Università degli Studi di Ferrara

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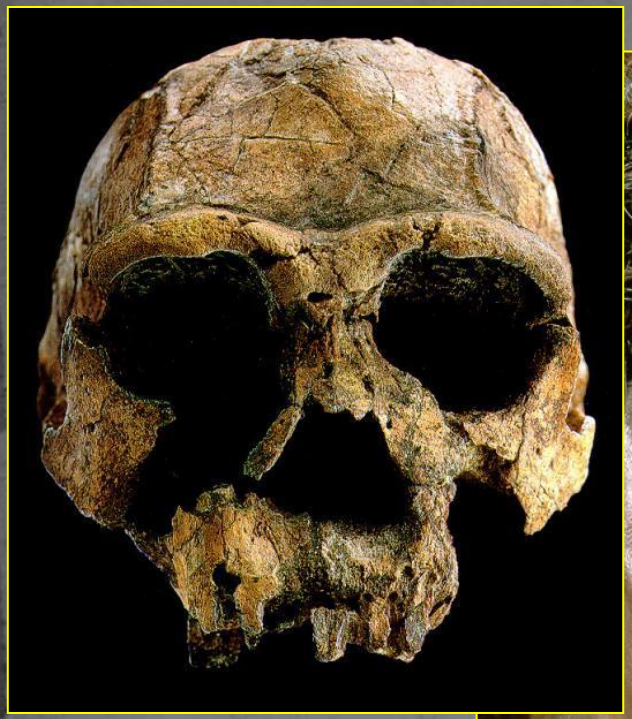
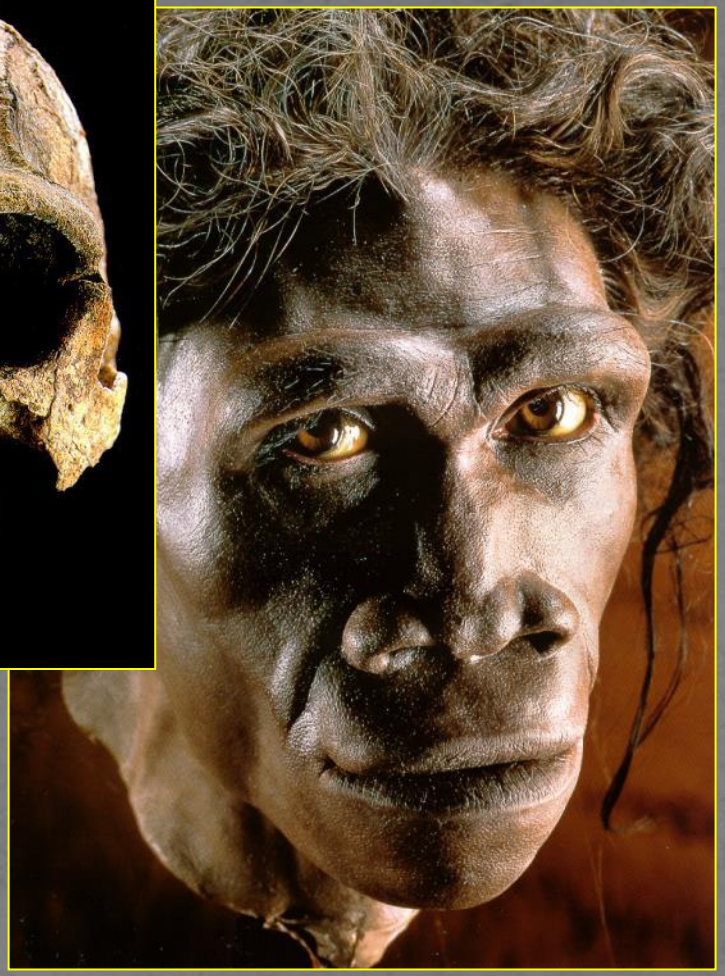
Cronologie e culture del Paleolitico
Lezione 4 – The Acheulean in Africa

Università di Ferrara
Dipartimento di Studi Umanistici
Sezione di Scienze Preistoriche e Antropologiche

The Acheulean (1.7-0.3 Ma)





KNM-ER 3733, Homo ergaster, East Africa 1,8-0,6 Ma

Biface from Gomborè II (Middle Acheulean 0.8 m.a.)

