

#### Jean Du Plessis\*

# 'Synaspismos' and Its Possibility in the Macedonian Styled Phalanx

*Abstract*: Ancient authors such as Aelian, Asclepiodotus, and Polybius all mention the Macedonian phalanx adopting a formation called the *synaspismos* in which the files of soldiers are so close together that their shields would overlap. Modern authors such as Walbank, English and Matthew argue that such a formation was impossible to assume in a battle scenario and that the ancient writers were mistaken, in its use in combat. Their argument is based on the fact that the manner of bearing the shield (*peltē*) and pike (*sarissa*) does not allow for such a tight formation. Through the use of experimental archaeology, this article however argues that the *synaspismos* formation was indeed a possibility, and that we are mistaken in the modern view of how the *phalangite* wielded the *sarissa* pike.

#### Introduction

The "Macedonian" styled phalanx was a truly formidable force on the ancient battlefield. The disciplined ranks and files dominated the Hellenistic period for two centuries, fighting on battlefields from Italy in the west to far-off India in the east. It was the military tool with which Alexander the Great and his Successors spread Hellenism beyond Greece and created the Hellenistic era. It thus had a major influence upon the ancient world. Ancient sources, which deal extensively with the Hellenistic pike phalanx, are full of references to its fearsome power. Polybius wrote that "nothing can resist it face to face or withstand its charge", and dedicated a special section of his *Histories* to explaining the workings of the Macedonian phalanx, both its strengths and failings.<sup>1</sup> Livy again states that its "force, while it is compact and bristling with extended spears, is irresistible".<sup>2</sup> Asclepiodotus, Aelian and Arrian all wrote military manuals with the largest and most detailed sections devoted to the use of the Hellenistic pike phalanx. Even long after the Hellenistic

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<sup>&</sup>lt;sup>1</sup> Polyb. 18.29.1

<sup>&</sup>lt;sup>2</sup> Livy 44.41.6

phalanx disappeared from the ancient battlefields, its influence could still be felt in the early modern era in the pike and musket armies of the 16<sup>th</sup> and 17<sup>th</sup> centuries, upon which ancient tactical manuals had a profound effect.<sup>3</sup> Modern scholars too have devoted much time and study to the Hellenistic phalanx and the impact it had on the ancient world, both on and off the battlefield. Yet despite its influence and military dominance in the Hellenistic era, and the extensive ancient literary material and modern scholarship devoted to it, much of its workings are ill understood and very little is agreed upon by modern scholars. From its origins and equipment, down to the formations and how it operated on the battlefield, the Hellenistic pike phalanx is a hot and fiercely debated topic.

This research paper will look at one particular element of the Hellenistic pike phalanx: the close formation of interlocking shields or *synaspismos* ( $\sigma v \nu a \sigma \pi i \sigma \mu o \varsigma$ ). It was a defensive formation discussed by the three tactical writers, Asclepiodotus, Aelian, and Arrian, and mentioned in the historical writings of Polybius and Plutarch. This formation, however, is questioned by modern scholars, such as Walbank and English, and most recently and most vigorously opposed by Matthew.<sup>4</sup> They argue that such a close formation of overlapping shields where a soldier occupies a mere one *cubit* of space, was impossible to assume with the arms of the "Macedonian" styled phalanx. I would however like to argue that the *synaspismos* formation was indeed possible for the Hellenistic phalanx to assume on the battlefield.

#### Synaspismos Formation

#### The Synaspismos in Literary Sources

Several ancient literary sources, when describing the Macedonian styled phalanx, refer to the extreme close formation called the *synaspismos*. Of these, the most detailed are the three tactical writers, particularly Asclepiodotus and Aelian. Asclepiodotus, in his *Tactics*, deals with the three formations in which the Hellenistic phalanx could form up, each with different intervals between the files of soldiers. The first, which he describes as the most natural, had intervals of four

<sup>&</sup>lt;sup>3</sup> Sekunda, *Seleucid and Ptolemaic Reformed Armies 169-145 BC: The Seleucid Army*, 7; Matthew, *The Tactics of Aelian*, xv

<sup>&</sup>lt;sup>4</sup> Walbank, *A historical commentary on Polybius*, 286, n. 9; English, *Field Campaigns of Alexander the Great*, 195, 208; Matthew, *An Invincible Beast: Understanding the Pike-Phalanx at War*, 143-145; Matthew, *The Tactics of Aelian*, 150

