

Spear-thrower

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A **spear-thrower** or **atlatl** (/ˈɑːt.lɑːtəl/^[1] /ˈæt.lætəl/; Nahuatl: *ahtlatl* Nahuatl pronunciation: [ˈaʔtlat͡ɬ]) is a tool that uses leverage to achieve greater velocity in dart-throwing, and includes a bearing surface which allows the user to store energy during the throw.

It may consist of a shaft with a cup or a spur at the end that supports and propels the butt of the dart. The spear-thrower is held in one hand, gripped near the end farthest from the cup. The dart is thrown by the action of the upper arm and wrist. The throwing arm together with the atlatl acts as a lever.

The spear-thrower is a low-mass, fast-moving extension of the throwing arm, increasing the length of the lever. This extra length allows the thrower to impart force to the dart over a longer distance, thus imparting more energy and ultimately higher speeds.^[2]

Common modern ball throwers (molded plastic shafts used for throwing tennis balls for dogs to fetch) use the same principle.

A spear-thrower is a long-range weapon and can readily impart to a projectile speeds of over 150 km/h (93 mph).^[3]

Spear-throwers appear very early in human history in several parts of the world, and have survived in use in traditional societies until the present day, as well as being revived in recent years for sporting purposes. In the United States the Nahuatl word *atlatl* is often used for revived uses of spear-throwers, and in Australia the Aboriginal word *woomera*.

The ancient Greeks and Romans used a leather thong or loop, known as an *ankule* or *amentum*, as a spear-throwing device.^[4]



Carved Aztec atlatl at the National Museum of Anthropology and History in Mexico City



Depiction of an atlatl

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Design

Spear-thrower designs may include improvements such as thong loops to fit the fingers, the use of flexible shafts, stone balance weights, and thinner, highly flexible darts for added power and range. Darts resemble large arrows or thin spears and are typically from 1.2 to 2.7 m (3.9 to 8.9 ft) in length and 9 to 16 mm (3/8" to 5/8") in diameter.

Another important improvement to the spear-thrower's design was the introduction of a small weight (between 60 and 80 grams) strapped to its midsection. Some atlatlists maintain that stone weights add mass to the shaft of the device, causing resistance to acceleration when swung and resulting in a more forceful and accurate launch of the dart. Others claim that spear-thrower weights add only stability to a cast, resulting in greater accuracy.



Bannerstone atlatl weight, ca. 2000 BC. Archaic peoples; Ohio.

Based on previous work done by William S. Webb, William R. Perkins^[5] claims that spear-thrower weights, commonly called "bannerstones," and characterized by a centered hole in a symmetrically shaped carved or ground stone, shaped wide and flat with a drilled hole and thus a little like a large wingnut, are a rather ingenious improvement to the design that created a silencing effect when swung. The use of the device would reduce the telltale "zip" of a swung atlatl to a more subtle "woof" sound that did not travel as far and was less likely to alert prey or other humans. Robert Berg's theory is that the bannerstone was carried by hunters as a spindle weight to produce string from natural fibers gathered while hunting, for the purpose of tying on fletching and hafting stone or bone points.

Several Stone Age spear-throwers (usually now incomplete) are decorated with carvings of animals: the British Museum has a mammoth, and there is a hyena in France. Many pieces of decorated bone may have belonged to *batons de commandement*.

The Aztec atlatl was often decorated with snake designs and feathers.^[6]

History

Wooden darts were known at least since the Middle Paleolithic (Schöningen, Torralba, Clacton-on-Sea and Kalambo Falls). While the spearthrower is capable of casting a dart well over 100 meters, it is most accurately used at distances of 20 meters or less. Seven spears were found in the Schöningen 13 II-4 layer, dating from about 400,000 years ago and thought to represent activities of *Homo heidelbergensis*.

