancient authors repeatedly state that it was this advantage of having fresh men fighting tired ones which gave the Romans such an edge over opponents who were in equal or greater overall numbers, but massed in a single fighting line (cf. Livy 9.32, 34.14–15; Onasander 22). Hence, any model we might develop of Roman infantry combat must be one in which having fresh troops in the fighting line matters at least as much as the physical and psychological advantages of greater formation depth.

The second and related point is that our model must be one in which the physical passage of lines to accomplish this line relief would have been a feasible proposition. Scholars have long debated the practicalities of the famous 'chequerboard' deployment of Roman legions, addressing such intractable issues as how wide the gaps between maniples or cohorts would have been, whether and how these gaps were closed before combat, and how they were opened again to allow an engaged first line to admit or withdraw through its supports without making itself catastrophically vulnerable to enemy penetrations in the process.²⁹ It is very hard to find satisfactory answers to these questions, and so any model of infantry combat at the level of individual soldiers which makes it easier to understand how the line relief process may have worked will be much more convincing as a consequence.

²⁷ As with other aspects of Roman battle, not much has been written on the topic recently. A good summary of the historical debate is in T. Rice Holmes, *Caesar's Conquest of Gaul* (1911), 587–99, and more recently in Wheeler, op. cit. (n. 14). I hope to publish my own thoughts on the subject soon.

²⁸ On the problems of Livy's account, see E. Rawson,

'Literary sources for the pre-Marian army', *PBSR* ns 26 (1971), 26–31.

²⁹ For recent contributions on the subject, see P. Connolly, *Greece and Rome at War* (1981), 140–2, Goldsworthy, op. cit. (n. 8), 138–40, and Gary Brueggeman's website on <http://www.geocities.com/Athens/Oracle/6622/>.

To summarize, Roman heavy infantry engagements possessed several clear characteristics which must be accounted for by any model of the combat mechanics involved. If not decided at the first clash, the contests often dragged on for an hour or more before one side finally broke and fled. The losers could suffer appalling casualties in the battle itself or in the ensuing pursuit, but the victors rarely suffered more than 5 per cent fatalities even in drawn-out engagements. The fighting lines could shift back and forth over hundreds of yards as one side withdrew or was pushed back by its opponents. Finally, the Romans had a practical system for the passage of lines, and preferred to reinforce or replace tired units with fresh ones rather than maximizing the depth of the initial fighting line. I will now discuss how various possible models of Roman infantry combat accord with these characteristics and with such direct evidence as we have from the ancient sources themselves.

IV. MODELS OF COMBAT

The first model which we must consider is a direct parallel with the *othismos* image which many scholars have of hoplite battle, namely a literal 'shoving match' in which successive ranks push from behind to try to drive back the enemy in a massive armed equivalent of a modern rugby scrum. Whatever the case for and against this model in the hoplite context, it seems highly implausible as a mechanism for Roman infantry combat, despite suggestive metaphors like Appian's description of the fighting at Philippi (*BC* 4.128).

For one thing, it is very hard to reconcile this image with the overall characteristics of Roman infantry battle. Peter Connolly has produced a striking visual reconstruction of a hoplite *othismos* based on the climactic struggle between Thebans and Spartans at the second battle of Coronea, but as soon as one tries to stretch out his frozen split second into an hour or more of continuous fighting literally cheek by jowl with the enemy, grave practical objections emerge.³⁰ It is hard enough to see the forward ranks in Connolly's image surviving even the next few frames of our imaginary film, given the spears poised inches from their faces. Transposing this image to the Roman context of over an hour of continuous fighting would surely produce grossly ahistorical *mutual* casualties through the devastating effects of the short Roman swords. It is also extremely difficult to envisage troops engaged in such a pushing duel being able to open gaps or withdraw from combat as part of the line relief process without collapsing in the face of the continuous enemy pressure.

Furthermore, the *othismos* model is at odds with several more direct indications from the available evidence. Roman shields certainly seem to have been designed to have an *individually* offensive role, allowing legionaries to barge into and unbalance their opponents, but their single hand grips and prominent bosses were much less suitable for exerting forward pressure on the back of one's own troops than the Greek *hoplon* may have been.³¹ Caesar's description of the Sambre makes clear that it was a positive hindrance for legionaries to be jammed closely together, and he ordered the Twelfth Legion to open its formation so that the men could use their swords more effectively (*BG* 2.25).

A radical image of Roman combat in which *both* sides were pressed together so closely that neither could use its weapons might perhaps have some theoretical attraction in explaining the combination of long battles with limited mutual casualties before the rout. Livy (34.46) describes a clash between Romans and Gauls in 194 B.C. in which the adversaries pushed one another with shields and bodies rather than using their swords, and Ammianus (18.8) records an instance at Amida where troops were so closely packed that the dead remained upright. However, both of these cases were highly exceptional, in that the troops were squeezing through very narrow passageways. Any attempt to

³⁰ See J. Hackett (ed.), *Warfare in the Ancient World* (1989), 66–7.

