

# CHAPTER 4

## Early Hominin Weapons

*“The apparently simple ability to throw overarm with force and accuracy is a skill uniquely developed in the human animal and one which was probably practised in deepest antiquity. Yet the lack of any evidence convincing to archaeologists results in the human ability to throw being rarely discussed or even referred to in most accounts of human evolution”*

[B. Isaac, 1987, p. 3].

**Introduction.** In Chapter 3 it was proposed that hominin origins coincided with the first use of sticks and stones as weapons and that the reproductive benefits obtained by use of this behavior led to natural selection that increased the prowess of this activity during millions of years of evolution. Some have opposed this idea by asserting that our early ancestors could not have used weapons, because there are no weapons that archeologists can identify as *made by hominins* [Lewin, 1987]. I shall refer to this as “the no hand-made weapons = no weapons argument” and refute it in this chapter by demonstrating that hominin weapons were available in their environment.

**The earliest weapons.** The earliest weapons were unmodified natural objects like sticks, stones and bones that lay ready at hand [Oakley, 1959]. Hominins did not *make* these weapons, they picked them up and used them. Because they were unmodified natural objects, they would have left no archeological trace. The first weapons would have been relatively simple, such as stones and tree branches [Young, 2003; Carrier, 2004]. Stones would serve as missiles and “percussive instruments” [Burton, 1884]. When choosing a rock for throwing, hominins would likely have selected those with a spheroidal form, because this shape has the best aerodynamic properties [Washburn and Lancaster, 1968; Coon, 1971; Adair, 1990; Kirschmann, 1999]. Ethnographic studies indicate that hunters who carry stones “as premeditated missiles either select water-rounded pebbles or peck rough stones into a globular shape” [Coon, 1971, p. 96].

Rocks of a size that could be held in a firm grip would have been sought. Based on estimates from available hominin hand fossils (Chapter 9), stones suitable for throwing would range from about the size of a golf ball to that of a softball (4.2-9.0 cm diameter). Those of high density would have been most useful. Potential clubs would have had an overall cylindrical shape, with cylindrical handles of a size suitable for gripping by hominin hands. Smooth surfaces on missiles and clubhandles were likely preferred to limit pain or injury to the hand as force was

applied to the weapon. The mass of a missile or club needs to be sufficient to injure an adversary, but not too large to be accelerated to high velocity by an arm motion (later to evolve into a full-body motion). Fossil evidence of hominin hands shows that well before the earliest known archaeological sites with hominin-made tools, spherical and cylindrical tools of some kind were having an impact on hominin reproductive success [Young, 2003, 2009, 2010]. The gradual evolution of two unique hominin handgrips, one for spheres, one for cylinders, began near the time of hominin origins (Chapter 9).

No ancient clubs or spears have been identified. The oldest known spears are from 0.4-0.5 Mya (Chapter 8). However, the long bones of large animals found at hominin sites would have made effective clubs, their smooth-surfaced, cylindrical shafts gripped by muscular, robust hominins (Chapter 12) swinging from a bipedal stance. Nevertheless, the evidence of ancient clubbing is partly indirect, consisting of the structure of the evolving hominin hand and modern club-swinging prowess, but this is supported by the direct evidence that men emerge in late prehistoric times swinging clubs, axes, maces and swords, all with cylindrical handles [Burton 1884; Frayer, 1997; Lambert, 1997].

**Unmodified stones.** Natural objects found at ancient hominin sites include stones appropriate for throwing located in nearby stream beds or rock piles. Rocks transported to sites from more distant regions are called “manuports” (hand carried) [M. Leakey, 1971; G. Isaac, 1977; Potts, 1994]. Some of these naturally weathered cobbles were spherical in form. Many could have been used for clubs as well as throwing stones. Localities near the Kada Gona river in Ethiopia are presently the earliest known archaeological sites (2.6 Mya) where primitive, hand-chipped, stone tools are found [Semaw, 2000]. The main raw material sources for the Gona tool-making hominins were rocks of volcanic origin from local streams in the form of water-worn, rounded, fist-sized cobbles. The smooth-surfaced stones ranged from 5.8 to 10.6 cm in diameter, with an average of about 8 cm [Hay, 1976; Semaw, 2000].

Water-rounded stones were readily available in local stream beds at Olduvai Gorge (Tanzania) at the early archaeological sites [Jones, 1995]. Olduvai Bed I assemblages (1.9 -1.7 Mya) are notable for huge quantities of manuports. At site HWK E, levels 3-5, there were 1,184 manuports [M. Leakey, 1971]; the MNK site contained over 800 [Potts, 1988]. “For what purpose would such large stockpiles of stone be necessary or even useful, particularly for a technological mode relying upon very simple cores/core tools and flakes?” asked Schick [1987, p. 795]. No hominin would be expected to accumulate rocks unless they were considered crucial for survival, yet they showed no signs of use. Among several possibilities, Potts [1984, 1988] hypothesized that hominins stockpiled rocks in different areas for use while foraging locally. Food that required tool processing was then brought to the rock piles. Predation at Olduvai was a potential threat and hominin strategies of predator avoidance were at a premium [Potts, 1988]. This suggests that the rock collections may also have been used as a source of missiles.

Mary Leakey [1971] was the first to state explicitly that manuports could have served as weapons. At Olduvai Upper Bed I site FLK North, where 83 cobblestone manuports mainly composed of vesicular lava were imported by hominins (mean diameter, 6.4 cm, tennis-ball size), she noted that this material was seldom used for tool-making at that level. "This seems to indicate that the nodules and blocks were not brought in to serve as raw material but for some different purpose. There is no indication of utilisation and they may have been kept in readiness for use as missiles against predators or scavenging animals" [Leakey, 1971, p. 83]. Comparable manuports occur in the oldest sediments of Lower Bed I site FLK NN, where there are water-worn lava cobblestones which also average 6.4 cm in diameter [M. Leakey, 1971]. Manuports occur at all levels at Olduvai [M. Leakey, 1971] and many are of suitable size and shape for throwing [B. Isaac, 1987]. They may have been used for weapons [Lee, 1979; B. Isaac, 1987; Cannell, 2002; LeBlanc, 2003]. Many other assemblages also include unmodified stones that would have been effective, lethal projectiles [G. Isaac, 1984]. Sites at Koobi Fora, Kenya (1.9-1.3 Mya) contained spheroidally shaped stones of a size appropriate for throwing. Local cobble-bearing channels provided plentiful well-rounded, stream-worn cobbles, mainly of fine-grained basalt [G. Isaac, 1984; Toth, 1987, 1997; G. Isaac, et al., 1997]. Toth [1997] refers to the cobbles as "spherical and subspherical." Those between 4 and 10 cm in diameter, commonly chosen for tool-making [G. Isaac, et al., 1997], were also suitable for throwing [B. Isaac, 1987, 1992; Cannell, 2002].

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