An earlier origin for the Acheulian

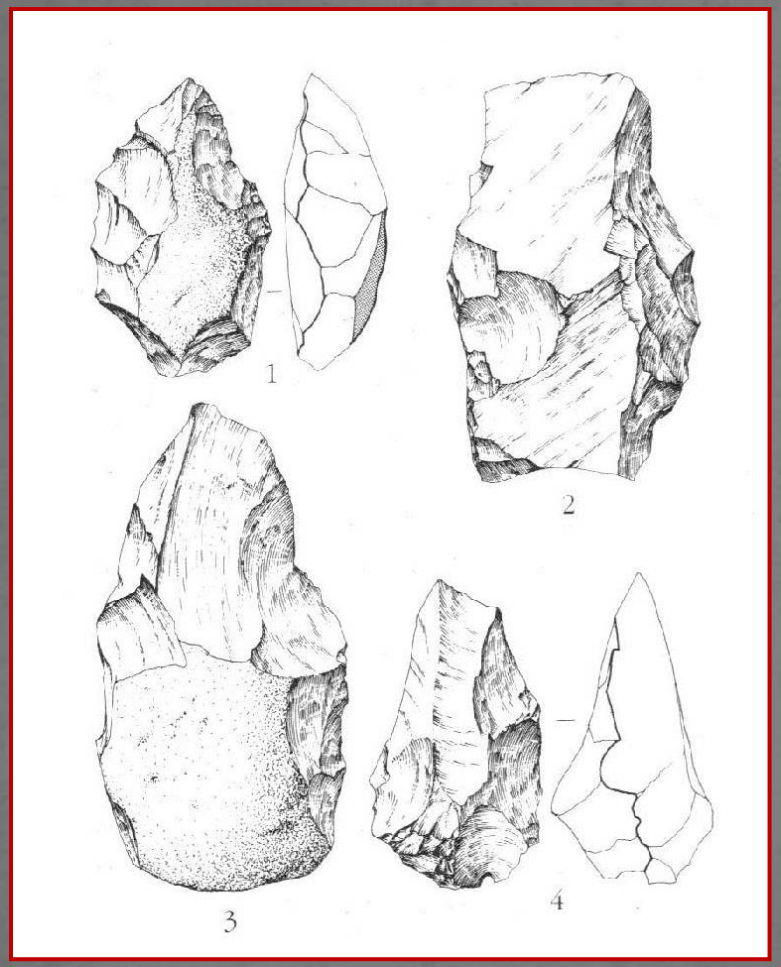
Christopher J. Lepre[1,2], Hélène Roche[3], Dennis V. Kent[1,2], Sonia Harmand[3], Rhonda L. Quinn[2,4], Jean-Philippe Brugal[5], Pierre-Jean Texier[6], Arnaud Lenoble[6] & Craig S. Feibel[2]

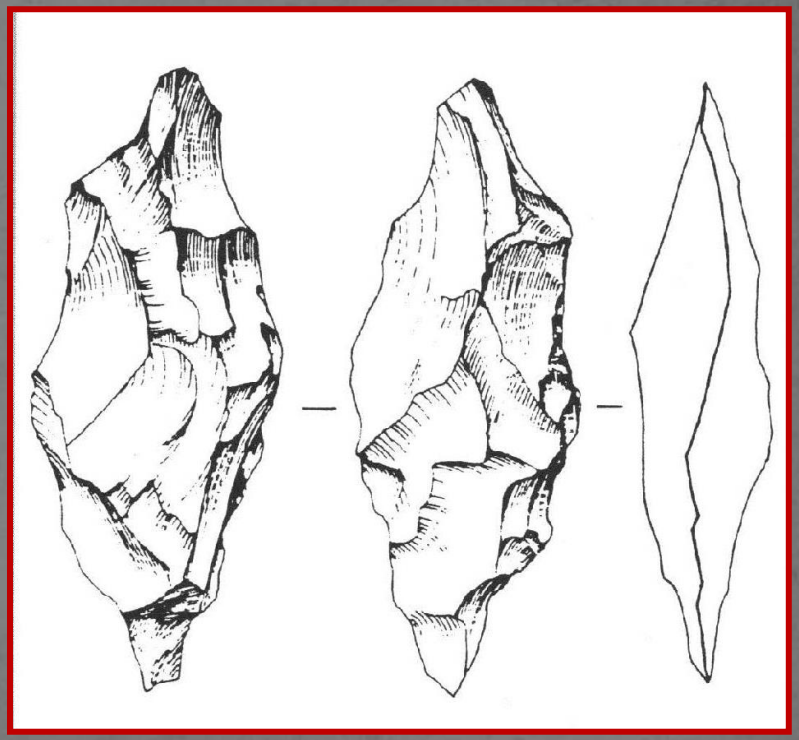
The Acheulian is one of the first defined prehistoric technocomplexes and is characterized by shaped bifacial stone tools. It **probably** originated in Africa, spreading to Europe and Asia perhaps as early as 1 million years (Myr) ago.

The origin of the Acheulian is thought to have closely coincided with major **changes in human brain evolution**, allowing for further technological developments.

Nonetheless, the emergence of the Acheulian remains unclear because well-dated sites older than 1.4Myr ago are scarce.

The evolved oldovan industry of Olduvai (Bed II) at the origin of the Acheulean?





Olorgesailie (Kenya)

The oldest Acheulean in Africa

To date, the oldest Acheulian sites in Africa are Konso Gardula in Ethiopia (ca. 1.7 my) and KS4 (ca. 1.65 my) in the Kokiselei Complex of the Nachukui Formation in West Turkana, Kenya.

