



Opinion

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Oldowan Scavengers Vs. Acheulian Hunters: What Does the Faunal Record Say?



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Opinion

Between 3 and 2 million years ago, our eastern African ancestors became omnivorous. A biped primate with mostly vegetarian eating strategy changed and started to eat animal food, meat and fat coming from the carcasses of large mammals, developing at the beginning a scavenging behavior. This was only possible thanks to the development of one extrasomatic evolution, the cultural technology making lithic artifacts, flakes to cut and dismember the carcasses and percussion tools to break the bones and extract the marrow content. These earliest lithics were very primitive and rudimentary, dominated by pebbles, cores and flakes, corresponding to the named Oldowan or Mode 1.

This technical innovation was the key for human evolution, but also the key for human dispersal out of Africa. During the latest Pliocene and Early Pleistocene humans increased their carnivore behavior, ingesting more quantity of meat and fat, and transforming their physiology making their digestive system shorter thanks to the ingestion of better quality and more energetic food, and transferring the surplus energy to the feeding and growth of the brain [1].

Herbivores are specialized to eat a kind of plants that directly depends on the climate. Then, these animals are normally conditioned by the climate where the plants they eat grow, which is related to the latitude. For this reason, herbivores normally have a longitudinal distribution on the continents. Carnivores, on the contrary, eat meat and it doesn't matter what is the animal where it is coming from. Meat is meat, and there are no big differences on energy if it is from a buffalo, a hippo, a rhino, a horse, an elephant or any other species. Then, the area of distribution of carnivore species is not restricted by climate, and now we can see that leopards are dispersed by an area from South Africa to most of Asia, and they were present in Europe

until the end of the Pleistocene. It was also the same for lions and spotted hyenas.

Once humans have developed their abilities to find and eat meat and fat, their possibilities for dispersal increased exponentially and, around 2 million-years-ago, humans were able to disperse out of Africa and colonize the middle latitudes of Eurasia, as it is recorded at the site of Dmanisi in the Caucasus [2,3], dated 1.800.000 years old. This first dispersal was done by hominins carrying with them the rudimentary Oldowan tools.

Oldowan tools persisted in Eurasia for more than 1 million years, until the base of the Middle Pleistocene but, in Africa something very important happened, a new technology emerged at around 1.700.000-1.600.000 years ago. It is the Acheulian or Mode 2, where the concept of symmetry is developed, and the most typical elements of this culture are the handaxes.

The Acheulian hominins developed the technology and few hundred thousand years later this culture was common around most of the African continent but, although there are few findings of primitive Acheulian in the Levantine Corridor, like 'Ubeidiya in Israel [4], dated ca. 1.200.000-1.600.000 years old, and south Asia, like Attirampakkam India, dated ca. 1.500.000 years old [5], developed Acheulian triggered one million years to colonize and be common in the Eurasian continent, until the base of the Middle Pleistocene, around 800.000-600.000 years ago.

Following this reasoning, African Acheulian people were in practically no contact with Eurasian Oldowan people during practically 1 million years, for 1.700.000 years ago until the beginning of the Middle Pleistocene, 800.000 years ago. In many cases, hominins and lithic artifacts are found in the same levels together with large mammal's fossil bones which, often, have cut and/or broken marks that have been provoked by the lithic artifacts to cut the meat and to extract the fat from the bones.

This is the direct evidence that our ancestors were eating the carcasses of these animals.

What Does the Record of Large Mammals Say to Understand the Hunting or Scavenging Human Behavior?

In paleontology and archaeology, it is always important what is recorded in the fossil assemblages. These are the data that help scientists to interpret and build up the hypothesis to understand how the site formation process was and, sometimes, how was the specific behavior of fossil humans and other species. Because of this, the excavation and all the analytic studies must be done following a methodological work. In the base of these archaeological and paleontological data, archaeologists have discussed for long decades what was the hunter or scavenging behavior of humans since our ancestors started to eat animal resources.

My experience, as a senior researcher, working for a long time in different Early and Middle Pleistocene archaeological sites around southern Europe, the Caucasus, the Levantine Corridor, northern and eastern Africa, suggest that always findings are important but, sometimes, we must analyze what is not recorded, what is not present in the fossil assemblages, and then, try to explain why?

Because of this, I always have been surprised to see how different the faunal record in Oldowan assemblages is, where the presence of carnivores is normally very important in number of species but also in specimens. Interesting examples of this are, among others, those from Fuente Nueva 3 and Barranco León in Orce, southern Spain, dated ca. 1.400.000 years ago, composed by a very good record of carnivore species [*Ursus etruscus*, *Lycaon lycaonoides*, *Canis mosbachensis*, *vulpes cf. praeglacialis*, *Pachycrocuta brevirostris*, *Megantereon whitei*, cf. *Homotherium* sp., *Lynx* sp., *Meles meles*, *Pannonictis cf. nestii*, Mustelidae indet. (small size)] [6], or that from Vallonnet in southern France, dated 1.100.000 years ago (*Ursus deningeri*, *Xenocyon lycaonoides*, *Canis mosbachensis*, *Alopex praeglacialis*, *Pachycrocuta brevirostris*, *Homotherium crenatidens*, *Acinonyx pardinensis*, *Panthera gombaszoegensis*, *Panthera pardus*, *Lynx spelaeus*, *Felis silvestris*, and *Meles meles*) [7]. This good record of carnivore remains is also normal in localities with primitive Acheulian artifacts such as 'Ubeidiya in Israel (*Ursus etruscus* *Canis mosbachensis*, *Lycaon lycaonoides*, *Vulpes cf. V. praeglacialis*, *Megantereon cf. M. whitei*, *Panthera cf. P. gombaszoegensis*, *Lynx* sp., *Felis* sp., and *Crocuta crocuta*) [8]. But the presence of carnivores is scarce, very scarce or null, although the record of ungulates is very good, when the developed Acheulian assemblages start to be dominant in Africa and later in Eurasia. This is the case in Buia, Eritrea, dated ca. 1.000.000 years old [9], Tighenif (formerly Ternifine) in Algeria, dated ca. 1.000.000 years old [10]; Wadi Sarrat in Tunisia, dated ca. 700.000 years old [11], Gesher Benot Ya'aqov in Israel, dated ca. 800.000-700.000 years old [12], or those from the Middle Pleistocene of Europe, such as the Solana del Zamborino, in

southern Spain, dated ca. 300.000-480.000 years old [13], or in the levels C1a and b from Terra Amata in southern France, dated ca. 380.000-400.000 years old [14].

How can we Interpret the Faunal Record of These Oldowan and Acheulian Assemblages?

Maybe it is not totally clear, but the most feasible interpretation is that Oldowan humans were part of the faunal assemblage with no control on the ecosystem, with no hunting abilities, cohabiting and competing with other carnivores, especially with large hyenas, for the carrion. Because of this, carnivores are normally well represented in these archaeological sites. This continues during the first primitive Acheulian assemblages but, when hominins developed the Acheulian culture something very important changed in their behavior. Humans became hunters and didn't need to be scavengers taking advantage on the preys hunted by other carnivores. Acheulian hominins controlled the ecosystems and the carnivores were expelled from their areas of influence.

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