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How to Throw a Spear on a Sling[1]

Greek spearmen in classical times threw spears with a sling. How?

When javelin throwers are told to be ready, Xenophon's phrasing appears, for instance, "He ordered the targeteers to carry javelin on strap, and the bowmen to hold arrow on string" (*Anabasis* 5.2, Rouse tr.). This context shows that the spear-throwers' readiness to throw, paralleling the archer with arrow nocked, was some preparation with a strap, sling, or thong. In addition to the warfare usage, Greek hunters also used a sling with their hunting spears. The hunter in Achilles Tatius 2.34 narrates, "I wound the thongs on my javelin..." (Winkler tr.)

I owe to my former student Donald K. Arp this observation: a culture that develops an advanced throwing weapon does not develop archery: consider the aborigines of Australia with boomerang and woomera, and the South American Indians who use the atlatl. We might also ask why the Greeks developed no tradition of archery, except for Crete.[2] In addition to the person-to-person machismo of Greek infantry combat, there may be the following reason why the Greeks never developed a tradition of archery. The Greeks did possess an advanced throwing weapon. Throwing a spear on a sling turns out to be extremely effective, accurate, and satisfying.[3] Experimentation confirms it.

We have a tripod of sources for any area of ancient technology: literary sources, archaeological ones, and experimentation. Experimentation here is key; whatever they did with sling and javelin, it worked. A means which does not work is out of court. Months of experimentation have resulted in a technique which

1. adds 50% to the range of a thrown spear;
2. elucidates what the Greek passages in Xenophon actually mean; and,
3. is aesthetically pleasing; watching the flight of a spear against the sky in the afternoon sun of a summer evening is an aesthetic experience

Yes, to come straight to the point, the spear on a sling is effective and satisfying. After months of experimentation, I have found a way to use a string or rope to add half again to the length of a spear cast.

A summary of results is that my best throws with the bare hand go 30 paces; give me a second with a thong, or rope and the same spear will fly 45 paces. Typical of many trials is 20-24 yards off the bare hand, 32-36 yards off the sling. Maximum when warmed up is about 50.

[1]An earlier version of this paper was delivered at the 2005 CAMWS meeting in Madison, WI.

[2]Crete is the exception, of course, but generally, when Greeks needed archers, they imported them from the Scythian north. "Scythian" and "archer" become synonyms in classical Greek.

[3]See illustrations 5 and 6. Who needs archery when you can throw a spear like this?

You could do better with the same spear and the same technique; I am in my 60's with joints arthritic, and throwing right-handed can bring pain to wrist and to the right knee that has no ACL. Most trials, therefore, are off the left hand. Still, a good cast off the sling is even more aesthetic to watch in its flight than an arrow.

The literature literally falls short. Follow the drawings in, for instance, John Warry's *Warfare in the Classical World,*[4] and you will simply trip the spear and watch it go end-over-end: The peltast illustrated has the loop-thong wound 9 times around the center of the shaft. Doubly incorrect.

1. So many winds trip, rather than accelerate, the spear -- the spear hangs up, spinning like a spindle and falls in front of you. The spear must be able to separate freely and almost instantly.

2. Throwing a spear from the center is like throwing a football at its center; the missile is unstable in yaw and the result is a wobble. This is tolerable with a football, but a spear going sideways will neither cover ground nor stick in it. Also there is a line-drawing sequence. It shows the loop-thong wound twice around the spear-shaft. Also dubious. Simply try it. The spear hangs up, flips over end, and lands short of where you could have thrown it with the bare hand, and likely butt-end to - even two winds around the shaft are two many. Further, between illustrations one and two in the line-drawing series, the artist has switched the direction of the windings. Clearly, the concept, not the technique, is expounded. The drawings, in short, are imaginary. The earlier article on our subject is quite indeterminate about whether the thong is free or affixed, and where. It concludes "It may well be that Greek throwers commanded some technique as yet unknown to us. More experiments with better throwers are needed. It is still too early to make dogmatic statements about Greek javelin throwing."[5]

A second problem is that these recent drawings assume the sling is a loop permanently affixed to the spear. *Non credo.* Though a loop affixed permanently about midway between balance point and tail-end is very stable in yaw, I can easily throw a spear bare-handed farther than with any arrangement so far of a loop permanently affixed to the spear. The best support for a permanently affixed loop might seem to be a passage in Euripides "come and see this prey, the beast we daughters of Cadmus hunted down, not by the looped darts of the Thessalians, not with nets..."[Bacchants, 1205]. "Looped" is *angkyletois.* And there's a translation from Xenophon, *Anabasis* 4.3 *ad finem,* where the more-than-two cubit arrows of the natives are used as *akontia,* "They fitted thongs to them and used them as javelins." (Rouse, tr.)