*cubits* separating the files, the second two *cubits* between the files, and the third with a mere one *cubit* separating the files:

The needs of warfare have brought forth three systems of intervals: the most open order, in which the men are spaced both in length and depth four *cubits* apart, the most compact, in which with locked shields (*synaspismos*) each man is a *cubit* distant on all sides from his comrades, and the intermediate, also called a "compact formation", in which they are distant two *cubits* from one another on all sides.<sup>5</sup>

These formations as described by Asclepiodotus, is virtually mirrored by Aelian: "the men are sometimes placed in open order... each man occupies a space equal to four *cubits*; in close order he is allowed two; and in the compact order (synaspismos), one cubit".6 Both writers refer to the most compact formation (one cubit interval), as the synaspismos, and state that it was adopted as a defensive position when bracing to meet the charge of an enemy phalanx.<sup>7</sup> Arrian, the third tactical writer, in both his biography of Alexander and the Ars Tactica, mentions the phalanx and its ability to assume the synaspismos formation.<sup>8</sup> Plutarch also refers to the Macedonian phalanx in synaspismos: "For the phalanx is like an animal of invincible strength as long as it is one body and can keep its shields locked (synaspismos / συνασπισμόν) together in a single formation".<sup>9</sup> Polybius again mentions the *peltastai* of Philip V forming up in the *synaspismos* against the Aetolian cavalry, and refers to the men in the formation forming up shield upon shield.<sup>10</sup> Polybius once again refers to the interlocking of shields by comparing the close formation of the Hellenistic phalanx to Homer's description of the Archaic Greek phalanx, and in doing so quotes Homer: "So buckler pressed on buckler".<sup>11</sup> Ancient sources are thus rife with references to the Hellenistic phalanx and the defensive formation of the synaspismos and the interlocking of the shields.

<sup>&</sup>lt;sup>5</sup> Ascl. *Tact.* 4.1

<sup>6</sup> Ael. Tact. 9.1-3

<sup>7</sup> Ascl. Tact. 4.3; Ael. Tact. 9.3-4

<sup>&</sup>lt;sup>8</sup> Arr. An. 5.17.7

<sup>&</sup>lt;sup>9</sup> Plut. *Flam*. 8.4

<sup>&</sup>lt;sup>10</sup> Polyb. 4.64.6-7. From the period literature, the Antigonid *peltastai* fought in the Macedonian manner. Livy refers to the *Caetrati* at Pydna armed with the same *sarissa* as the phalanx. Livy 44.40.6. The *Caetrati* as mentioned by Livy (31.36.1 "*caetratos, quos peltastas uocant*") is the Latin term for peltasts. The *Caetra* shield again, is the Latin term for the *peltē* shield used by Livy (28.5.11): "*pelta caetrae haud dissimilis est*". Plutarch (*Aem.* 19.1) to, refers to the *peltastai* armed in the Macedonian manner.

<sup>&</sup>lt;sup>11</sup> Polyb. 18.29.6; Hom. Il. 13.131

#### The Arms of the Phalanx

To better understand the Hellenistic phalanx and the *synaspismos* formation, we need to first look at the arms borne by its soldiers.

The soldier of the Hellenistic phalanx was armed with a monstrous pike called the *sarissa*. The length of the *sarissa* is a debated topic itself among modern scholars, due to various period literature giving different lengths and the unstandardized units of Greek measurements.<sup>12</sup> The debate of the exact length of the *sarissa*, falls beyond the scope of this paper, but it is generally thought that its length measured somewhere between 8 - 16 *cubits*, depending on the period.<sup>13</sup>

Because of the immense length of the *sarissa*, it was held with both hands, resulting in no free hand to hold a shield. To compensate for this, the phalanx soldier carried a shield called a *peltē* which was smaller than the traditional Greek *aspis*. The *peltē* was attached to the left forearm, allowing both hands to wield the *sarissa*. Asclepiodotus describes the shield as "of bronze, eight *palms* in diameter, and not too concave".<sup>14</sup> Aelian gives a similar description of the shield: "The Macedonian shield, made of bronze is best. It must not be too concave and be 8 *palms* (*oktapalaistos*) in diameter".<sup>15</sup> The actual shield was not of bronze but consisted of a wooden core covered with a thin bronze layer. This is evident from the cut wedges on the outer rim of historical finds of shield facings, which indicate that the bronze served merely as a cover for the shield and that it was folded around a core material. In the case of a shield find from Pergamon, the bronze facing was between 0.5 mm and 0.35 mm in thickness, which in itself makes it clear that the bronze was far too thin to serve a defensive function by itself.<sup>16</sup>

