

# Hoplite Shield and Spear

## Chapter 6

(a rough draft from The Cutting Edge anthology) pictures have been added which were not in the anthology article...

“With Your Shield or On It”:

Combat Applications of the Greek Hoplite Spear and Shield

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### Introduction

When one thinks of the world of Ancient Greece, images that immediately spring to mind are the proliferant scenes of warriors fighting either mythological beasts, strangely dressed ‘barbarians’ or most frequently other similarly armed warriors. The Greek world was comprised of independent city states or Poleis which were constantly at each other’s throats and warring with each other. The warriors so often illustrated in the art of the period were known as Hoplites, citizen soldiers whose duty to fight was due to the privilege of citizenship of their home Polis. From our earliest records up until the time of the Macedonian ascendancy these citizen soldiers fought as infantry in the massed ranks of the phalanx. Despite all of the great changes and achievements of the ancient Greek world, the field of battle remained one of the greatest constants of the culture. While equipment changed over time with regard to visual appearance, the tactics on the battlefield remained remarkably simple – two lines of men clashing together on a hot summer’s day seeking to drive each other from the field. However there has been remarkably little scholarship about the actual activities of the warrior’s right at ‘the coal face’ of combat – how did they actually physically interact with each other using their famed weaponry?



battle.

The purpose of this article is to introduce and explain the structure, significance and basic usage of the Hoplite spear and shield in warfare in Archaic and Classical Greece from c. 600 to 380 BC. Considering the hundreds of thousands of Hoplite warriors who fought in this long epoch, it is perhaps surprising that so few offensive weapons survive in museum collections today. Indeed, it is the articles of defensive weaponry which best survive. This is at least in part due to the fact that they were frequently dedicated at religious sanctuaries to mark victories in

There is a parallel bias in most modern written works dealing with the hoplite military panoply, and little focus has been placed to date on the offensive weaponry which was used in these lines of battle (Connolly 1998; Warry 2001; Snodgrass 1999). For several hundred years the spear was the primary weapon of the Greek Hoplite, with the sword functioning more as an auxiliary weapon which was used when the spear was shattered

or when the lines of battle were broken and fleeing opponents were to be cut down. From the defensive weaponry of the hoplite, one of the most characteristic features was the shield or *aspis*, a large concave structure of wood, sometimes faced in thin polished bronze or fixed with a blazon depicting mythological creatures or more simple motifs.



The shield and spear functioned in harmony in the hoplite system, creating a robust wall of wood with spear thrusts coming from above the shield to drive the attack against the enemy lines. Many studies examining hoplite warfare deal with the larger ‘whole’ of the battlefield, such as tactical innovations and developments, but this paper will present an interpretation of the more localized combat environment of the frontline warrior and his immediate environment. To this end, I have been involved in the reconstruction of a number of these centrally important weapons of hoplite warfare. These have been used to investigate potential modes of use with the help and participation of some of my students from martial arts class. Training and drilling with these was undertaken on both a single and group basis in order to examine potential uses of these against swordsmen, spearmen and persons equipped with similar spear and shield, including fighting in formation.

#### The equipment

Hanson (2000: 83 – 88) makes a brief study of the hoplite spear, estimating a width of 1 inch (25mm) and a weight in the range of 2 to 4 pounds (c.1 – 2 KG) for spears made of cornel or ash wood, and they would typically be of 2 to 3 meters in length (Connolly 1998: 63). Hanson (following Polybius) suggests that spears of this thickness would have a tendency to shiver on collision with the initial impact of opposing phalanxes, a possible reason for the carrying of two spears in much Black-figure artwork of the Archaic period. Spears would have had an iron point and in most cases a bronze ferrule or butt-spike which would have served both as a counter balance to the spearhead which allowed more of the spear to be held forward of the user, hence increasing its range. It would also have served as a secondary means of offense if and when the spear was broken and the spearhead was lost in the melee. The suggestion that most of the spearheads of the front rank warriors would have been lost in the first few moments of combat resulting in a jostling match, while possible, is not well reflected in contemporary sources dealing with hoplite warfare such as Herodotus or Thucydides.







