Throwing and human evolution

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‘L’arme dont on s’est le plus souvent servi est peut-être celle dont on a le moins parlé, sur laquelle on a le moins écrit’ (Florance 1909:52)

Abstract

Ability to throw was probably achieved at an early stage in human evolution but has received little scholarly attention. Although this ability is poorly developed in apes, anatomical studies suggest that the hand of *Australopithecus afarensis* was adapted to throw with precision and force. Archaeological evidence and early ethnographic observations are cited in order to demonstrate the importance of the throwing skill in human evolution.

Rédsumé

La capacité de lancer a probablement paru assez tôt au cours de l’évolution humaine, mais les savants y ont accordé peu d’attention. Bien que cette habileté soit peu développée parmi les grands singes, des études anatomiques suggèrent que la main d’*Australopithecus afarensis* était adaptée à lancer avec précision et force. L’auteur cite les indices archéologiques et les anciennes observations ethnographiques afin de démontrer l’importance dans l’évolution humaine de cette capacité de lancer des objets.

Introduction

In sport, hunting and warfare, from the hand thrown beachball to the air launched rocket, the use of missiles is a commonplace of human behaviour. 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.

In recent years various skills and behaviours have come under close examination because it has been thought that they might have contributed to the transformation of protohominids into humans. Examples include the adoption of bipedal locomotion (Washburn and Moore 1980:77; White 1980:176; McHenry 1982:154); the use of sharp-edged tools (Tobias 1968:375; Washburn and Moore 1980:122); and the incorporation of provisioning or foodsharing into social behaviour (Isaac 1978:106; Lovejoy 1981:344). The skilled overarm throwing of missiles deserves a similar scrutiny, since it is possible that it developed into a
behaviour of adaptive importance with repercussions far beyond the simple scoring of a hit. Modern humans develop this skill and the concomitant behaviour to a higher degree than any other animal, excelling in controlled arm and body movements that are co-ordinated with an accurate visual perception and mediated by a very versatile ballistic sense, all of which must be founded on an intricate neurophysiological basis. This behaviour has been manifest in the use of spearthrowers, and bows and arrows since about 10,000 years ago, more recently in slings, and ultimately in the development of guns and rockets.

Given that we are unlikely to retrieve indisputable evidence of the very earliest stages of throwing skill through traditional archaeology, is there anything useful that can be contributed circumstantially? As it happens, it is possible to collect a limited amount of information on the history and prevalence as well as the convincing power of this capability in modern humans. Several specific questions should be kept in mind: first, what is the available recorded evidence for the prevalence of throwing in hunting and warfare? Second, what does this human capability amount to, in terms of range, accuracy and power to stun, critically injure or to kill? Third, how far do our closest living relatives share in this ability? Fourth, what is the neurological and fossil anatomical evidence? Finally, what archaeological evidence is there from different periods in time that this behaviour actually occurred and that it was adaptively significant? This paper briefly takes up these questions in an effort to stimulate interest as well as the further compilation of relevant data. In particular, it endeavours to present forgotten or overlooked evidence for the effectiveness of the well-thrown stone. There are two reasons for the need to do this: throwing is, on the one hand, taken as commonplace and hence is not subject to careful reporting in ethnography; on the other hand, modern city dwellers and scholars are less and less aware of the potential of this skill, and therefore unable to utilize it in their modelling of the evolutionary past.

For the last one hundred years or so, the throwing of unmodified stones and the wielding of sticks has been mentioned in passing in various accounts of aggression among peoples without highly developed technologies (Lane Fox 1868:95). Darwin wrote, 'I can see no reason why it should not have been advantageous to the progenitors of man to have become more erect or bipedal. They would thus have been better able to defend themselves with stones or clubs, to attack their prey, or otherwise to obtain food' (1871:52). These ideas still merit attention in modern texts (Wilson 1978: Fig. 27.5; Washburn and Moore 1980:71), but as long ago as 1870 J. G. Wood complained that his readers were not aware of the deadliness of the possible assault: '... even at the present day it is difficult to make some persons believe in the stone throwing powers of the Australian' (1870:41).

When searching for first-hand accounts of successful stone-throwing, either in hunting or in war, the impression is gained that even when it was observed, it was not recorded, as it was so much a part of 'normal' human behaviour. This is exemplified by Hough, who made an exhaustive survey of hunting methods in the Americas: 'Skill in throwing rocks may also be mentioned in connection with the capture of game' (1919:285). No description followed.

The search for evidence has shown that where it does exist, the record would seem to be mostly dual in character: first, the ethnographic listing and very rare description of the capture of small game, and second the descriptions of the confrontation of explorers and settlers by indigenous peoples. Throwing rather than stick-wielding is to be considered here, since not only does it need greater skill, but the aggressor gains safety according to the