It was with these *sarissae* pikes and *peltai* shields, that the ancient historians claimed the phalanx assumed the interlocking shields formation called the

<sup>&</sup>lt;sup>12</sup> Theophrastus (*HP*. 3.12.1-2) who wrote during the time of Alexander (c. 370-287) states that the longest *sarissa* was 12 *cubits* in length. Asclepiodotus (*Tact.* 5.1), writing in the 1<sup>st</sup> century BC, states that the *sarissa* should not be less than 8 *cubits* nor longer than 12 *cubits*. His maximum length of 12 *cubits* is thus similar to that of Theophrastus. Polybius (18.29.2) again refers to a staggering 16 *cubit sarissa*, but for practical reasons, it had been reduced by his day (2<sup>nd</sup> century BC), to 14 *cubits*. The 16 *cubit sarissa* is confirmed by Polyaeanus (*Strat.* 2.29.2), writing in the 2<sup>nd</sup> century AD, stating that the Macedonian garrison of Edessa in 270s, wielded *sarissae* of such length. The *sarissa* pike thus ranged somewhere between 8 – 16 *cubits* in length between the 4<sup>th</sup> and 2<sup>nd</sup> century BC.

<sup>&</sup>lt;sup>13</sup> For more information on the length of the *sarissa*, see Matthew, *The Length of the Sarissa*, 79–100 and Campbell, *How long was the Macedonian Sarissa: An obscure debate over a very long spear*, 48-53

<sup>14</sup> Ascl. Tact. 5.1

<sup>&</sup>lt;sup>15</sup> Ael. Tact. 7.14

<sup>&</sup>lt;sup>16</sup> Peltz, *Der Makedonische Schild aus Pergamon der Antikensammlung Berlin*, 333. This thickness is clearly not adequate for protection by itself and we must conclude it was a mere facing for a wooden core.

*synaspismos*. As mentioned above, the tactical writers wrote that the particular formation of *synaspismos* required a space of one *cubit* per soldier.

#### The Question of Measurement

It is important to understand the measurements given by the ancient sources to have a better understanding of the *synaspismos* formation. As mentioned above, Greek measurements were not standardized, making it difficult for us to interpret the Greek measurements into our modern scale. The most common accepted unit is the Attic *cubit* of 45 cm.<sup>17</sup> This would thus give the 8 palm *peltē* shield a size of approximately 61 cm.<sup>18</sup> Matthew however, suggests that the tactical writers referred to the Olympic / Peloponnesian *cubit* of 48 cm based on a *dakylos* of 2 cm.<sup>19</sup> Matthew supports his theory by referring to a metrological relief found on Salamis dating to the time of Alexander the Great, giving a 2 cm measurement for the *dakylos* and a *cubit* of just over 48 cm.<sup>20</sup> The Olympic unit of a 2 cm *daktylos* results thus in a *peltē* of 64 cm. This corresponds far better with archaeological finds of *peltai* shields. A fragmented *peltē* shield find from Begora was calculated by Liampi, Adam-Veleni and Hammond to have a diameter of an estimated of 66 cm.<sup>21</sup> The shield find from Pergamum is slightly more intact and measures between 65 cm and 66 cm.<sup>22</sup>

The fascinating find of a Ptolemaic shield mould of limestone, now in the Allard Pierson Museum, Amsterdam, has a diameter of approximately 69 cm.<sup>23</sup> At first it appears as if the mould could not be that of a *peltē* as the diameter is too large. The Pergamum shield find however, clearly shows that the outer layer

<sup>&</sup>lt;sup>17</sup> Matthew, The Length of the Sarissa, 48; Campbell, How long was the Macedonian Sarissa: An obscure debate over a very long spear, 48; Richardson, Numbering and Measuring in the Classical World, 18-23; Markle, Macedonian arms and tactics under Alexander the Great, 92

<sup>&</sup>lt;sup>18</sup> 4 daktyloi equated a palm. 6 palms again equated a cubit.

<sup>&</sup>lt;sup>19</sup> Matthew, *The Length of the Sarissa*, 48. At Olympia the *stade* measured 191 m, resulting in a 48 cm *cubit* (See Matthew, *The Tactics of Aelian*, 150, n 5).

<sup>&</sup>lt;sup>20</sup> Dekoulakou-Sideris, Relief from Salamis A Metrological, 448; Jones, Doric measure and architectural design 1: The evidence of the relief from Salamis, 79, table 1.