## The Hoplite's spear

Modern commercial reproductions of the Greek spear usually present a weapon with a 1 inch (25mm) diameter shaft. That is the diameter used in my own experiments detailed below, although future work will include examination of accurate replicas of thinner shafted weapons of  $\frac{3}{4}$  inch (18mm) diameter. Some of the 'mock-up' spears with steel cuffs used in my testing program are of this smaller size and proved illustrative of some aspects of their potential uses. When the 1 inch diameter spears get to lengths of six feet (c.2m) or greater, issues of speed and maneuverability as well as arm strength start to amplify. The kind of arm and shoulder development necessary for handling a 1" diameter six foot spear with ease are not well depicted in Greek Art. Based on close examination of the artwork and the diameters of surviving ferrules, a diameter of  $\frac{3}{4}$  inch (18mm) for Archaic and Classical spears can be considered a realistic estimate, see Figure 17. In this regard, it is best to envisage a level of heterogeneity in the weapons of the hoplite warrior, as the role of personal preference in the self-armed citizen soldier allowed for a warrior to purchase weapons which best suited his physical strength and dexterity. While the thinness of Greek spears as illustrated in the art may be simply convention, the archaeological findings support this, and they appear this diameter even on very well executed images.

Aspects of practical necessity are also most pertinent as the light weight of these spears allowed considerable accuracy when thrusting. When confronting a heavily armoured opponent who may only have his throat or eye as a target, this is extremely important, especially in the press of bodies which characterize this form of warfare. The image of orderly lines of hoplites stretching along the field of battle all coming face-to-face in neat array and pushing each other while seeking to stab an adjacent foe is dramatically over-simplistic, as will be discussed below.



The Masai tribesmen of Africa use spears of similar thinness appears to be the case for the Greek hoplite, and in spite of their spears thin structure, they are still sufficient to kill a lion at close quarters. Two spears could be carried into battle as is frequently depicted in the artwork from Geometric (Figure 18) through to Classical Red-Figure vase paintings. However, an interesting possibility from one of our earliest sources, the Chigi Vase, makes the intriguing possibility that at least in this early period, these weapons were of different lengths, one

short or about man height, and the other about a foot (300mm) longer (see for example the famous vase by Exekias depicting Achilles and Ajax, now in the Vatican museum (Woodford 1994: 24). The differential spear lengths on the Chigi Vase in particular are not simply artistic convention trying to get them to fit into a tiny space, as there are spears placed upright by non-combatants and these are also of differential length (Connolly 1998: 38 – 39). It is clear from the artistic sources available (given that we have no extant wooden shafts from the period) that the use of spears of equal length was also relatively common. Anderson's statement is instructive for assessing the use of this second spear in the mature phalanx: "Yet the second spear may have sometimes been found as part of the hoplite's equipment after the development of the regular hoplite phalanx, from which light armed or unarmored missile throwers were excluded." (Anderson 1993:18).

Stress is laid by Classical authors on the effect of the Greek phalanx, a shield wall overlapping, which hit the enemy with such a resounding force it often knocked the first line into the second line. The integrity of "the line" was as legendary as it was essential. Most of the surviving art shows the first blast of the line with the spears held over arm, as shown in Figure 19.

It is interesting that in this position a spear can not only be thrust down but that one can throw a spear or if it is sufficiently heavy, "drop" or slide the spear downward-by releasing and retightening the grip. This can be done in a similar way to a throw, but without losing the weapon. It is a sharp quick slide and is aided by the palm up grip. With a light spear it can be done accurately and it can compensate for sudden shifts of distance which within six inches to a foot (150mm to 300m) can be the difference between hitting or just missing the target with a spear-point. Spear throwing as the lines closed could also be undertaken, with projectiles released as a shower on collision or before similar to the Roman pilum, especially if one had a second spear (probably shorter and more effective for close combat) and a sword or dagger as a back-up weapon. While the historical sources do not refer to this use of spears in hoplite combat, we must remain cautiously aware of the Athenocentric nature of Classical written and artistic sources and bear in mind that regional and temporal variations would have been highly likely. It is most frequently believed that the spear was used solely in an over-arm or above head fashion, but there are innumerable depictions of it being used under-arm also in the artwork.