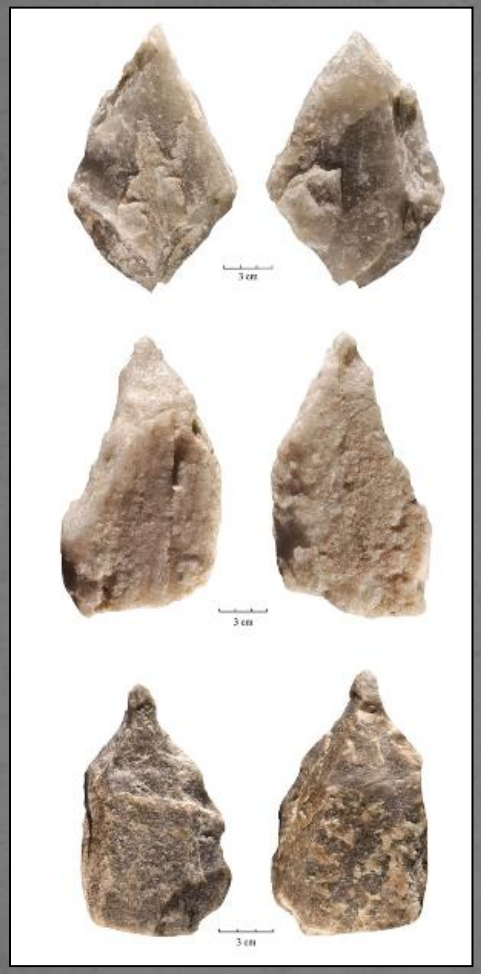
In Western Europe, however, the oldest occurrences of the Acheulian are almost a million years later. In Spain, France, and Italy, Acheulian bifaces are not found before the early part of the Middle Pleistocene.

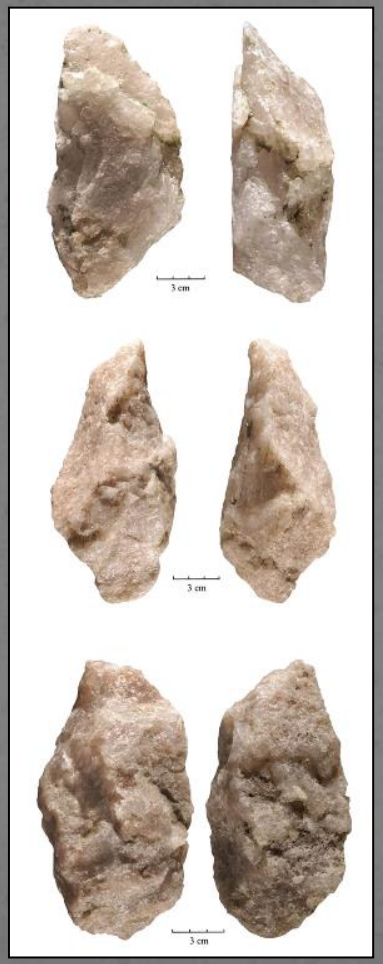
The Kokiselei 4 archaeological site (Nachukui formation, West Turkana, Kenya) bears characteristic early Acheulian tools and pushes the first appearance datum for this stone-age technology **back to 1.76Myr ago**.

Co-occurrence of Oldowan and Acheulian artefacts at Kokiselei indicates that the two technologies are not mutually exclusive time-successive components of an evolving cultural lineage, and suggests that the Acheulian was either imported from another location yet to be identified or originated from Oldowan hominins at this vicinity. In either case, **the Acheulian did not accompany the first human dispersal from Africa, despite being available at the time.**

This may indicate that multiple groups of hominins distinguished by separate stone-tool-making behaviours and dispersal strategies coexisted in Africa at 1.76Myr ago.

Olduvai – early Acheulean (1.7 Ma)





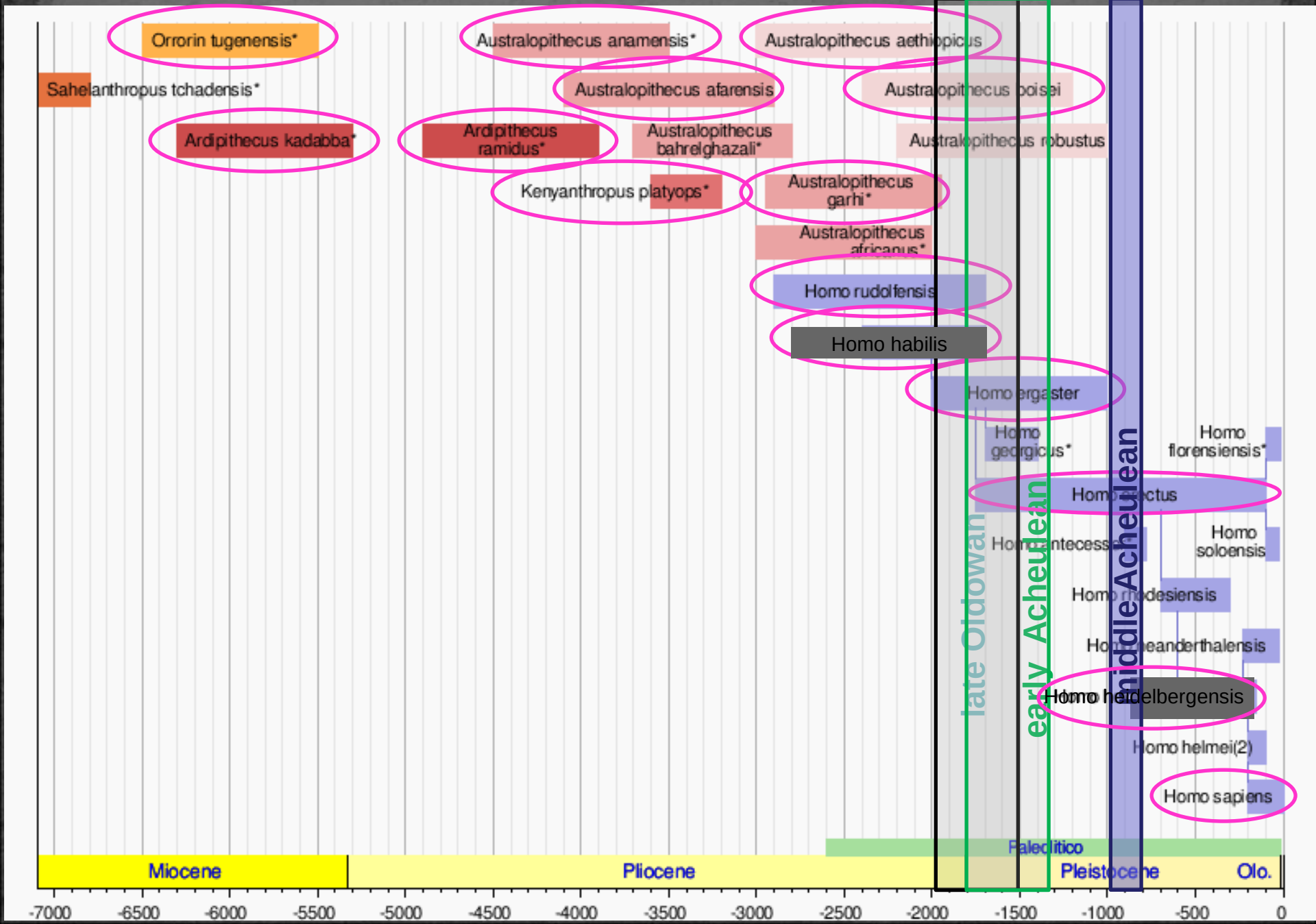
Olduvai – early Acheulean (1.7 Ma)