^[7] The spearthrower is believed to have been in use by *Homo sapiens* since the Upper Paleolithic (around 30,000 years ago).^[8] Most stratified European finds come from the Magdalenian (late upper Palaeolithic). In this period, elaborate pieces, often in the form of animals, are common. The earliest

secure data concerning atlatls has come from several caves in France dating to the Upper Paleolithic, about 21,000 to 17,000 years ago. The earliest known example is a 17,500 year-old Solutrean atlatl made of reindeer antler and found at Combe Saunière (Dordogne), France.^[9]

In Europe, the spearthrower was supplemented by the bow and arrow, in the Epi-Paleolithic. Along with improved ease-of-use, the bow offered the advantage that the bulk of elastic energy is stored in the throwing device, rather than the projectile; arrow shafts can therefore be much smaller, and have looser tolerances for spring constant and weight distribution than atlatl darts. This allowed for more forgiving flint knapping: dart heads designed for a particular spear thrower tend to differ in mass by only a few percent. By the Iron Age, the amentum, a strap attached to the shaft, was the standard European mechanism for throwing lighter javelins. The amentum gives not only range, but also spin to the projectile.^[10]



Reindeer Age articles



Ceremonial atlatl,
Peru 0-300 A.D.,
Lombards Museum

The spear-thrower was used by early Native Americans as well. It seems to have been introduced to America during the immigration across the Bering Land Bridge, and despite the later introduction of the bow and arrow, atlatl use was widespread at the time of first European contact. Complete wooden spearthrowers have been found on dry sites in the western USA, and in waterlogged environments in Florida and Washington. Several Amazonian Indian tribes also used the atlatl, for fishing and hunting. Some even preferred this weapon over the bow and arrow, and used it not only in combat but also in sports competitions. Such was the case with the Tarairiu, a Tapuya tribe of migratory foragers and raiders inhabiting the forested mountains and highland savannahs of Rio Grande do Norte in mid-17th-century Brazil. Anthropologist Harald Prins offers the following description: "The atlatl, as used by these Tarairiu warriors, was unique in shape. About 88 cm (35 in) long and 3 to 4.5 cm (1¼ to 1¾ in) wide, this spear thrower was a tapering piece of wood carved of brown hard-wood. Well-polished, it was shaped with a semi-circular outer half and had a deep groove hollowed out to receive the end of the javelin, which could be engaged by a horizontal wooden peg or spur lashed with a cotton thread to the proximal and narrower end of the throwing board, where a few scarlet parrot feathers were tied for decoration. [Their] darts or javelins... were probably made of a two-meter long wooden cane with a stone or long and serrated hard-wood point, sometimes tipped with poison. Equipped with their uniquely grooved atlatl, they could hurl their long darts from a great distance with accuracy, speed, and such deadly force that these easily pierced through the protective armor of the Portuguese or any other enemy."^[11] Among the Tlingit of Southeast Alaska approximately one dozen very old elaborately carved specimens they call "shee áan" (sitting on a branch) remain in museum collections^[12] and private collections, one having sold at auction for more than \$100,000.

The people of New Guinea and Australian Aborigines also use spear-throwers. In the mid Holocene,^[13] Australian Aborigines developed spearthrowers, known as *woomeras*.^{[14][15]}

As well as its practical use as a hunting weapon, it may also have had social effects. John Whittaker, an anthropologist at Grinnell College, Iowa, suggests the device was a social equalizer in that it requires skill rather than muscle power alone. Thus women and children would have been able to participate in hunting,^[3] although in recent Australian Aboriginal societies, spearthrowers are restricted by custom to male use.

Whittaker said the stone-tipped projectiles from the Aztec atlatl were not powerful enough to penetrate Spanish steel plate armor, but they were strong enough to penetrate the chain mail, leather and cotton armor that most Spanish soldiers wore.^[6] Whittaker said the Aztecs started their battles with atlatl darts followed with melee combat using the macuahuitl.^[6]

Bâtons de commandement

Another type of Stone Age artefact that is sometimes excavated is the *bâton de commandement*. These are shorter, normally less than one foot long, and made of antler, with a hole drilled through them. When first found in the 19th century, they were interpreted by French archaeologists to be symbols of authority, like a modern Field Marshal's baton, and so named *bâtons de commandement* ("batons of command"). Though debate over their function continues, tests with replicas have found them, when used with a cord, very effective aids to spear or dart throwing.^[16] Another theory is that they were "arrow-straighteners", and the examples in the 1920 illustration at right are so labelled.