³¹ See Goldsworthy, *op. cit.* (n. 8), 206–12, 217–19.

generalize such cases into a 'sardine' model of Roman infantry combat as a whole is starkly at odds with the focus in Roman battle descriptions on weapon play rather than shoving, with the Roman, Celtic, and Spanish stress on skilled swordsmanship, and with the comparative dearth of references to crushing and trampling as a cause of injury.³² All this, together with the emphasis on the injection of fresh reserves rather than sheer physical depth in Roman infantry tactics, suggests that the associated clashes did not take the form of a close range shoving match.

Sadly, the limited chronological overlap between the hoplite and legionary ways of fighting means that we have no clear evidence on how a contest between the two tactical systems would have developed. However, we know much more about clashes between the Romans and the pike phalanxes which succeeded hoplites in Greek warfare. Polybius seems to imply that physical pressure was important in these later phalanxes, when he writes that the rear ranks served both to inhibit the retreat of those in front and to add to the force of the charge by the sheer pressure of their bodily weight (28.30). Later tactical treatises echo this suggestion (e.g. Asclepiodotus 5.2). Does this mean that Roman battles against the Greeks did indeed take the form of a literal *othismos*?

It is instructive to consider for a moment the more symmetrical case of clashes between pike formations themselves. The ancient evidence about the tactical mechanics of such contests is rather vague, other than to show that formation depth continued to be a very high priority.³³ Fortunately the pike was revived as a weapon in the early modern era and we can gain some further insights from that more recent period. Modern re-enactment groups trying to display the famous 'push of pike' do often engage in close range shoving matches cheek by jowl with their opponents, but with the pikes themselves rather redundantly slanted upwards for obvious safety reasons, instead of levelled against the opposing formation.³⁴ Actual contemporary accounts suggest that real early modern pike duels were more tentative affairs, involving cautious long-range fencing rather than the creation of 'mutual kebabs'.³⁵ This would tie in with the apparent escalation in the length of ancient *sarissae*, from 10 or 12 cubits in the Alexandrian era to a massive 14 or 16 cubits (24 feet) in Hellenistic times, since outreaching enemy phalangites during such a fencing contest would be a key priority as long as it did not make the pikes too grossly unwieldy.³⁶

Accounts of battles between phalangites and legionaries also support the idea that the pikes themselves played the key role. Polybius, in his analysis of Cynoscephalae (18.29–32), focuses far more on the detailed strengths and weaknesses of the overlapping pike hedge than he does on his passing remark about pressure from the rear, and Plutarch in his account of Pydna (*Aem.* 20) likewise stresses the role of the Macedonian pikes, either in stabbing the Paeligni as they tried to break through or in failing to keep the Romans at bay once gaps developed in the hedge of weapons.

Connolly's pictorial representation of Pydna is far less problematic than his portrait of the second battle of Coronea, since it shows the legionary line held at a distance, with the foremost pikes embedded in the large Roman shields.³⁷ One can easily imagine such a stand-off continuing for a protracted period, with the Romans gradually giving ground to avoid the thrusting pikes, and with only a steady trickle of casualties through the stabbing of an over-zealous legionary or through a well-thrown *pilum* finding its mark, until at last the Romans achieved the kind of catastrophic breakthrough illustrated in the foreground of Connolly's picture and were able to massacre the phalangites at close quarters (cf. Livy 36.38; Plutarch, *Sul.* 18–19). The exact contribution of the rear ranks of pikemen remains somewhat enigmatic, as in the hoplite case, but what is clear is that we are dealing with very different tactical circumstances than in the direct shield-to-shield shoving of the *othismos* model.

³² On Greek references to such crowding, see Hanson, *op. cit.* (n. 3, 1989), 174–6.

³³ See B. Bar-Kochva, *The Seleucid Army* (1976), 134–5, 167–9.

³⁴ See K. and D. Guest, *British Battles* (1996), 100–1.

³⁵ See S. Peachey, *The Mechanics of Infantry Combat*

in the First English Civil War (1992); S. Reid, *Gunpowder Triumphant* (1987).

³⁶ See D. Head, *Armies of the Macedonian and Punic Wars, 359 BC to 146 BC* (1982), 106, 111.

³⁷ See P. Connolly, *The Roman Army* (1975), 8–9; *idem*, 'Legion versus phalanx', *Military Illustrated* 124 (1998), 36–41.

The clashes between legionaries and phalangites were very much a special case, and the normal adversaries of the Romans in the Western Mediterranean and Northern Europe were other infantry equipped broadly like themselves, with large shields, javelins or spears, and swords.³⁸ If the more symmetrical contests between these adversaries did not take the form of a close-packed shoving match, then the obvious alternative model (as in the hoplite controversy) is of a charge into contact followed by a succession of hand-to-hand duels between the opposing troops.³⁹ This is the image popularized by a whole string of Hollywood epics, and (in amended form) it represents the 'default consensus' among scholars based on numerous references to such *mêlées* in the ancient sources. However, on closer analysis, this model proves to be almost as problematic as the *othismos* image as a way of explaining the overall characteristics of Roman infantry combat.

