Experiments in Fending Atlatl Darts with Basketmaker S-Shaped Sticks

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Introduction

The design of S-shaped sticks is a diagnostic artifact of the Basketmaker II period. In the early 20th century these artifacts were assumed to be throat knives, similar to ethnographically known rabbit knives used in the American Southwest. In 1931, it was first suggested by Kidder and Guernsey that these sticks might serve a different function, due to a large part of differing use wear patterns observed on S-shaped sticks and modern rabbit-sticks. A footnote in their paper suggests the possibility that these sticks may have served as tools for fending atlatl darts. By 1942, Robert Leiser had assumed the possibility that these sticks were unlikely to be rabbit sticks based on use wear, although he concludes that not all researchers were in agreement on the latter.

By the time of Heizer’s writing, the idea of these S-shaped sticks and some C-shaped sticks as “fending sticks” for the definition of atlatl darts had been established in the literature. In 1950, Earl Morris noted the lack of shields in Basketmaker II contexts, and established the idea that these sticks are essentially early forms of shields, and part of a warrior’s battle kit. Morris goes on to assert “the curved fending stick heavily handled would have been most efficacious in striking aside the relatively slow moving darts.” Morris cites no experimentation to back up this claim. In 1989, in an article in Ethno, Phil E. Geib quoted Morris, and added that he can verify Morris’ s claim “from personal experience.” The nature of this experience is arbitrarily left to the reader’s imagination. The views of Morris and Geib have since been reiterated by Steven LeBlanc.

The present work is an attempt to evaluate Basketmaker S-shaped sticks in the role of fending sticks. A reproduction S-shaped stick and a “control” C-shaped stick were tested in this capacity. Results follow.

Experimental equipment and design

Preliminary experiments were performed sporadically over the course of a about a year before the experiment commenced. Two fenders (the author and Deán Pettigrew were outfitted with protective helmets and baseball chest protectors. Reproduction Basketmaker I atlatl darts were prepared with blunt rubber heads made from golf club grips packed with closed cell foam rubber. The fender was outfitted with either a replica S-shaped stick or a control stick, a Sisgala style C-shaped rabbit-stick (Fig 1 B). Darts were thrown at the fender from a distance of 10 yards. Darts of the weight tested have been clocked with a radar gun to travel between about 45 and 60 miles per hour, thrown from the atlatls used.

The fender attempted to sweep the darts away from their body. Two experiments were recorded, with each fender utilizing both the S-shaped stick and the C-shaped control. Each experiment consisted of an irregular number of repetitions, due to complications and circumstance. Experiments varied between n=22 and n=30. Data generated are therefore presented as averages, to avoid complications due to unequal sample sizes.

Outcomes of fending attempts, C-shaped stick

Figure 2 A: The outcomes of fending attempts with the C-shaped stick. Histogram shows outcomes, expressed percentages, with standard errors calculated between experiments. Pie chart shows breakdown of locations of “injuries,” or dart impacts. The results of both the S-shaped stick and the C-shaped stick were not significantly different. In all cases, the most likely outcome of attempting to fend a dart with either stick (Fig 2 A, 2B). As such, one can consider the two stick shapes roughly equivalent as fending tools.

Fending attempts, considered across all runs with both sticks, resulted in a 3.6% success rate. In control, 66.23% of attempts resulted in “injuries” of varying severity. Interestingly, the “fishing” response (a unconscious flexing of the body out of the way of incoming projectiles) was significant. Fencing resulted in a “success” rate of 12%. This is significant, because both fencers consistently attempted to stand their ground against incoming darts, and as a result of an unwarmed reflexive action were able to more successfully defend themselves against injury than through the use of fending sticks.

Conclusions

The present study is only preliminary, and only represent the fending attempts of two test subjects. As such, no conclusive statements can be made regarding the universal efficacy of S-shaped or C-shaped sticks as dart fending devices. That the 3.6% success rate for fending with both sticks is extremely low. Fencing provided a significantly higher degree of protection from darts (12%) even when test subjects attempted not to flinch. While this fencing response could be overcome through practice, and dart fending success rates could likely increase due to practice, would this be of practical use, and is it likely that S-shaped sticks were designed as dart fending devices?

The author has also performed preliminary experiments using a small 14” diameter shield mounted on the left arm. Even with an atlatl in the right hand and a handful of darts in the left, a 90% success rate in protecting the body from darts was readily possible in the first shield-fending session. Additionally, simply stepping aside as an incoming atlatl dart approaches is almost 100% effective in fact that the subconscious reflex response provides a significant degree of protection from atlatl darts, even at the relatively close range of 10 yards.

Preliminary data of this study suggest that Basketmaker S-shaped sticks are unlikely to be “fending sticks.” Far better tools (likely) could be designed for the task, and behavior (Side stepping) provides an extremely significant degree of protection as well. The idea of these tools as fending sticks is both unnecessary and in the author’s opinion unlikely. Preliminary experiments in Wisconsin have shown that keeping the sticks close to the chest makes them to be very stable in flight, eliminating straight flight paths of many of the darts. S-shaped sticks are poor defensive tools and are likely to be throwing sticks.

This is perhaps unsurprising, as there exist in New Mexico pottery of S-shaped beings employed in rabbit hunting.”

References