#### The shield in perspective

The shield of Classical Greece was a remarkable piece of engineering in many regards. It differs significantly from its predecessors, most of which were lighter constructions, possibly of wicker and rawhide. The hoplite shield was manufactured from carved wooden planks abutted at the edges which created a broad bowl shaped shield. These were often faced with bronze blazons or devices, and in many cases were entirely faced in bronze (the facing of such a shield can be seen in Figure 20). The shield of the ancient Greek Hoplite also made use of a new and innovative method of holding and managing its weight in combat. The central handle is replaced by a brace which accommodates the forearm just below the elbow of the left arm, and the hand grips a thong close to the perimeter of the shield (See Figure 21). This has many significant implications, the first being weight management. Many heavy shields from the Mycenaeans to the Vikings made use of a telamon or shoulder strap to take the weight of the shield, yet this is absent on the Greek shields, some of the heaviest forms used in ancient warfare. The innovative method used to overcome the need for a shoulder strap on the Greek shields was placing the elbow at the center of gravity of the shield, bearing much of the weight. Essentially, this transformed the upper arm into a 'strap' in that the weight was suspended directly from the shoulder, placing little strain on the forearm in carrying the mass of the object. This meant that the forearm and hand could be used to manipulate the heavy shield tactically, rotating it and also being able to swing the front of the shield out to strike with the shield rim itself (Figure 22), or more practically to allow for sword strikes or underarm spear-thrusts without compromising one's own defense to too high a degree.



Held in this manner, the user could also push their shoulder comfortably into the bowl of the shield and use it for pushing forward offensively, an essential component of the actions of *othismos*, or attempting to break the opposing line by sheer pressure and force. While there were clear advantages of the Greek shield, a problem which arose from this manner of gripping it was the potential pushing against the left hand ‘over-hang’ in the press of battle which would apply leverage consequently reducing the area of the shield covering the user. This opening of a slight weakness on the right-hand side of a warrior’s defense would cause each warrior to seek shelter behind the overhang of the shield of the warrior to his right, thus causing shifting of the entire line of battle towards the right, risking a flanking attack. To this end, it was common to place the toughest and most experienced troops on the left wing so that they would hold their ground, as described in Thucydides.

The shields used in the experiments weighed about twenty pounds (c.9 KG). When the *Porpax* (wrist brace) and other metal/bronze accoutrements are added the weight is raised to as much as thirty pounds (c. 14 KG). At the time of photography the Hoplite team was using a leather elbow brace on some shields and steel braces on other examples (later all replaced by metal braces). Once held up, the first thing that both I and my students noticed about the shields is that it was extremely difficult to see over or around. Once you get moving it’s very disconcerting and you find you use your ears as much as your eyes, and one can feel it effecting the way one can move forward comfortably. It was a bit like having an open umbrella pointed in your face!

As discussed above, the overlapping of the shields is essential for the shield-wall to maintain integrity and cohesion. I am not aware of any in-depth analysis of this “locking the shield wall”, and therefore I will do so in this section. When the interior of hoplite shields is depicted in artwork, it is clear that a rope ran around the interior of the bowl. A portion of this was sometimes used (in the absence of a specific handle) to grip the perimeter of the shield, but this does not explain why the rope continued around the rest of the interior. After experimenting with the inner rope of the shield it began to become clear that it was possible for one’s fellow hoplite to hold one’s rope through their hand-grip or possibly their elbow. The slack in the rope can be easily adjusted until the shield edges overlap neatly and the hold is strong with taught rope (Figure 23). The overall effect on shield/wall movement is astonishing. The entire shield wall becomes a unit and one can sense every

shift of shield movement on either side. Moreover the entire wall can be articulated; shields lifted or shifted horizontally – through this linkage.

It is notable that on the unprovenanced shield in the Museo Gregoriano at the Vatican (illustrated in Connolly 1998: 53) there is no evidence for a rope encircling the entire interior of the shield. However, there is room for a rope grip on both the right and the left of the shield, and as we know from artwork, these shields most often had a very specific top and bottom, making the left-hand handle essentially redundant unless it was utilized in some other manner, the above linking being a most viable interpretation.