First, we must define the kind of individual duelling envisaged. The Hollywood version has the opposing units, even if marshalled in quite sophisticated formations to begin with (as in the movie *Spartacus*), degenerating into armed mobs which lose all cohesion during the charge and which interpenetrate with one another to produce a chaotic array of duels in which virtually all the antagonists, rather than just the front-rankers, are directly engaged. This might look good for a few seconds on the silver screen, but it is utterly implausible in reality. It would require a suicidal willingness on the part of the individual troops to forfeit the protection of their comrades and expose themselves to an unseen strike from flank or rear, and it also flies in the face of the clear emphasis of our sources on discipline and formation cohesion (cf. Livy 21.57, 22.4–5, 25.21, 30.34; Vegetius 1.26, 2.17, 3.19). The mutual casualties produced by such a chaotic intermingling of ranks would be massively greater than we know occurred. Hence, scholars instead envisage Roman infantry *mêlées* as a clash between two formed lines in which only the front-rankers engaged one another directly.

An area of significant dispute is the lateral spacing between these duelling front-rankers. Polybius (18.29–30) claims that there was only one legionary in the front rank for every six feet of unit frontage, whereas Vegetius (3.14) states that legionaries fought on a frontage of just three feet each. Connolly accepts the Polybian version, but rather undermines this by suggesting that the legions fought in close order at Cannae and Trebia — Polybius (3.72) says that at the latter battle the army used the regular Roman order.⁴⁰ The Polybian spacing is based on the idea that each legionary faced two pikemen in the front rank of a phalanx, but we know that phalangites could form a special 'locked shields' formation with a frontage of only eighteen inches each (Polybius 2.69; Asclepiodotus 4), so the truth may be that legionaries could vary their own frontage between three and six feet, perhaps by the simple expedient of having every second rank step into or out of the gaps in the rank in front.⁴¹ Although the sources do record a few instances where legionaries fought in loose formation as individual duellists (Livy 28.2; Caesar, *BC* 1.44; Tacitus, *Annals* 2.14), these cases appear to be very much the exception to the rule, and it seems most likely that a closer order was adopted during normal massed combat.⁴²

So what is wrong with this image of Roman infantry clashes consisting of continuous front-line duelling with swords and spears? The most important problem is that of time. If the contests could drag on for hours, it is impossible to imagine individual front-rankers managing the sustained physical effort required, even given the Roman practice of training with weighted equipment (Vegetius 1.11). Although this problem would certainly explain the Roman emphasis on replacing tired units with fresh ones using their line relief system, that system alone seems insufficient to provide the endurance needed, especially since the supporting lines were sometimes used for grand tactical manoeuvres rather than line relief. Furthermore, although our sources do record several instances of fresh Celtic and Punic troops relieving tired comrades (Livy

³⁸ See Head, *op. cit.* (n. 36), 143–70.

³⁹ The argument that hoplite battles took the form of such individual duels is advanced in P. Krentz, 'The nature of hoplite battle', *Classical Antiquity* 4/1 (1985), 50–61.

⁴⁰ Connolly, *op. cit.* (n. 29), 142.

⁴¹ This process is nicely illustrated in J. Warry, *Warfare in the Classical World* (1980), 126–7.

⁴² See Goldsworthy, *op. cit.* (n. 8), 179–80.

27.2, 30.18; Caesar, *BG* 3.5, 7.85), there is no sense that this practice was anything like as routine in those armies as it was in the Roman case.

Some have answered this objection by suggesting that each rank *within* a maniple or cohort progressively replaced the one in front, in a close combat equivalent of the early modern *caracole* system for delivering fire.⁴³ However, there is no clear ancient evidence for such a constant rotation of ranks within heavy infantry units, and plenty of arguments against it. The system could hardly have been unique to the Romans, since it would have given them a crushing advantage in combat endurance without even needing the line relief mechanism. The Greeks are known to have placed their best men in the front and back ranks (Xenophon, *Mem.* 3.18), and Roman centurions seem to have fought continuously in the front rank of their units, hence the high casualty rate they sometimes sustained.⁴⁴ Appian does say on two occasions when describing combat between legionaries that *wounded* front-rankers were carried away (presumably between the files) and replaced by the men behind (*BC* 3.68, 4.128), and Caesar describes how the troops defending the rampart of Galba's besieged camp were too few for wounded or weary men to be replaced as the Gallic attackers were able to do during the six-hour assault (*BG* 3.4–6), but to generalize this into a routine system in which each file in the open field was effectively a queue of troops waiting to take their turn to fight goes far beyond the evidence we have.