<sup>&</sup>lt;sup>21</sup>Adam-Veleni, Xálxuvn ασπίδα από τη Βεγόρα της Φλώρινας, 19 (65.6cm); Liampi, Der makedonische schild als propagandistisches mittel in der hellenistischen zeit, 157; Hammond, A Macedonian shield and Macedonian measures', 365. Hammond takes an interesting approach of establishing the 2cm daktylos through the decorative techniques on the shield. It must be remembered that the shield find is very damaged and exact measurements are not possible.

<sup>&</sup>lt;sup>22</sup> Peltz, Der Makedonische Schild aus Pergamon der Antikensammlung Berlin, 333.

<sup>&</sup>lt;sup>23</sup> Moormann, Ancient Sculpture in the Allard Pierson Museum Amsterdam, 187-188

of the shield was folded over around the wooden core of the shield.<sup>24</sup> This section which is folded over is calculated to be approximately 2.5 cm.<sup>25</sup> This folding of the outer layer is confirmed by the shield of Pharakes of Potus which shows the outer rim cut into wedges meant to fold around the wooden core.<sup>26</sup> When the folded outer layer along with the thickness of the shield is taken into consideration, the Ptolemaic mould corresponds well with the other shield finds. The archaeological evidence thus supports Asclepiodotus' size of 8 palms for the *peltē*.

From the evidence it appears that Matthew's suggestion of the Olympic / Peloponnesian 48 cm *cubit*, is the most appropriate when studying the Hellenistic phalanx.

The Hellenistic phalanx soldier was thus armed with a pike between 3.84 m (8 *cubit*) and 7.68 m (16 *cubit*), depending on the period.<sup>27</sup> For defense he carried the small round *peltē* shield of 64-66 cm in diameter (8 *palms*).<sup>28</sup> Each soldier thus occupied a space of a mere 48 cm (1 *cubit*) within the phalanx, when it formed up in the *synaspismos* formation.

#### The Modern Opposition to the Synaspismos

Several modern scholars however refute the possibility that the Hellenistic phalanx could form up in such a close formation of a mere one *cubit* / 48 cm per man and with interlocking shields. The arguments are largely based on the size of the arms and the manner of bearing them, which conflicts with the limited space of the one *cubit* interval given for each soldier when in the *synaspismos* formation. Walbank states that "this formation could hardly have been deployed in phalanx action".<sup>29</sup> English again states that the arms and armour of the phalanx made it impossible for it to form up in such a close formation, and that *synaspismos* was merely terminology used to describe a close order formation of three feet, and

<sup>&</sup>lt;sup>24</sup> Peltz, Der Makedonische Schild aus Pergamon der Antikensammlung Berlin, 334

<sup>&</sup>lt;sup>25</sup> Peltz, Der Makedonische Schild aus Pergamon der Antikensammlung Berlin, 334

<sup>&</sup>lt;sup>26</sup> Peltz, *Der Makedonische Schild aus Pergamon der Antikensammlung Berlin*, 336; Kenneth & Wight, *The J. Paul Getty Museum Handbook of the Antiquities Collection*, 48. It must be noted the Pontus shield is much larger than the *pelté* and its reference here simply serves as demonstration of connecting the bronze facing to a wooden core.

 $<sup>^{27}</sup>$  While the 16 *cubit* / 7.68 m *sarissa* was the longest, Polybius clearly states that it was impractical and thus reduced to 14 *cubits* / 6.72 m.

<sup>&</sup>lt;sup>28</sup> Larger examples of *peltai* might have existed as well but the majority seem to have been 64-66 cm. For larger examples see Sekunda, *Macedonian Armies after Alexander*, 18.

<sup>&</sup>lt;sup>29</sup> Walbank, A historical commentary on Polybius, 286, n. 9

should not be taken literally to mean "locked shields".<sup>30</sup> Matthew delves into great detail on various elements on why it was impossible for the Hellenistic phalanx to assume the *synaspismos* formation, based on the arms carried by its fighting men. He concludes that "phalangites bearing a long pike and a shield of 64 cm in diameter are physically incapable of creating a combative formation with interlocking shields in an interval of only 45 - 50 cm per man".<sup>31</sup> Even those modern scholars who do suggest the use of the *synaspismos* formation, fail to give an explanation for how it was formed. Those who do offer theories and models for how it was possible, fail to conform with the terminology of interlocking shields, or distort the position of the soldiers in such a way, that the shield is removed from the front of the body and no longer provides protection for the bearer.<sup>32</sup>

#### The Problems of the Synaspismos Formation

The very first problem concerning the *synaspismos* is that the shield measuring 8 *palms* / 64 cm is already larger that the allocated space of one *cubit* / 48 cm per man, as given by the ancient tactical manuals. The shield is thus 16 cm larger than the one *cubit* / 48 cm. This however can easily be explained by the overlapping or interlocking of the shields. The extra 16 cm thus overlaps with the adjacent soldier's shield.