Progressive "emancipation" from the natural constraints of nature: **capacity to create culture**

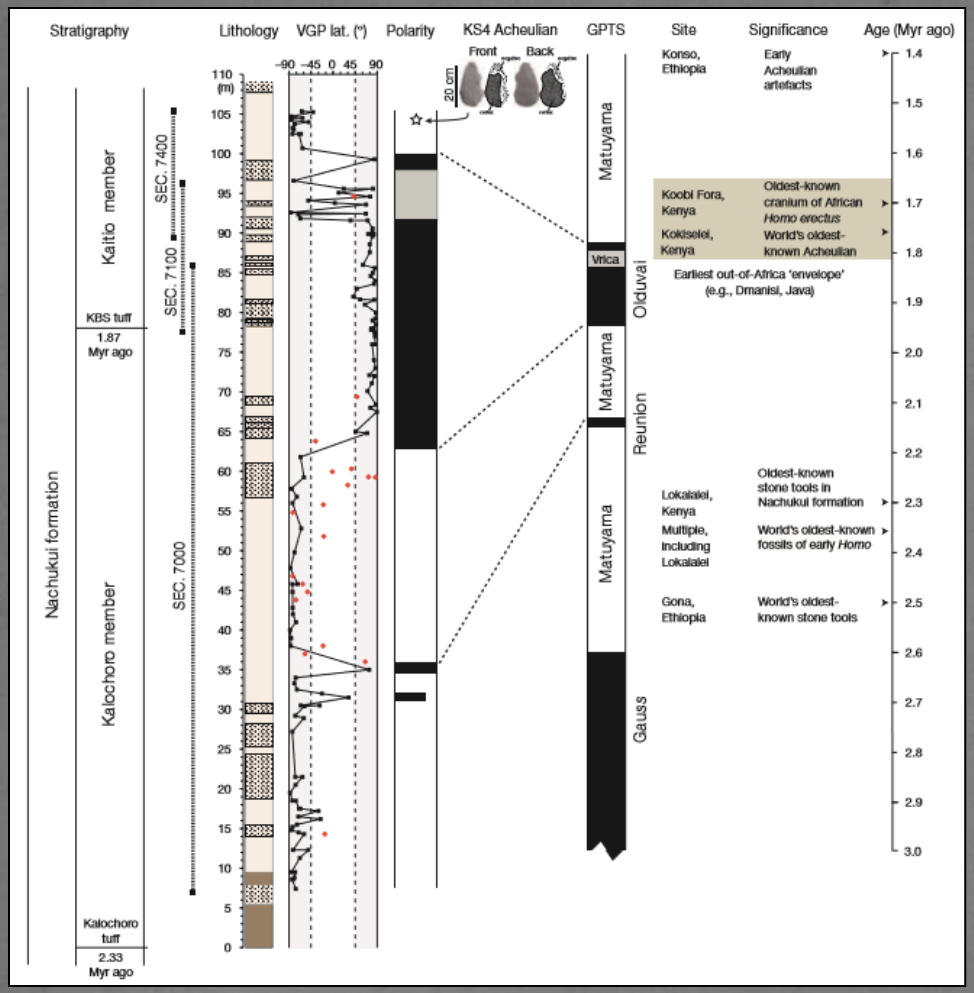
- Raw materials from local sources
- Direct hand-held percussion / bipolar percussion
- High intra-site variability of flaking methods
- Very few retouched flakes – only edge modification

First systematic attempt to configure natural geometry through a technical process