There is, in any case, an even more decisive objection to the image of prolonged and uninterrupted sword duelling, namely that (like a continuous *othismos*) such a contest would surely have produced far greater *mutual* casualties before one side took to flight and exposed itself to one-sided slaughter during the pursuit. I have already shown that the victors usually suffered less than 5 per cent fatalities, with many of these casualties no doubt occurring when parts of their own forces were pushed back or even routed, and not simply as a statistical consequence of a prolonged attritional duel. It is very hard to see how an infantry battle array a mile long and containing tens of thousands of troops could remain within arm's reach of a steady enemy for hours on end without enough of the weapon strokes getting through to cause far greater losses even to the eventual victors.⁴⁵

Since neither a prolonged *othismos* nor continuous sword duelling seems to fit in with the overall characteristics of Roman infantry combat, it is particularly striking that the few scholars who have explored this subject in any detail in recent years have independently developed models which portray Roman *mêlées* as much more tentative and sporadic affairs. I will briefly outline the ideas of each scholar in turn.

Adrian Goldsworthy has produced the most comprehensive analysis, which has two key features for our purposes.⁴⁶ First, he argues that, during hand-to-hand combat, at least three-quarters of front-rankers 'fought more with the aim of staying alive, than of actually aiming to kill the enemy'.⁴⁷ Goldsworthy draws a comparison with studies by S. L. A. Marshall of US soldiers in World War Two, which found that during firefights the great majority of such troops did not fire their weapons at all, or loosed off only a few unaimed shots at the enemy.⁴⁸ Ancient armies would no doubt strive to ensure that the few 'natural fighters' were concentrated in the leading ranks — a factor that may do much to explain the value of deep formations, since the more ranks there were, the more selective one could be about the men selected for this highly dangerous role. However, Goldsworthy suggests that even these picked men would be vulnerable to enduring human frailties in the face of such mortal peril. In his words:

We may picture a line of men in contact with an enemy unit, with the majority of soldiers fighting very cautiously, gaining the maximum protection from their shields, watching their

⁴³ See J. F. C. Fuller, *Julius Caesar: Man, Soldier and Tyrant* (1965), 90–1.

⁴⁴ See Goldsworthy, *op. cit.* (n. 8), 208, 257–8.

⁴⁵ For example, even if we assume that just 5 per cent of the troops were in the front rank, and that they struck their adversaries only every five seconds, and that less than 1 per cent of these attacks caused death

or mortal injury, each army would suffer 5 per cent fatalities *every ten minutes*.

⁴⁶ Goldsworthy, *op. cit.* (n. 8), ch. 5. Cf. Kromayer and Veith, *op. cit.* (n. 6), 361–2.

⁴⁷ *ibid.*, 219.

⁴⁸ S. L. A. Marshall, *Men against Fire* (1947).

opponents, and only occasionally delivering a weaker blow, exposing as little of their right arm and side as possible. A minority of men would fight far more aggressively, attacking their opponents with powerful blows from their *scutum*, and delivering savage thrusts and cuts with their sword.⁴⁹

The second relevant aspect of Goldsworthy's model is that he suggests that drawn-out infantry *mêlées* would be punctuated by lulls, during which the two sides would draw back a little from one another in order to catch their breath and replace wounded front-rankers. He cites in support of this idea Appian's account of a clash between two veteran legions at Forum Gallorum (*BC* 3.68), which describes just such a mutual pause to draw breath, 'as in gymnastic games'. However, Goldsworthy's argument rests mainly on practical grounds, namely that continuous sword duelling would be physically unendurable and that the withdrawal of wounded and the replacement of tired units by fresh ones could not have happened while the lines were actually in contact.⁵⁰

A very interesting recent article by Alexander Zhmodikov comes at the same problem from another perspective, this time relying much more on the ancient sources themselves than on deductions from more modern experience.⁵¹ It has long been considered axiomatic that *pila*, and similar throwing weapons used by non-Roman heavy infantry, were a mere precursor to the real combat with swords and spears, and were hurled in massed volleys during the charge to contact. Our sources do indeed often speak of legionaries throwing *pila* and then drawing their swords to charge, or even of clashes in which the two sides closed so quickly that there was no time for *pila* to be hurled before the collision (cf. Livy 9.13, 28.2; Caesar, *BG* 1.25, 1.52, 2.23; *BC* 3.46, 3.93). However, Zhmodikov points out that there are other passages in the sources which paint a rather more equivocal picture.

For one thing, several officers and commanders who were killed or wounded in Roman infantry battles are reported to have been hit by a missile weapon rather than transfixed by a sword or spear, even though this was often long after the contest began (cf. Livy 8.9, 24.42, 25.19, 29.2, 41.18). Moreover, Zhmodikov cites frequent references to missiles in a wide range of battle accounts, for example at Emporiae, where Livy (34.14) reports an indecisive period of missile exchanges, followed only later by a charge into hand-to-hand combat. Caesar describes several infantry contests in which missiles were used on a protracted basis, most notably at Ilerda, where he says that *pila* were exhausted only after five hours of continuous combat (*BG* 1.26, 2.27, 4.32, 5.33–5; *BC* 1.45–6). The stalemate at Ilerda was broken only when Caesar's men drew their swords and charged the enemy, although his account does not make clear whether this was the first time sword-fighting had occurred during the prolonged engagement.