**Figure 1:** The photo shows that wielding the *sarissa* at the same elevation as the shield makes it impossible for the shields to interlock.

A far more complex problem is when the *sarissa* is added to the equation. As we have seen above, the shield in a *synaspismos* formation had to overlap or interlock, due to the shield being larger than the required one *cubit* per soldier. This is also confirmed by the description of the ancient literary sources and the very name of the formation itself meaning "interlocking shields or shields together". This in effect created a solid wall of bronze shields with no gaps or openings. Matthew views this shield wall as an obstruction which would not

<sup>30</sup> English, Field Campaigns of Alexander the Great, 208

<sup>31</sup> Matthew, An Invincible Beast: Understanding the Pike-Phalanx at War, 143-144

<sup>&</sup>lt;sup>32</sup> Matthew, *An Invincible Beast: Understanding the Pike-Phalanx at War*, 143-145; Matthew, *The Tactics of Aelian*, 150

allow for a soldier to wield the heavy *sarissa* for combat. Matthew states that "the presence of this shield wall would then prevent the *sarissa* from being lowered for combat". He explains:

Due to the position of the shield on the left arm, and how the left hand is used to help wield the pike, the bulk of the shield sits at the same elevation as the *sarissa* when it is lowered for combat. Thus even two phalangites standing sideby-side would not be able to interlock their shields due to the presence of the weapon held by the man on the left.<sup>33</sup>

The argument clearly has merit and it is indeed impossible to have the shields touch, never mind interlock and overlap, with the *sarissa* held at the same elevation of shield. Having two soldiers formed up next to one another, clearly shows that the *sarissa* held horizontally with the head pointed towards the enemy, does not allow for the shields to interlock, and automatically makes the space occupied by each soldier, larger than one *cubit* (see fig. 1). At first glance, it appears that it was impossible for the Hellenistic phalanx to form-up in the *synaspismos* formation in a battle scenario, as claimed by Matthew and others.

#### The Elevation of the Sarissa

We should however not be too eager to conclude that the ancient sources were mistaken about the *synaspismos*, nor that the tactical writers were misinformed about the technical specification of the Hellenistic phalanx. I would like to propose the following theory. I believe that our modern ignorance as to how the *sarissa* was held during combat results in the idea that the *synaspismos* formation is impossible to form in a battle scenario. Every modern depiction of the Hellenistic phalanx, whether in the world of entertainment of cinema and gaming, living history and re-enactment groups, or scholarly models in books and articles, present the phalanx soldier as carrying the long *sarissa* pike in a low guard at waist height and at the same elevation as the shield (see fig. 1 & 2).<sup>34</sup> I am not arguing that the *sarissa* was never held in such a low guard fashion, and in the more open formations described by the tactical writers (the 2 *cubit* and 4 *cubit* interval formations), it is possible that this method of holding the *sarissa* was indeed used.

<sup>&</sup>lt;sup>33</sup> Matthew, An Invincible Beast: Understanding the Pike-Phalanx at War, 145

<sup>&</sup>lt;sup>34</sup> Oliver Stone's '*Alexander*', Rome 1 & 2 in the Total War Gaming Series, the German re-enactment group *Hetairoi*, and every depiction of a phalanx soldier in art and books, all depict the *sarissa* being carried waist height during combat.



low guard at the same elevation as the shield.



Figure 2: The phalanx soldier wielding the sarissa in Figure 3: The phalanx soldier wielding the sarissa in high guard at the same elevation as the shield.

For the synaspismos formation however, I would like to propose that the sarissa was held in a high guard above the shoulder and in line with the enemy's face (see fig. 3 & 4). Gripping the sarissa in such a manner would result in the sarissa being elevated above the shield, meaning it no longer causes an obstruction between the shields. Since the sarissa is no longer at the same elevation as the shield, the shields of the adjacent phalanx soldiers in the same rank would be able to overlap and interlock, resulting in a synaspismos formation (see fig. 4).