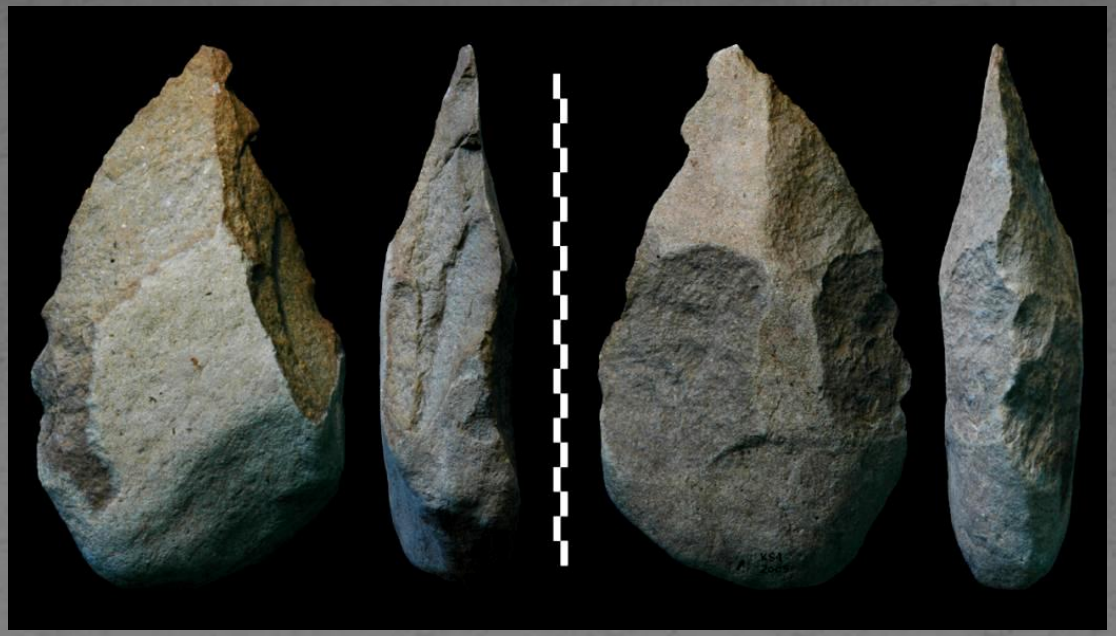
Who did what

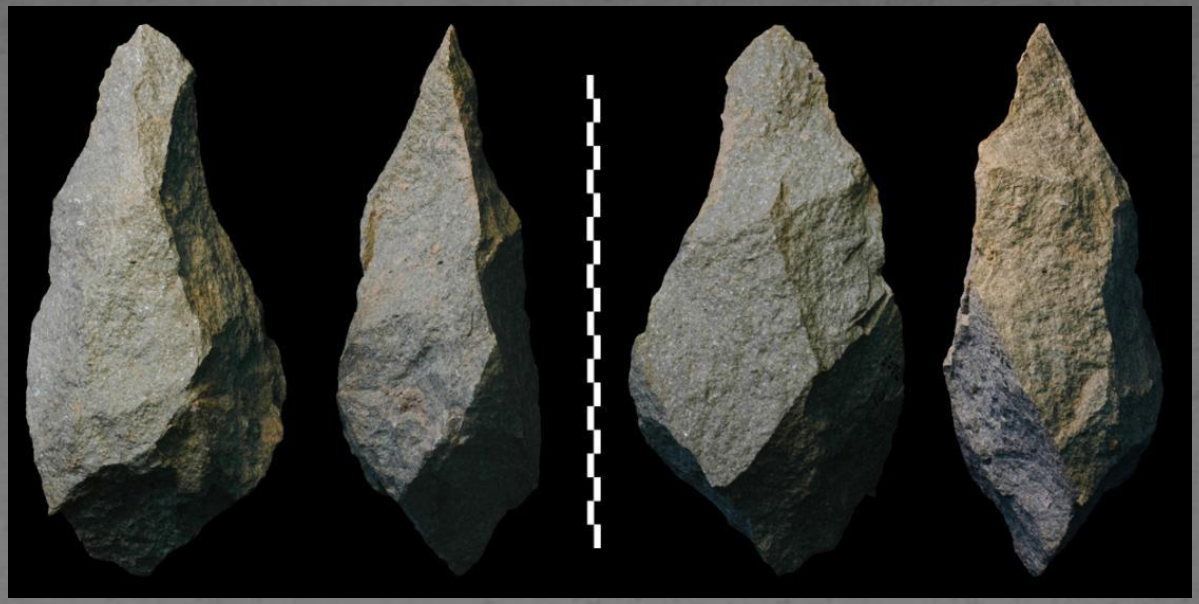

Orrorin tugenensis*
Sahelanthropus tchadensis*
Ardipithecus kadabba*
Australopithecus anamensis*
Australopithecus afarensis
Ardipithecus ramidus*
Australopithecus bahrelghazali*
Kenyanthropus platyops*
Australopithecus aethiopicus
Australopithecus boisei
Australopithecus robustus
Australopithecus garhi*
Australopithecus africanus*
Homo rudolfensis
Homo habilis
Homo ergaster
Homo georgicus*
Homo florensiensis*
Homo soloensis
Homo rhodesiensis
Homo heidelbergensis
Homo helmei(2)
Homo sapiens
late Oldowan
early Acheulean
middle Acheulean
Paleolitico
Miocene
Pliocene
Pleistocene
Olo.
-7000
-6500
-6000
-5500
-5000
-4500
-4000
-3500
-3000
-2500
-2000
-1500
-1000
-500
0