It was not possible to investigate practically tactical considerations based on this linkage as we lacked enough equipment and men. It is possible that thus linked, smaller groups of hoplites such as those from a broken line or pursuing / being pursued could also link up to form a defensive unit, potentially closing around an opposing force in a lasso-like pincer move. This would give a further range of options for perspectives on marching arrays and footwork patterns. I expect there was a synchronized art to “locking” and “unlocking” or gripping and loosening the grip on one’s fellow’s shield-cord. This would be useful particularly after the enemy line was pounded back or the line itself started to break and needed to retreat, disperse or be replaced from the rear.

There are two vision obstruction/suppression strategies with the shield and spear combination; one is – the huge shield is simply pushed in the face of the adversary. The other strategy is that the spear is held so that it is descending at 30 – 45 degrees. Since the opponent has to look up and over his own shield, whatever it’s size, he ends up looking directly at the point of the spear which if held properly, presents very little of the shaft. This throws off judgment as to thrusting speed which is incredibly hard to evaluate when looking at a point. The optical phenomenon is much like that encountered by aircraft pilots when viewing an oncoming plane on the horizon line.

#### Down cut / thrust

The double edged spear can cut on thrust and draw. This is particularly noteworthy since this means an opponent can be cut on both the thrust and retraction of the spear. One need only get the spear head down amongst the enemy’s legs for it to cut (see Colour Plate 8) as little motion is needed and here one realizes that greaves were a necessity rather than an option. In this capacity the leather skirts which sometimes were attached to the bottom shield edge make sense beyond simply defense against archery or projectile attack.





The idea of the “running wall”, that is the line of men actually running towards the enemy attempting to close the distance to reduce the casualties caused by archers was even intimated in the Olympic events which included foot racing in armour and holding shields. The running also gives impact to the shield wall. Experimentation I have carried out has proven that if standing, the antagonist’s first line can be thrown back well into the second line. This would make them temporarily vulnerable to the spear throw at or after initial impact. And a spear throw can be effective two to five lines deep into the enemy’s ranks. The first lines receiving the impact of the shield wall could easily release a volley of spears into the second and third lines of the enemy with maximum effect prior to impact. And if the first line is carrying a second spear as rendered in many Greek art remnants – it could be worth the loss of the first spear. Hanson (2000: 162) has argued that the spear was held underarm for this initial clash, however, the risk of the spear sticking into an enemies shield and thus grounding a 2 meter spike facing back into one’s own crowded and pushing men would be extremely dangerous and must negate this suggestion. Rather we should envisage the spear as being held aloft, either for throwing or stabbing on the initial impact. After the two opposing lines have engaged following this first crash, learning a sense of group ‘rhythm’ in training can be shown to teach the “line” how to synchronize movement. With regard to this corporate movement and group training of hoplites Thucydides (6.68) tells us of the Argive “select force of one thousand, who were given long training in warfare at public expense” and less than a century later we know that the thousand strong Theban Sacred Band were an elite force afforded great resources in their training. The historic sources make it clear that for at least certain key elements in the army, much time and effort was spent on teaching them how to fight effectively as an army, the Spartans of course being the most famous advocates of this extensive system of training.

For the Phalanx to optimize its wall-like pressure it can adopt a “pulse” or rhythm so the mass of men moves as a unit. This is analogous to a battering ram or a team playing the game of “tug of war”. This can best be achieved through a drum or vocal chant. Placement of the shield precisely along the back of the man in front with emphasis of pressure below the right shoulder blade is most effective (See Figure 24). The men on the



front line can physically push forward grounded robustly behind their shields, and can make use of their head and thigh to push forward as well as their shoulder, thus restricting their vision but presenting little by way of target to the opposing line by keeping the head below attack line, especially if it's helmeted. The body angle of each man in front of a fellow's shield is well matched to its own curvature and size, eliminating any space between body and shield which could serve to increase percussion on impact. A row (as opposed to line) of men can thrust and retract simultaneously or in a staggered pattern. This creates a lateral alignment or "disalignment" of the spears from the front, allowing a higher frequency of offensive moves by a multi-row phalanx. In this context it is extremely important that the spear heads and their angles are carefully maintained to avoid weaknesses in the line or worse still, injury to one's own comrades.