Figure 4: The photo demonstrates that by wielding the sarissa in a high guard, the weapon no longer serves as an obstruction for the shields to overlap.

Holding the sarissa in a high guard actually makes a lot of sense. Carrying the sarissa at waist height meant that the sarissa head was lined up with an enemy's torso area. The torso however, tended to be the most well armoured and defended area of the heavy infantry. Take the phalanx soldier for instance. According to the Military Decree of Amphipolis, the hēgéomai (file leaders) of each phalanx soldier was clad in a thorax or a hemi-thorax.<sup>35</sup> The hēgéomai were the soldiers who stood in the front ranks of a Hellenistic phalanx.<sup>36</sup> The front ranks thus had their torsos protected by a metal cuirass of either iron or bronze. We have already discussed

the *peltē* shield carried by each soldier, which would have added additional defense to the torso area. The torso area was thus very well defended. This was generally the case with all heavy infantry of the Hellenistic world, such as the Roman legionaries who were clad in body armour and protected by the large scutum shield. For the sarissa to

<sup>&</sup>lt;sup>35</sup> Web # Meletemata 22, Epig. App. 12 SEG 40. 524 http://epigraphy.packhum.org/text/152464

<sup>36</sup> Ael. Tac. 4.2; Arr. Tac. 5.6

wound or kill an opponent, the pike head thus had to penetrate far enough through a shield and body armour before it could hit its mark. The face on the other hand was largely open and exposed, to allow for vision, breathing and hearing. The *sarissa* held at the same elevation of the face of an opponent was thus aimed at a far more vulnerable and exposed target. Aiming at the exposed face of an enemy was doubly important to the phalanx when it assumed the *synaspismos* formation. I have already mentioned that the *synaspismos* formation was a defensive formation assumed when bracing for the charge of an opposing enemy.<sup>37</sup> This means that the Hellenistic phalanx was not in motion when it was formed up in the *synaspismos*. Without the momentum and weight of the charge, the soldiers in the *synaspismos* formation would far less likely be able to penetrate though shields and armour. Having the *sarissa* aimed at the enemy's exposed face would be far more effective.

Matthew has suggested that the *sarissa* was far too heavy and thus impossible to hold above the shoulders and at the same elevation as the opponent's face.<sup>38</sup> Pike warfare of the early modern era however contradicts this. In the early modern era, pike warfare once again found dominance on battlefields across Europe. The pikes of the era did not differ all that much from the *sarissa* with examples reaching well over five metres in length.<sup>39</sup> In fact, warfare of the period was deeply influenced by the ancient tactical writers, particularly Aelian's *Tactica*, as mentioned above.<sup>40</sup> The early modern era military manuals on pike warfare describe the pike being held over the shoulder and pointed at the face of the enemy, similar to the manner I suggest for the *synaspismos*:

and carrying their piques firmlie with both their hands over ye sholdiers of all the ranks before them, the points of their piques likewise towards the faces of their enemies approachin... points of their piques lighted upon the bare faces of the formost ranks of their enemies<sup>41</sup>

The military manuals from the era such as *Wapen-handelinghe van roers, musquetten, en spiessen,* have beautiful illustrations on pike drills, which clearly show that the pike was held over the shoulders at the same elevation as the face

<sup>37</sup> Ascl. Tact. 5.3; Ael. Tact. 11.5

<sup>&</sup>lt;sup>38</sup> Matthew, An Invincible Beast: Understanding the Pike-Phalanx at War,146

<sup>&</sup>lt;sup>39</sup> Sekunda, *The Sarissa*, 24. These were longer than the 8, 10 and 12 *cubit sarissae*, and only slightly shorter than the 14 *cubit*. One might argue that the 16 *cubit*, being over 7 meter is substantially longer than the five meter early Modern Era pikes, but even Polybius (18.29.2) states that the 16 *cubit* was beyond practical.

<sup>&</sup>lt;sup>40</sup> Sekunda, *Seleucid and Ptolemaic Reformed Armies 169-145 BC: The Seleucid Army*, 7; Matthew, *The Tactics of Aelian*, xv

<sup>&</sup>lt;sup>41</sup> Smythe, Instructions, Observations and orders Mylitarie, 42, 44



**Figure 5:** A 17th century illustration of a pikeman, demonstrates that the pike could be, and indeed was, held in a high guard in line with the enemy's face during the early modern era (Image in Public Domain).