A spear can be thrown with a loop permanently affixed to the spear, but the index finger of the throwing hand must contact the loop at the pad, right under the fingernail. If the index finger is any deeper in the loop, the greater security in the throwing is countered by the higher

[4]1980, repr. 2002, p. 50. The original edition was text only; the reprint with illustrations was produced by a team. It is the team's illustrations in the recent re-edition, not John Warry's work, that are referred to. From the author's preface: "Throughout the book, it should be noted that the artists' reconstructions with their appended illustrations are mostly based on research independent of that which underlies the text of the fourteen chapters."

[5]H. A. Harris, "Greek Javelin Throwing," Greece and Rome, March, 1963, pp 35-36.

probability that the index will trip the loop and upend, rather than propel, the spear.

But in the Greek, "fitted thongs to them" is a present active participle, *enangkylontes,* NOT an aorist act done beforehand, but present to the time of use. In Xenophon *Anabasis* 5.2, the peltasts are ordered "to go *diengkylomenous."* Further, ordering a feint attack, Xenophon at 4.3 ad fin, has the akontists go *diengkylomenous* and the archers *epibeblemenous.* These perfect participles mean the peltasts and archers go with their missiles readied for launch. Not a question of the thong being permanently affixed to the spear and being thrown with it! The verb is done to be ready for use. The parallel rendering would have the archers nock their arrows and the spearmen enloop their spears.

Most clear and plain of all the passages is one in Achilles Tatius. A hunter does a variation of this verb before throwing a spear at a boar, *enangkylesamenos to akontion ...pempo to belos* ("I enlooped the spear and threw it." 2.34). The spear is the direct object of the looping. NOT the way to say it if the thong was affixed to the spear and was always on it. The hunter's sequence is unmistakable:

1. See the boar charge.
2. Enloop (Enangle) the spear.
3. Throw it.

The best evidence for the idea that the loop is permanently affixed to the spear is Roman, not Greek. It is at Caesar *De Bello Gallico* 5.48.5: *ut tragulam cum epistola ad ammentum deligata intra munitionem castrorum abiciat.* The likely way to render this is "to throw a spear with the letter tied to the *ammentum,"* as if the *ammentum* were part of the spear. This rendering, however, trips over a logical problem. Ammentum is the Latin for a spear-throwing strap - or a sandal strap - but if the letter is tied to this ammentum, then this ammentum was NOT used to throw the spear!

The Greek *angkyle* is NOT a permanently affixed loop. What is the *angkyle* then?

I believe I found the answer in the arrow-throwing technique related by Charles Parker, in *The Archers Magazine* (Vol 3. No. 7, June, 1954, p. 10). The illustrations show a string looped around a shaft, and riding over a knot at the end of the string, with the front end of the string wound several times around the index finger. Parker credited Sir Ralph Payne-Galway's classic *Book of the Crossbow.*[6]

In this technique the angkyle would be the bend of the string around the nub or knot at the end of the thong. You set it before each cast of the spear. Experiments showed a sling that stayed in the hand was potentially rewarding. I have spent many an evening with a home-made throwing-spear, and trying every arrangement, and every kind of rope, thong, shoestring, strap or even drapery cord.

If the throwing cord is supple and thicker, closer to rope than cord, the knot becomes completely unnecessary. This is a great simplifying factor, because the size of the knot was

[6]Originally published 1903, still available in a 1995 Dover reprint. The arrow-throwing essay is on pp. 243-6. Payne-Galwey's drawings have the loop at mid-shaft, and the arrow held for throwing at the front end. The mode of the loop is right, but it is the work of a moment to demonstrate that placement of it, and the hold at the front end, are imaginary. Parker's item shows a more workable placement.

critical to success if the "thong" is string or thin cord: too small, and it slips; too big and it hangs up and trips the spear. Using a supple rope about a quarter-inch in diameter removes this factor entirely.