Front-rankers would clearly have found it difficult to retain their javelins after launching or receiving a charge, since their hands would be occupied with shield and sword — the horizontal grip of the *scutum* made it impractical for *pila* to be retained in the left hand.⁵² However, the many supporting ranks could well have held on to their javelins for future use, even after a hand-to-hand clash had occurred. A relief from the fortress at Mainz shows a soldier with drawn sword backed up by another carrying a *pilum*, and Plutarch (*Sulla* 18–19) explicitly describes a constant stream of javelins and fire-bolts being launched from the Roman rear ranks during the clash with the slave phalanx at the second battle of Chaeronea.⁵³ There are also several references in the sources to spent missiles being picked up for re-use (cf. Livy 10.29; Sallust, *Bŷ* 58). The very fact that later versions of the *pilum* were designed to break on impact (Plutarch, *Mar.* 25) indicates that re-use of enemy weapons was common, hence supporting the idea that the employment of javelins was not necessarily confined to a brief volley during the initial charge.

⁴⁹ Goldsworthy, *op. cit.* (n. 8), 222.

⁵⁰ *ibid.*, 224–7.

⁵¹ Zhmodikov, *op. cit.* (n. 8).

⁵² Goldsworthy, *op. cit.* (n. 8), 199.

⁵³ The Mainz relief is illustrated in A. J. Goldsworthy, *Roman Warfare* (2000), 76.

A few years ago, I put forward my own model of Roman infantry combat, based heavily on psychological considerations and on deductions from more recent experience.⁵⁴ We know from eighteenth- and nineteenth-century engagements that bayonets caused only a tiny proportion of battle casualties, but bayonet charges do seem to have been decisive in triggering routs. The explanation for this apparent paradox seems to be that cold steel held a unique terror for troops, over and above that caused by the more random and impersonal perils of shot and shell. The morale of opposed infantry formations appears to have been closely interlinked, such that if one side could nerve itself to launch a bayonet charge in the conviction that the enemy would not stand, the enemy did indeed break before contact. Conversely, if mutual deterrence was maintained, then the combat could bog down into a bloody close-range firefight between the opposing lines, often lasting for hours.⁵⁵

The mid-nineteenth-century French officer Ardant du Picq was closely familiar with such dynamics, and produced an insightful comparative study of ancient and modern battle in which he argued that massed combat in both eras was dominated by the overpowering instincts of fear and self-preservation among the individual troops on both sides. Du Picq wrote that, 'Man does not enter battle to fight, but for victory. He does everything that he can to avoid the first and obtain the second'.⁵⁶ As a consequence, face-to-face combat was inevitably a highly traumatic and tentative affair. In du Picq's words:

Collective man, a disciplined body of troops formed in tactical battle order, is invincible against an undisciplined body of troops. But against a similarly disciplined body, he becomes again primitive man. . . Discipline keeps enemies face to face a little longer, but cannot supplant the instinct of self-preservation, and the sense of fear that goes with it.

Fear! . . .

There are officers and soldiers who do not know it, but they are people of rare grit. The mass shudders, because you cannot suppress the flesh.⁵⁷

There are striking parallels between the psychological role of bayonet charges in modern warfare and the way in which many ancient combats were decided at or before the first shock, with a charge by one side prompting its enemies to take flight at once. Hoplite engagements seem to have been particularly susceptible to such an early resolution, sometimes even producing 'tearless battles' when one side fled so soon that it outdistanced any pursuit.⁵⁸ Goldsworthy claims that late Republican and early Imperial legionaries exploited their professionalism and *esprit de corps* by winning similar swift victories against less resolute opponents through a coordinated volley of *pila* followed by a fierce charge.⁵⁹ This chimes exactly with Paddy Griffith's argument that the disciplined British infantry of the Napoleonic Wars beat the French not through winning prolonged firefights but through a single devastating musket volley followed by a charge with the bayonet.⁶⁰

The popularity of the long and unwieldy pike as an infantry weapon in both ancient and early modern times surely stemmed, at least in part, from a dread of true hand-to-hand combat, and from a desire to keep the enemy at bay and to inflict damage from a 'stand off' position. There is also clear support in the ancient sources for an interactive model of friendly and enemy morale, as in Thucydides' account of the battle at Amphipolis (5.10), when Brasidas encouraged his men to attack by proclaiming that the jostling in the Athenian ranks meant that they would not stand. These instances demonstrate that the terror of cold steel, which is so apparent in modern warfare, was by no means absent among ancient combatants.

So what does all this mean for the many cases in Roman infantry battles where neither side broke at the outset, and the combat turned into a prolonged affair? I suggest

⁵⁴ Sabin, *op. cit.* (n. 8).

⁵⁵ See P. Griffith, *Forward into Battle* (2nd edn, 1990), ch. 2; *idem*, *Rally Once Again: Battle Tactics in the American Civil War* (1987) 140–5.