(see fig. 5).<sup>42</sup> The English Civil-War Society's *The Marquess of Winchester's Regiment*, which follows the drill book of William Bariffe, is one of the premier re-enactment groups of the English Civil War period. The pikemen of the regiment demonstrate in practice, that it was indeed possible to hold the five meter pike at the same elevation as the opponent's face (see fig. 6).<sup>43</sup>

# Experimental Archaeology in support of the Synaspismos and the High Guard.

In order to better understand the formation of the *synaspismos* and to help demonstrate that this formation was indeed possible to assume on the battlefield, a section of the paper is devoted to experimental archaeology. A replica *peltē* shield was reconstructed

based on historical evidence. Several thin wooden strips of oak, a common type of wood used for shields, were cut and glued to form the core base of the shield (see fig. 7). The first layer of wooden strips was glued horizontally over a dish-shaped metal mould to create the concave shape of the shield mentioned by the tactical manuals.



**Figure 6:** The modern Living History re-enactment group, *The Marquess of Winchester's Regiment*, demonstrate that it was more than possible to carry a pike in such a high elevated position as the high guard. (Photographs by kind permission of *The Marquess of Winchester's Regiment* of the English Civil War Society, United Kingdom).

<sup>&</sup>lt;sup>42</sup> De Gheyn, *Maniement D'Armes D'Arquebuses, Mousquetz, et Piques*, fig 14, 24. This particular version is the French translation of the Dutch with copies of the original illustrations on military drill. Figures 1-32 deal with the drill with the pike.

<sup>&</sup>lt;sup>43</sup> Marquess of Winchester's Regiment 2017

A second layer was glued vertically over the horizontal layer, followed by a third horizontal layer of wooden strips, creating a strong wooden core approximately 1.5 cm thick. The wooden core was covered by a thin layer of hammered out bronze of 0.5 cm thickness, based on the thickness of the bronze facing of the Pergamum find (see



Figure 7: The wooden core base of the *peltē* shield.

fig. 8).44

The manner in which the shield is attached to the arm is based upon the mural from the *House of Menander*.<sup>45</sup> The mural depicts a soldier bearing

a small round shield interpreted by Sekunda as a *peltē*.<sup>46</sup> The mural is a copy of the 3<sup>rd</sup> century BC original and thus believed to be a faithful depiction of a Hellenistic *peltē*. The mural shows the forearm strapped to the shield by three leather straps (see fig. 9). To attach the straps to the shield, homemade bronze and copper rivets, nails and attachments were used. The replica *peltē* serves as a practical example of how it was fastened to the forearm and how the left hand was free to grip the *sarissa* in both a low and a high guard.



**Figure 8:** The wooden core base of the peltē shield covered with bronze layer.

**Figure 9:** The image on the left shows the straps with which to strap the shield to the forearm. The image on the right demonstrates the shield attached to the forearm.

Long shafts were cut from wattle trees, which measured lengths in excess of five meters.<sup>47</sup> These would serve to replicate the *sarissae* (see fig. 10). The wattle was cut from an extremely dense wattle forest. The density of the forest forces the trees to grow rapidly

<sup>&</sup>lt;sup>44</sup> Peltz, Der Makedonische Schild aus Pergamon der Antikensammlung Berlin, 333

<sup>&</sup>lt;sup>45</sup> Pompeian house mural #: I 10.4

<sup>&</sup>lt;sup>46</sup> Sekunda, *Macedonian Armies after Alexander 323 - 168 BC* 44, 43 Pl. F2.

<sup>&</sup>lt;sup>47</sup> Wattle in South Africa is an exotic tree, and the harvesting of the wattle did not negatively impact upon the environment (Weber, *Invasive Plant Species of the World*, 7)

upwards to compete for the most sunlight, which results in a very straight trunk, ideal for shafts of spears and pikes. A similar method of producing shafts for pikes existed during the 16<sup>th</sup> and 17<sup>th</sup> century in Europe, with plantations of ash trees planted in very close proximity to one another.<sup>48</sup> For good measure, a metal pike head was attached to the front of the shaft. While it is impossible to know the weight of the Hellenistic *sarissa*, the replica of wattle wood (including the attached pike head) weighed 6.5 kg, a similar weight to the pikes used by the *Marquess of Winchester's Regiment* (see fig. 6) and those used in the 17<sup>th</sup> century.<sup>49</sup>

In the words of Sir Clottworthy, a British officer in the English Civil War, the pike was "a damned thing to be suffered".<sup>50</sup> The *sarissa* was a heavy weapon indeed, but after a few days of experimentation, became rather manageable. Both the high guard and the low guard were experimented with, while wielding the *sarissa*. Surprisingly, both I and those who assisted me, found that it was easier wielding the *sarissa* in the high guard position (see fig. 11).