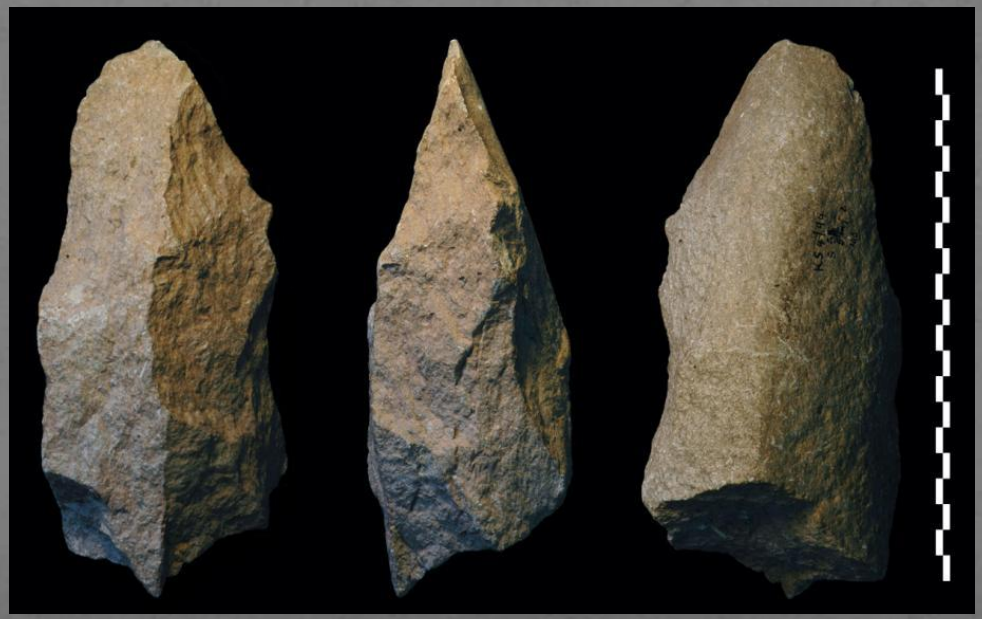
WEST TURKANA – early Acheulean (1.76 Ma)



-One selected raw material
-Large cobbles locally available
-Short reduction sequences
-Irregular edges and no simmetry = lack of a bifacial/bilateral equilibrium
-Lack of shape management, only edge modification
-Diversified large tools
-Management of a three-dimensional space in small flaking





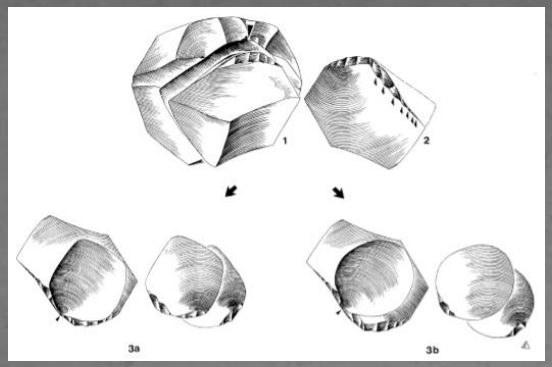


Techno-economic continuity between 1.7 and 1.6 Ma in the Melka region

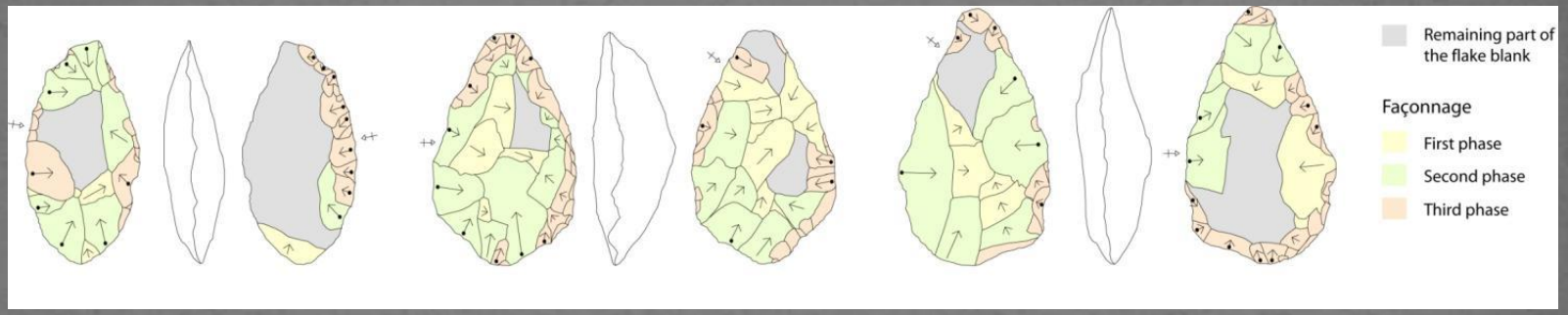
Oldowan – Acheulean transition: a continuous trend with the emergence of two main innovations