⁵⁶ A. du Picq, *Battle Studies*, translated in *Roots of Strategy*, Book 2 (1987), 69.

⁵⁷ *ibid.*, 74.

⁵⁸ See Hanson, *op. cit.* (n. 3, 1989), 160–1; Xenophon, *An.* 1.8, 1.10.

⁵⁹ Goldsworthy, *op. cit.* (n. 21), 10–11.

⁶⁰ Griffith, *op. cit.* (n. 55, 1990), ch. 2.

that close-range sword duelling between steady bodies of infantry must have been a highly unstable state, and one that would require massive injections of physical and psychological energy either to initiate or to sustain for any length of time. It was clearly only the availability of protective armour and shields that made such duels endurable at all, given their apparent intolerability for the unprotected troops of more modern times. I would argue that there must also have been a more physically and psychologically sustainable 'default state' within protracted Roman infantry contests, into which the combatants would naturally relapse if the initial advances by either side failed to trigger an early rout.

We can see such 'default states' in a wide variety of other forms of human combat. Anthropological observations of primitive tribes confirm the image in heroic poetry of protracted stand-offs in which individual warriors would move forward to do battle and then retreat into the safety of the supporting mass.⁶¹ Even when lethal weapons are not involved, we can see similar stand-offs between rioting mobs and lines of police, or at an individual level between duelling boxers, who spend much more time circling each other warily and looking for an opening than they do in the actual flurries of blow and counter-blow. I suggest that the default state in protracted Roman infantry combats would have been similar to that between eighteenth- and nineteenth-century infantry, namely a small separation of the two lines so that they could exchange insults and missile fire but were not quite close enough for hand-to-hand duelling.

If such a default state existed in Roman infantry clashes, this raises the question of the frequency and duration of actual sword fighting between the opposing lines. Could troops who had closed for such sword play disengage without routing, and re-establish the 'safety distance'? How long a period of sword fighting was physically and psychologically sustainable before the tension had to be broken either by a reversion to the default stand-off or by the flight of one side? What proportion of the overall length of infantry clashes was spent in sword duelling, and what proportion in sporadic missile exchanges from a short distance away? We cannot know for certain the answers to any of these questions, especially since patterns probably varied considerably depending on the specific circumstances of each clash. However, the sources do give a few hints which suggest what may have happened in individual cases.

At one extreme, it is possible to envisage an exact parallel with more recent experience, namely that if neither side broke at the outset, the clash would bog down into a close-range firefight with no hand-to-hand combat at all until one side eventually nerved itself to renew the charge and put the enemy to flight. Livy records a battle in 310 B.C. in which the Etruscans deliberately threw away their missiles so as to close with swords, but then found it 'difficult' to come to close quarters and were subjected to a one-sided hail of javelins and rocks from the Roman lines until they were sufficiently disordered for the Romans to launch a successful charge of their own (9.35). In this model, there would be only two phases in infantry combat — the initial stand-off, which might last hours, and the eventual sword play, which might take minutes or even just seconds to be decisive.

Although such protracted stand-offs did probably occur in some cases, I find it very hard to believe that all the prolonged infantry clashes which took place in Roman battles were purely missile duels, with sword fighting occurring only at the very end. Such a radical image seems to me incompatible with the many references in the literature to true hand-to-hand fighting, and it makes it difficult to explain how one side could 'push back' its adversaries during the course of the contest. Hence, unlike in the stalemated firefights of more recent times, I believe that in most Roman battles the lines *did* sporadically come into contact, as one side or the other surged forward for a brief and localized flurry of hand-to-hand combat. The flurry of combat would end when one side got the worst of the exchange, and its troops would step back to re-impose the 'safety distance' while brandishing their weapons to deter immediate enemy pursuit.

⁶¹ See H. van Wees, 'Kings in combat: battles and heroes in the *Iliad*', *Classical Quarterly* 38/1 (1988),

1–24; I. Eibl-Eibesfeldt, *The Biology of Peace and War* (1979), 129–87.

This kind of dynamic stand-off punctuated by episodes of hand-to-hand fighting could continue for some time until one side finally lost its ability to resist, thereby breaking the bonds of mutual deterrence and encouraging the opposing troops to surge forward and begin killing in earnest, their gnawing tension and fear now released and converted into an orgy of blood lust. The most common mechanism for such a transformation would obviously be the panic of the losing troops due to the breaching of their line, a psychological shock such as the death of the general, or the sheer accumulation of casualties and fatigue.⁶² Livy's detailed account of the initial fighting at Zama (30.34) seems to me to fit perfectly with such a model of sporadic close combat:

The Roman attack gained solidity as the men pressed on into the enemy by their own weight of numbers and that of their arms; on the other side, there were repeated charges with more speed than power behind them. Consequently the Romans immediately broke the enemy's line at the first attack; then they pressed on with their shoulders and shield bosses, steadily advancing as the foe fell back, and making considerable progress as no one offered resistance. Then, as soon as they saw that the line confronting them had given way, the Roman rear line also began to press hard from behind, and this gave increased impetus to the rout of the enemy. On the other side, the second line of Africans and Carthaginians gave no support at all to the auxiliaries as they gave way; on the contrary, they fell back themselves for fear that the Romans would cut their way through those of the front line who offered firm resistance, and reach themselves. As a result, the auxiliaries suddenly turned and fled. . .⁶³

Livy's references to 'repeated charges' and to steady advances and withdrawals before the final rout accord very well with the image of sporadic surges forward from a shifting stand-off position. However, like most other ancient battle pieces, the account is far from unambiguous, and parts of it could be interpreted more literally in terms of a physical *othismos*.⁶⁴ When one adds to this characteristic ambiguity the additional problem of the unreliability of such descriptions, especially those by non-military authors like Livy, writing long after the battle concerned, it becomes apparent why the 'pure' approach of relying on ancient sources alone as a guide to ancient battle mechanics is so sadly deficient. That is why it is so important to test possible models against wider yardsticks, in the form of the overall characteristics of Roman infantry engagements and the enduring psychological strains upon men in mortal combat.

The model of Roman infantry combat as a dynamic balance of mutual dread fits the overall characteristics of the phenomenon far better than do the alternative images of a protracted *othismos* or continuous sword duelling. It helps to explain why some clashes were decided at the first onset while others dragged on for hours. It accounts for the relatively low casualties suffered by the victorious army, since periods of close range stand-off would be far less bloody than the equivalent firefights in the eighteenth and nineteenth centuries, given the much lower numbers of missiles available and the fact that the great majority would be blocked by the large infantry shields (cf. Livy 28.2, 28.32-3; Caesar, *BG* 1.26; Josephus, *Bj* 3.112-14).⁶⁵ The model also suggests how one side could gradually 'push' another back over distances of hundreds of yards, since if it was always the same side that gave way after the sporadic flurries of hand-to-hand duelling, the accumulation of such small withdrawals would have significant grand tactical impact over time.

Why would parts of each line sporadically surge forward into contact? The key individuals would surely be the 'natural fighters' and junior leaders, who would encourage a concerted lunge forward to overcome the understandable reluctance among

⁶² See Sabin, *op. cit.* (n. 8), 73-7.

⁶³ Penguin translation by A. de Selincourt.

⁶⁴ Polybius (15.13) in this instance does not support the physical pressure interpretation, since he says that the key Roman advantages lay in the steadiness of their ranks and the superiority of their equipment,

and that the *principes* gave support by cheering on, rather than shoving, their comrades.

⁶⁵ The theoretical lethality of ancient missile weapons, and the importance of shields in reducing this, are discussed in Gabriel and Metz, *op. cit.* (n. 24), 70-5.

their comrades to be the first to advance into the wall of enemy blades.⁶⁶ Roman sub-units such as centuries, maniples, and cohorts offered an ideal basis for such localized charges, whereas tribal warriors would mount less disciplined attacks led by the bolder spirits among them. The many accounts of Roman standard-bearers carrying or flinging their standards towards the enemy to embolden the onslaught of their comrades (as at Pydna and in Caesar's invasion of Britain) are of obvious relevance in this connection (Plutarch, *Aem.* 20; Caesar, *BG* 4.25). Across an overall infantry battlefield many hundreds of yards wide, the back and forth movement of individual sub-units or warrior bands just the crucial few yards to engage in or disengage from hand-to-hand combat would not prejudice the maintenance of the overall line.

If such flurries of sword fighting were not quickly decisive, then sheer physical and nervous exhaustion, coupled with the killing or wounding of the key junior leaders who were inspiring their men to engage, would lead the two sides to separate back to the default stand-off. The fact that even phalangites could step back facing the enemy (as at Sellasia) indicates that there was usually sufficient 'give' within infantry formations to allow front-rankers to shy away from their adversaries without bumping immediately into the man behind. Indeed, when this flexibility was removed and troops became too closely packed together, thereby hindering their ability to use their weapons properly or to step back from clashes which were not going well, they risked exposing themselves to one-sided slaughter. Something like this clearly happened at Cannae, and it could well be that a key reason why flank and rear attacks were so devastating was not just the psychological shock they caused but the fact that they crowded the victims in on one another, removing their ability to re-establish the 'safety distance' and so to recover their cohesion and fighting effectiveness.⁶⁷

Envisaging Roman infantry clashes as a natural stand-off punctuated by periodic and localized charges into contact is of particular assistance when trying to explain the operation of the Roman multiple-line system. In a situation of pervasive mutual deterrence, it is much more plausible to imagine forward sub-units fighting with gaps in their line, covered at a distance by supporting sub-units whose presence would dissuade the enemy from breaking his own line by advancing into the gaps concerned. We know that such deterrence could operate at the grand tactical level, since the strong Punic centre at Ilipa watched impotently while its flanks were destroyed, rather than advancing into the massive box formed by Scipio's Roman flanking formations and his refused Spanish centre (Polybius 15.14). A similar process on the much smaller frontages of maniples and cohorts seems even more plausible, and would allow the second line to move up smoothly into the intervals in due course, either to fight alongside the first line or to take over the burden of the combat.