**Figure 10:** The image shows the length of the replicated *sarissa* in full view (5.4 metres), similar to Ascelpiodotus' 12 cubit *sarissa*.

More shields were created to demonstrate the *synaspismos* in practice. These shields were created of more affordable material of sheet metal but were faithful to the eight *palm* measurements and the concave shape.

Gripping the makeshift *sarissa* in a low guard while bearing the shield, clearly demonstrated that it was indeed impossible to form the *synaspismos*, as Matthew argues, because the *sarissa* obstructed the shields from overlapping (see fig. 1). Gripping the *sarissa* in the high guard however, made it possible for the shields to overlap, since the *sarissa* was no longer an obstruction (see fig. 4). This again allowed the individuals to stand closer to one another and reduce the space between them. The space occupied by each individual was actually slightly less than 48 cm / one *cubit*. Both individuals next to one another with the overlapping shields occupied a combined space under 96 cm (see fig. 12).

A very interesting observation was made during the experimental archaeology about the shield position, when comparing the low guard and the high guard. Grip-

<sup>48</sup> Sekunda, The Sarissa, 29

<sup>&</sup>lt;sup>49</sup> The English Civil War re-enactment group's pike weighs approximately 6.4 kg.

<sup>&</sup>lt;sup>50</sup> Hogan, Anonymous: The History of the Warr in Ireland 1641 to 1653, 49



Figure 11: Wielding the sarissa in the low guard (left). The sarissa wielded in the high guard (right).

ping the *sarissa* in the high guard raised the shield to a higher elevation. This meant that the shield covered a larger area of the body when the *sarissa* was held in the high guard, compared in the low guard. Not only did the high guard allow for the *synaspismos* formation to be formed, but it gave greater protection to the body (see fig. 13).

We also discovered that it was far easier to thrust towards the enemy's face from the high guard, as well as thrust lower towards the torso area. One could comfortably drop the pike head from the high guard and thrust downward to the torso. Thrusting towards the face from the low guard was however very difficult. It meant raising the heavy pike head (which was in-line with the waist) at such an angle that it would point towards the enemy's face. This action was slow and cum-



**Figure 12:** The image demonstrates that while in synaspismos, a single individual can occupy a space of 48 cm / 1 cubit.

bersome, and the actual thrusting motion at this angle had little power behind it. This meant that from the high guard, one could strike at various targets on the enemy's body. From the low guard one was limited to striking at the torso area.



**Figure 13:** The image shows a frontal view of the low guard (left) and the high guard (right). By comparing the low and high guard next to one another clearly demonstrates that the high guard provides greater shield cover to the upper body than the low guard.

## Conclusion

The research has shown that, by simply changing the way the *sarissa* is held from a low guard to a high guard, the Hellenistic phalanx could indeed form the *synaspismos* formation described in the ancient literary sources. Assuming the high guard with the *sarissa* removes it as an obstacle, allowing for the shields to overlap. This in turn reduces the space between the files of the phalanx, allowing each individual to comfortably occupy a space of 48 cm / one *cubit*, as given by the tactical writers.

The research, as well as the experimental archaeology, has demonstrated that it was possible to assume a high guard with a pike of such an extraordinary length. It also demonstrated that the high guard was more effective than the low guard in an offensive sense: by assuming the high guard, the *sarissa* head was aimed at the face of an enemy, which was the most exposed part of the body. The low guard, however, aligned the head of the *sarissa* with the well armored and defended torso. From a personal point of view, the high guard also made the wielding of the pike a little easier to bear, compared with the low guard. One could far more easily drop the pike head and thrust at the opponent's torso area from the high guard, than lift the heavy pike head and thrust towards the enemy's face from the low guard. One thus had more offensive striking options from the high guard than from the low guard. From a defensive position, the high guard allowed the shield to be elevated, which in turn gave more protection to the upper body of the soldier.

With this research paper, I would like to conclude that the defensive formation of the *synaspismos*, as it was described in the literary sources, was indeed possible to assume in a combat scenario, simply by reevaluating how the *sarissa* was held and that wielding the *sarissa* in a high guard was more effective than in the commonly accepted low guard.

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