The very first attempt showed promise, and each advance showed glimmerings of what might come of the process. There was a memorable turning point when the slung spear lit at the far end of my 98' archery range, but still 20 feet up in the trees. At this point I knew I had to stop practicing in the back yard! All subsequent sessions for practice/experimentation have been in a valley alongside a nearby soccer field. Demonstrations to my Ancient Warfare students have been in a very open, carefully chosen and monitored part of campus.

Spear-flinging is infectious, like eating peanuts. Seeing a spear against the sky, flying well in the afternoon sun of a summer eve is an aesthetic experience. See the illustrations for any clarifications on the technique.

Observations

1. Just like in a bare-handed throw, the spear has left the hand before the forearm is vertical, but the rope is still propelling the spear.

2. The rope is straight up and down when the throwing arm is straight horizontal. The release occurs about at this point. [See illustrations]

Practical matters

1. Mark the balance point of the spear. (Only needs be done once for the life of the spear.)

2. Sand a slight degree of cone into the tail end of the spear. This is insurance against the loop coming loose prematurely, as well as for a proper launch: if there is any slipping, the loop moves to a wider spot, and the loop gets tighter, and hangs on until it should let go.

3. Set the angkyle right at the tail end of the spear. [See illustration 1.]

4. Pull the thong around so it overlaps itself once. When it unwinds, it will unwind to work with the spin off the fingers.

5. Hold the thong tight with the off hand while winding the free end around the index finger of the throwing hand. [See illustration 2.]

6. Between the loop and the spear-wielding spot, have the rope go no more than halfway around. That is, the angkyle and the index finger should just be on opposite sides of the spear. This is all the spin that the rope needs to impart.

7. Wield the spear a bit behind the balance point.

8. Pick a target first and look at it.

9. While cocking to throw, look at the spearpoint.

10. Throw.

11. Since the rope is still propelling the spear until the arm is fully extended forward, the follow-through MUST stay in the plane of the line to the target.

Trouble-shooting

The spear yawed and went sideways through the air. *Too much side-arm in the throw and/or follow-through. Try deliberately pointing straight out at the end of the throw. Yes, it is just like throwing a baseball overhand, but a baseball-throwing follow-through will give you a curve. To throw it straight, the follow-through must be straight in the plane of the target.*

The spear went all right, but short.

The loop slipped! Nylon drapery cord, e.g., is too slick. Not every kind of string/rope will work!

The spear up-ended and flew tail-down, or even rotated backwards to land tail-first.

The spear hung up on the thong.

a. *Don't wind the thong quite so far around between the angkyle and the index finger. One quarter-turn is plenty.*

b. *You let the rope go slack in between looping the end and throwing.*

c. *If you have only a quarter-turn between angkyle and index, the nub is too fat.*

The spear went high and straight, spinning like a well thrown football spiral, and staying horizontal through its entire trajectory.

You found it! This is it.

One evening it was so windy my hat blew off. Having learned that the spear flies better if you pick a target first, rather than just fling for distance, I used the hat for a target. Practice makes perfect. When I hit the hat, left-handed, from 38 paces off, I packed the spears on the bike and rode home. I've still got the hat.

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Illustration 1. The rope is looped once close to conical butt end of the spear. Tension is maintained over the loop. This is the "*angkyle*." Wife, Joanna, is marking the launch point of a bare-hand throw for the sake of comparison.

Illustration 2. The rope is wrapped a time or two around the index finger. Spear is held a bit behind its center of gravity. Note maintained tension.

Illustration 3. In same position as for an earlier bare-hand cast. Rear back and launch. Free end of rope trails from hand.

Illustration 4. Throw is absolutely overhand; the shoulders are almost straight up and down; the index finger pointed is straight at target. The spear left the hand 90 degrees earlier, but sling is still propelling it.

Illustration 5. Compare arm position to that in #4. Note that the rope is still nearly vertical; note the position of the spear.

Illustration 6. Spear flight. A wide-open space is needed! When throwing at a near target instead of throwing for distance, the extra velocity becomes extra impact instead of extra distance. Accuracy is enhanced because of the need for the utterly straight-on follow-through; one's index finger must slice the center-line of the target, and you hit what you point at.

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