



## The European Earliest Technologies from the Atapuerca Perspective

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**FIRST PARAGRAPH:** The Sierra de Atapuerca (Spain) sites yield several archaeological assemblages that represent a chronological sequence from the late Early Pleistocene to the late Middle Pleistocene. After studying these assemblages, several factors have been observed to keep on or change along the Atapuerca sequence (see Ollé et al., this volume), and they may determine the technological evolution at a local scale. These factors are: 1) Dominance of certain production methods depending on the chronology; 2) Presence / absence of small retouched flakes; 3) Small tools diversity, standardization, continuity of retouch, and intensity of configuration; 4) Presence / absence of choppers and chopping tools; 5) Presence / absence of large cutting tools.

## 从阿塔坡卡看欧洲最早的技术

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**首节:** 西班牙阿塔坡卡山遗址发现了几个考古学组合, 构成了从早更新世晚期到中更新世晚期的时间序列。研究了这些组合以后, 我们发现, 有些因素支持维持或者调整阿塔坡卡的序列。这些因素也可能说明了地区性的技术演变。这些因素包括: 1) 通过单极的、多极的、正交的、多向的、两极的、以及向心的(包括勒瓦卢瓦)打击方法得到的产品序列; 2) 有无修整过的小薄片; 3) 多样化标准化的小工具、修整的连续性和结构的强度; 4) 有无用鹅卵石或大石块制作的大工具; 5) 有无薄的大工具。

Here we characterize the technological features of some key European sites according to these factors observed at Atapuerca, in order to evaluate whether they are also involved in the European technological evolution during Early and Middle Pleistocene times. Eventually, we will try to seek general information concerning Asian assemblages.

Our conclusions suggest that the earliest peopling of Western Europe occurred before 1 My with a Mode 1 technology quite homogeneous (TE9, TD3-4 in Spain, Pont de Lavaud in France, Monte Poggiolo in Italy, etc.). The high number of European sites of this time may suggest that the first peopling may have not occurred much earlier. That is, the fact does not seem to be due to methodological or taphonomical questions.

The origin of this early peopling is under debate: if *H. antecessor* is of African origin, then its Mode 1 technology should also be of African origin. This hypothesis would be supported by the presence of spheroids in the lithic assemblages of Fuente Nueva and Barranco León (Spain), since these artefacts are clearly of African origin and they lack from

any non-African assemblage. Otherwise, *Homo antecessor* would be of Asian origin, what seems to be supported by most specialists. If so, its technology would likely share the same origin, what makes difficult to explain the African attributes of Fuente Nueva and Barranco León assemblages.

Around 800 ky the technological framework get more complex. On one hand, we have the lithic assemblages derived from the early European Mode 1. These are the late Mode 1 assemblages such as TD6 (Spain) and Pakefield (England). On the other hand, assemblages with features of an early European Acheulean have been recently reported (i.e. Boella, Quípar, in Spain). The first Acheulean out of Africa appears in Ubeidiya (Israel) and Isampur (India) (>1,2 My), but it did not arrive to both ends of the Eurasian continent until 800 Ky (i. e. Boella, Spain, and Bose, China). Therefore, the early Acheulean would likely have dispersed from Africa towards the whole Eurasia, and so it would not be a local evolution from the late European Mode 1. This hypothesis would be supported by the occupational gap existing from 800 ky to 500

ky at Atapuerca. If we extrapolate this gap, we could suggest that around 800 ky an early Acheulean came into Europe from Africa, but it did not reach neither the central Iberian Peninsula (Atapuerca) nor England at these dates. There the late Mode 1 (TD6, Pakefield) disappeared, as well as any evidence of human occupations, until the arrival of the 500 ky old Acheulean groups. Alternatively, the Late Mode 1 evolved towards the Middle Pleistocene assemblages without large tools (i.e. Bilzingsleben, Schönningen, Isernia la Pineta, etc.).

Between 500 ky and 300 ky appeared the plain Acheulean in several Eurasian sites, and many remains of *H. heidelbergensis* accompany these assemblages in Europe. Currently, there is no way of determining whether this European plain Acheulean developed from the European early Acheulean, or it is fruit of new and repeated waves of humans. However, the chronological hiatus between the Early Acheulean of 800 ky and the Plain Acheulean of 500 ky may suggest the entrance of new hominin populations.

Finally, our data support that the Plain and Late Acheulean may have technically derived into the Mousterian of European Mode 3.

这里，为了评估这些因素是否与处于早更新统和中更新统之间的欧洲技术演变有关，我们根据在阿塔坡卡遗址观察到的这些因素总结了一些关键的欧洲遗址的技术特点。最后，我们将试图寻找关于亚洲组合的一些基本信息。

我们的结论显示西欧最早的人类聚落产生于一百万年前，他们有着一种非常同源的技术(第一模式，包括：西班牙的TE9、TD3-4，法国的乔拉瓦德，意大利的阳台山等等)。这个时期的大量欧洲遗址表明最早的人类定居可能不会比这更早。这种说法并不是因为方法论或者埋葬学问题。

早期人类定居的来源问题还在争论之中：如果先驱人是来自非洲的话，那么他们的第一模式技术也应该来自非洲。西班牙新源头和狮子谷石器组合中存在球状体支持了这一假说。因为这些人工制品明显起源于非洲，在非洲以外的石器组合中还没发现过。

也有观点认为匠人可能起源于亚洲，大多数专家支持这一观点。如果这样的话，它的技术很可能也起源于亚洲，这很难解释新源头和狮子谷石器组合中的非洲特征。

大约80万年前，技术框架变得更加复杂。既有源于早期欧洲的第一模式的石器组合。例如西班牙的TD6和英国的佩克地都是晚期第一模式组合。最近也有报道发现早期欧洲阿舍利文化特征(例如西班牙的博埃拉和奎帕尔)。最早走出非洲的阿舍利文化出现在以色列的乌贝蒂亚和印度的伊桑坡(早于120万年)，但是直到80万年前才到达亚欧大陆的两端(例如西班牙博埃拉和中国百色)。因此，早期的阿舍利文化可能从非洲扩散到整个欧亚大陆，所以它不可能是晚期欧洲第一模式在当地演变来的。阿塔坡卡从80万年前到50万年前存在文化断层，这也支持了这一假设。根据这一断层推断，我们可以推测大约80万年前阿舍利文化从非洲传播到欧洲，但当时既没有到达伊比利亚半岛中部(阿塔坡卡)，也没有到达英国。当地的晚期第一模式(TD6, 佩克地)和任何人类定居的证据都消失了，直到50万年前阿舍利文化到来。

距今50万年到30万年前，欧亚大陆若干遗迹中出现了平原阿舍利文化。在欧洲有很多海德堡人的遗骸同这些石器文化一起出现。目前，还没有办法判断欧洲的这些平原阿舍利文化是否是欧洲早期阿舍利文化发展而来的，或者是重新迁入的人类带来的。此外，晚期欧洲第一模式也可能演化出了没有大型工具的中更新世组合(例如德国的比津斯利本和旭宁根、意大利的以瑟尼亚松林，尽管后来的组合强烈地受到原材料的影响)。但是在我们看来，这种技术也可能是阿舍利文化的适应性变化，就像后来在北欧的平原阿舍利文化演变成了克莱顿尼亚文化一样。

最后，还须着重提一下，在早更新世晚期和中更新世早期(180-50万年)，欧洲和欧亚走廊有很多人类物种(格鲁吉亚人、匠人、先驱人、直立人和海德堡人)，而同时期的亚洲仅仅只有一种(直立人)。(胡抗 译)