1. Production of Large Tools
2. Incipient emancipation from raw material geometry

Garba XIII ~1.0 Ma



Kombewa method

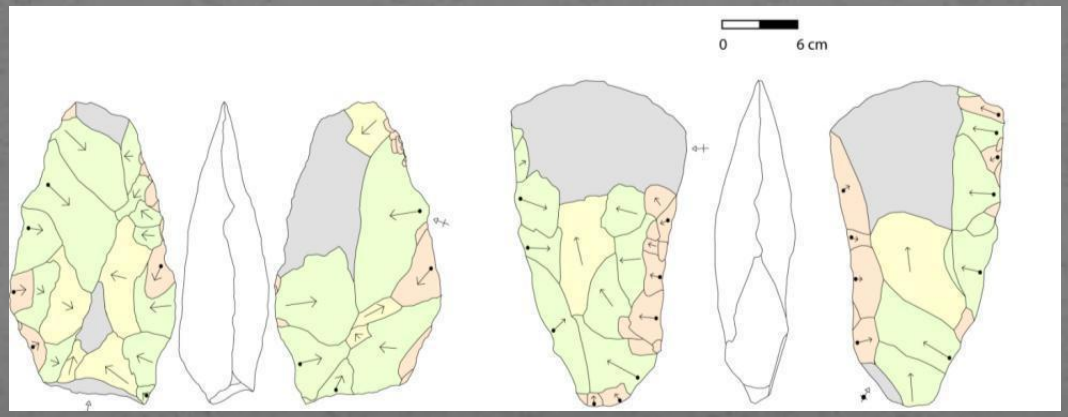


Porphyritic basalt

Obsidian

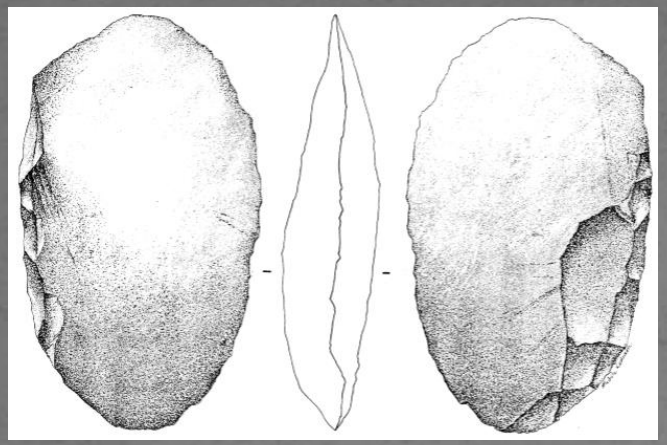
Porphyritic basalt

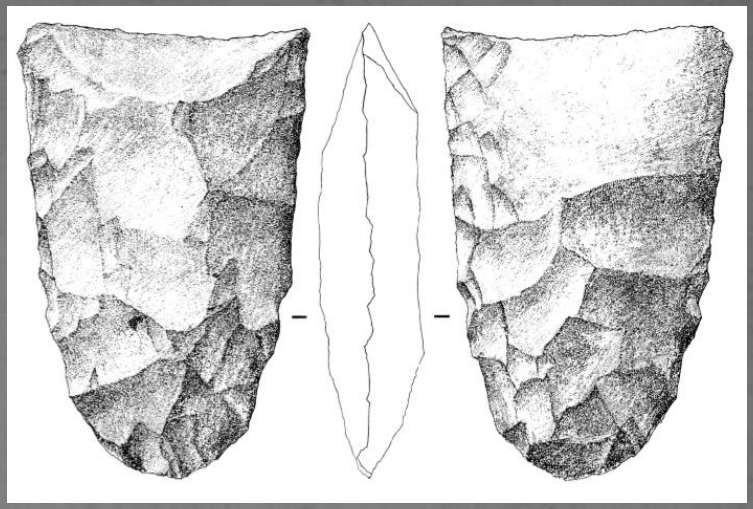
HACHEREAUX

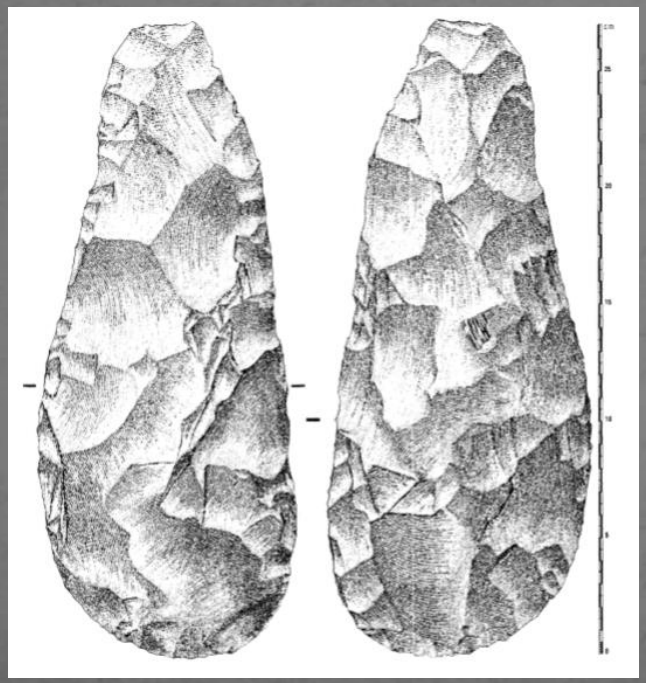


Porphyritic basalt

ISENYA, Kenya - 1.0 Ma



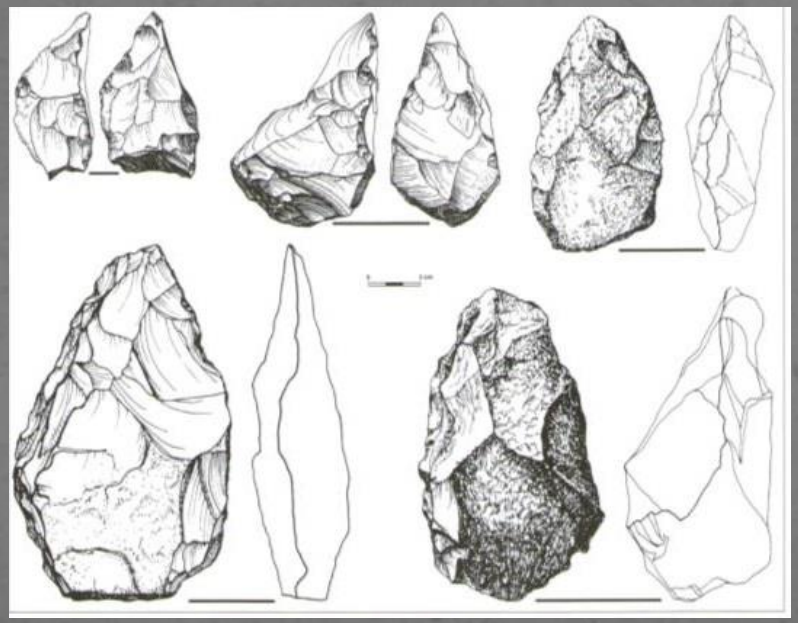




Oldest Acheulean out of Africa ?

Ubeidiya (Israel)

1 My?

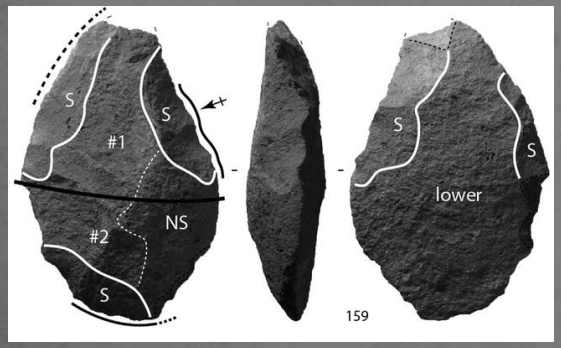


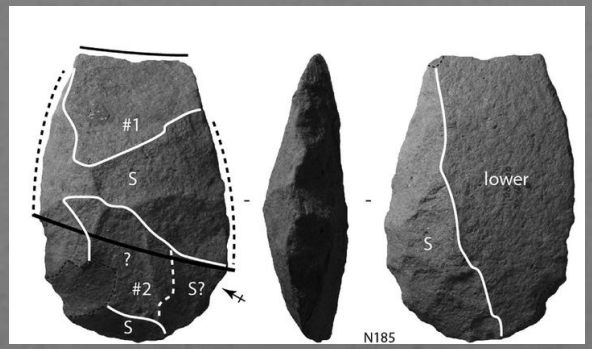
The first Acheulean out of Africa

Pleistocene Milestones on the Out-of-Africa Corridor at Gesher Benot Ya'aqov, Israel