There would, however, be real benefits in terms of endurance and staying power from holding the supporting lines back outside javelin range at first. Within the initial fighting line of the two armies, not only would front-rankers quickly become physically exhausted by the effort of even sporadic close combat, but all ranks would be subjected to intense and prolonged physical and emotional stress as they nerved themselves to surge forward against the enemy just a few yards away, prepared themselves for a similar sudden charge by their adversaries at any moment, and kept a constant watch on the sky so as to be ready to intercept or dodge any missiles heading their way.⁶⁸ The Romans, with their multiple-line system, could keep large parts of their force detached from the immediate strain of this front-line stand-off, and so insulated from the wearing-out process it involved. In du Picq's words:

The best tactics, the best dispositions were those that made easiest a succession of efforts by assuring the relief by ranks of units in action, actually engaging only the necessary units and keeping the rest as a support or reserve outside of the immediate sphere of moral tension.

⁶⁶ On the role of junior leaders such as centurions, see B. Isaac, 'Hierarchy and command structure in the Roman army', in Y. le Bohec (ed.), *La Hierarchie (Rangordnung) de l'armée romaine sous le haut-empire* (1995), 23–31.

⁶⁷ See Sabin, *op. cit.* (n. 8), 76–7.

⁶⁸ See Goldsworthy, *op. cit.* (n. 8), 219–27.

The superiority of the Romans lay in such tactics and in the terrible discipline which prepared and assisted their execution.⁶⁹

V. CONCLUSION

Having begun by noting Keegan's important catalytic influence on the study of ancient battle mechanics, it is appropriate to return at the end to his own interpretation of such mechanics in his earliest case study — that of Agincourt. Keegan's picture of the heavy infantry clash at that battle bears some remarkable similarities to the model I have suggested for Roman infantry combat. At one point, he describes the English and French hosts, 'divided, at a distance of ten or fifteen feet, by a horizontal fence of waving and stabbing spear shafts, the noise of their clattering like that of a bully-off at hockey magnified several hundred times'.⁷⁰ He goes on to describe how the huge numbers of the French proved paradoxically counterproductive, as the undisciplined rear ranks barged forward to get a share of the action, thereby knocking the front rankers off their feet or depriving them of the flexibility to withdraw and pressing them willy-nilly into the spear strokes of the English.⁷¹ This image of a close range stand-off and of the perils of overcrowding tallies far better with recent interpretations of Roman combat than it does with the *othismos* model, in which pressure from behind is a positive virtue and a key means of making increased formation depth count at the fighting front itself.

Is it plausible that two such different forms of heavy infantry combat could have existed in the ancient world? We should certainly beware of insisting on any artificial uniformity, since it is clear even from the Roman evidence alone that there were huge variations in deployment patterns and fighting techniques, which make any search for a single 'ideal' system a dubious endeavour at best.⁷² The pike phalanx of Alexandrian and Hellenistic times operated on very different principles from either the Roman legion or the preceding hoplite phalanx, and the issue of how pike phalanxes fought Greek hoplites and other phalangites (as opposed to the fairly well documented topic of how they fought asymmetrically armed Roman troops) is a topic which deserves significant further study in its own right.

This is, indeed, the main weakness of the *othismos* debate in its current form. It focuses so heavily on symmetrical clashes between hoplites that it is hard-pressed to place hoplite warfare within the context of ancient infantry combat as a whole. To give just one example, Herodotus' description of Plataea (9.61–3) has the Persians making repeated individual charges at the Spartan line, which seems to fit much better with my stand-off model than with a continuous shoving match. As our studies of ancient combat mechanics broaden out beyond their understandable initial focus on hoplite warfare, the result should be a better and more integrated understanding of all the diverse forms of ancient combat, including hoplite battle itself.

In this article, I have sought to take one further step along this road by summarizing what appears to be an emerging consensus about the nature of Roman heavy infantry clashes. All of the few scholars who have paid serious attention to the issue in recent years seem to agree that these clashes were more tentative and sporadic than has previously been assumed, and that only such a model can account for the apparent combination of long duration, one-sided casualties, fluidity of the battlefield and emphasis on reserves rather than formation depth. However, there are significant detailed variations between the various models proposed, and given the ambiguous and indirect nature of the supporting evidence, the way remains open for a fundamental challenge as has happened within the evolving *othismos* debate. If this article serves to stimulate such further thoughts about the nature of Roman infantry battle or of ancient combat as a whole, it will have more than served its purpose.

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⁶⁹ Du Picq, *op. cit.* (n. 56), 79.

⁷⁰ Keegan, *op. cit.* (n. 20), 99.

⁷¹ *ibid.*, 100–1.

⁷² See Goldsworthy, *op. cit.* (n. 8), 283–4.