Modern times

In modern times, some people have resurrected the dart thrower for sports, often using the term atlatl, throwing either for distance and/or for accuracy. Throws of almost 260 m (850 ft) have been recorded.^[17] Colleges reported to field teams in this event include Grinnell College in Iowa, Franklin Pierce University in New Hampshire, Alfred University in New York, and the University of Vermont.^[18] There are numerous tournaments, with spears and spearthrowers built with both ancient and with modern materials. Similar devices are available to throw tennis balls for dogs to chase, and in the sport of jai alai.

Atlatl are sometimes used in modern times for hunting. There are meetings and events where people can throw darts.^[19] A few examples of the locations of such competitions are in Oregon,^[20] Rhode Island and in Lexington, Kentucky^[21] held yearly. In the U.S., the Pennsylvania Game Commission has given preliminary approval for the legalization of the atlatl for hunting certain animals.^[22] The animals that would be allowed to atlatl hunters have yet to be



The thrower is checking to see that the dart has been correctly located on the spur of the spear-thrower; next she will turn her head in the other direction, aim and throw

determined, but attention is focused on deer. Currently, Alabama allows the atlatl for deer hunting, while a handful of other states list the device as legal for rough fish (those not sought for sport or food), some game birds and non-game mammals.^[23] Starting in 2007, Missouri allowed use of the atlatl for hunting wildlife (excluding deer and turkey), and starting in 2010, also allowed deer hunting during the firearms portion of the deer season (except the muzzleloader portion).^{[24][25]} Starting in 2012, Missouri allowed the use of atlatls during the Fall archery deer and turkey hunting seasons and starting in 2014 allowed the use of atlatl during the Spring turkey hunting season as well.^[26] Missouri also allows the use of the atlatl for fishing, with some restrictions (similar to the restrictions for spearfishing and bowfishing).^[27] The Nebraska Game and Parks Commission allows the use of atlatls for the taking of deer as of 2013.^[28]

The woomera is still used today by some Australian Aborigines for hunting in remote parts of Australia. Yup'ik Eskimo hunters still use the atlatl, known locally as "nuqaq" (nook-ak), in villages near the mouth of the Yukon River for seal hunting.

Competitions

Chimney Point state historic site in Addison, Vermont hosts the annual Northeast Open Atlatl Championship. In 2009, the Fourteenth Annual Open Atlatl Championship was held on Saturday and Sunday, September 19 and 20. On the Friday before the Championship, a workshop was open to teach modern and traditional techniques of atlatl and dart construction, flint knapping, hafting stone points, and cordage making.^[29]

The World Atlatl Association stages an annual event of spear-throwing at Valley of Fire State Park in Nevada.^[3]

There was an atlatl competition at the Ohio Pawpaw Festival each year.^[30] Another annual atlatl competition is at Bois D' Arc Primitive Skills Gathering and Knap-in, held every September in southern Missouri.^[31]

Atlatl associations around the world^[32] host a number of local atlatl competitions.

In the sixth episode of the fourth season of the television competition, *Top Shot*, the elimination round consisted of two contestants using the atlatl at ranges of 30, 45, and 60 feet.

See also

- Aztec warfare
- Hunter-gatherer societies
- Woomera (spear-thrower)
- Amentum
- Kestros
- Swiss arrow

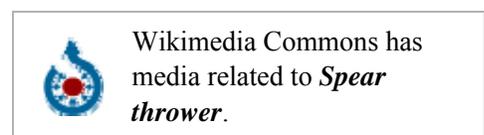
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3. "Girls on top" (<http://www.economist.com/node/11014530>). The Economist. April 12, 2008. Retrieved December 2010.
4. Howard L. Blackmore. (2000) *Hunting Weapons: From the Middle Ages to the Twentieth Century*, page 103 "... the air".³¹ A device which enabled all but the heaviest of spears to be cast a respectable distance was the spear thrower. ... It was known to the Greeks as the ankuli and to Romans as the amentum.³ The spear was rested in the hand and ..."
5. "Atlats & Primitive Technology" (<http://www.onagocag.com/atlatl1.html>). Retrieved 2012-08-19.
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External links

- World Atlatl Association Web Site (<http://www.worldatlatl.org/>)
- Atlatl reference page (<http://www.msu.edu/%7Eedoneycar/refatl.html>)
- Graphic of a spear thrower in use. (http://www.britishmuseum.org/explore/highlights/highlight_image.aspx?image=com1369a.jpg&repage=21233)



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