If the shields of the wall unlock and open and a Hoplite goes to "free fighting" out of line (notably as a line collapses or during a rout) the technique of rotation to use the butt-spike is highly efficient. The smaller spear here, less than the height of the man carrying it, allows for fast spinning or pivots on a vertical plane and can be brandished with amazing efficiency, as it can literally be used in a fencing style. However, as long as battle-line formation is maintained the spear should not be moved in laterally/horizontally sweeping motions as there is a high chance of spearing one's own men. This more versatile mode of spearmanship is best suited to when the "melee" begins and line formation is lost, then the spear can be used effectively under-arm and the sword and dagger become useful.

The shield as an offensive weapon is another consideration. The Bronze facing sometimes added to the shield could be carried to the edge and effectively acting as blade of sorts, and the thinness of the shield edge itself makes an excellent impact weapon. This opens up a whole new series of studies on techniques. Pictured in Figure 22 is a shield technique using a kind of "uppercut" or palm-up strike. Here, the shield is used to "stop – hit" as they say in fencing parlance or "hit in time". As the opponent (with his back to the camera) winds up to with an overhand thrust, his adversary (facing the camera) launches his own attack with his shield edge which not only stops the spear attack but also holds the shield at bay while hitting the throat. In spite of the weight of the shield this can be done quite easily due to the elements of its balance along the elbow.

Because the Hoplite shield is curved, only two inches or so of actual contact surface is maintained with the opponent's shield at any one time. This makes it difficult for the Hoplite's enemy to know and feel just which way the hoplite is pushing. The continual disorientation during contact can be used to create a tactical advantage by an experienced and skilled warrior. Flat shield against flat shield would be much easier to "read" and sense the pushing direction of the opponent. This factor of disorientation of pressure must have been extremely frustrating for the Hoplite antagonists' should they have had flat shields, notably during the Persian wars. Moreover, in action the convex surface distributes pressure in such a way as to prevent the enemy's shield from sliding over the top of the shield. The inner curved surface of the hoplite shield allowed the hoplites to "sit" inside the shield and push back against the enemy, where the legs are used more efficiently, like a recumbent bicycle. The problem with this is that it cannot be used in the mass shield press. It is possible to jump into the shield with the hip or thigh while holding the spear aloft.

## Conclusion

It has been argued that othismos or mass pushing of the hoplite lines of battle was intended to literally smash through the lines of an opposing army (Cawkwell 1978). When we consider the versatility of the hoplite weaponry and some of the variety of modes of attack discussed in this paper, it becomes clear that these contests of force had considerably more variables. If we consider a hoplite battle as lasting around 1 to 2 hours (Hanson 2000, Cawkwell 1978), and that the lines of battle could stretch for hundreds of yards / meters, then the idea of a simple pushing match becomes difficult to maintain. This issue of the lengths of the combat lines and the various discrete 'micro' battles along the lines is of great importance and must be stressed emphatically. While there was a clear necessity to break or destroy the opposing lines, it is certain that priorities between offensiveness and defensiveness would have swung as the cohesion of each (interlinked) section of the lines alternated. There is little doubt that the many methods of pushing through brute force described above could be used during othismos to seek to smash the enemy line, but this would have been at discrete areas of the line as

opposed to along its entirety. This again ties in with the varying priorities of warriors whether they would ground themselves behind their shield and try and push home an advantage gained at spearpoint, or whether they would push into the opposing rank to open up room for more effective spear-work (or sword-work) to gain a strategic advantage. One must stress again the heterogeneity of the lines both with regard to quality of troops and combat fortitude or even luck, as it is essential to remember the line of battle was not a monolithic self-conscious entity, but masses of individuals. In this regard, it was frequently the case that different areas of each army's line might break through the opposing army's simultaneously. Without sufficient reserve troops, this could not be driven home as an immediate end of the conflict, and the lines could be re-formed through looser formation hand-to-hand fighting as described in this chapter. Conversely a line could indeed collapse entirely as a single break-through successfully spread along the line causing a snow-ball effect.

The hoplite warrior needed a wide range of skills to fight in this dynamic combat environment, and he could certainly expect to switch from pushing to kicking to stabbing to cutting over the course of a single engagement. As I have described in the preceding pages, the weaponry which he possessed was well suited indeed to many modes of interpersonal combat and could be used with lethal precision as well as brute strength. Hopefully these ideas and demonstrations will give a more living quality to the many studies on Classical Greek warfare already in place.

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