Naama Goren-Inbar,[1]* Craig S. Feibel,[2] Kenneth L. Verosub,[3] Yoel Melamed,[4] Mordechai E. Kislev,[4] Eitan Tchernov,[5] Idit Saragusti[1]

The Acheulean site of Gesher Benot Ya'aqov in the Dead Sea Rift of Israel documents hominin movements and technological development on a corridor between Africa and Eurasia. New age data place the site at 780,000 years ago (oxygen isotope stage 19), considerably older than previous estimates. The archaeological data from the site portray strong affinities with African stone





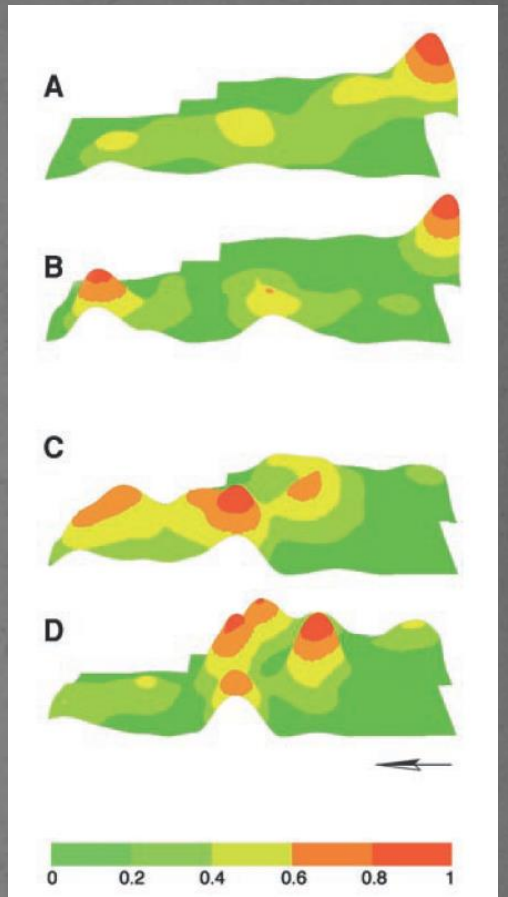


Fig. 1. Three-dimensional illustration of the relative densities of flint microartifacts in Area C (~5 m by 2 m per layer), GBY. (**A**) Layer V-5, unburned microartifacts; (**B**) layer V-5, burned microartifacts; (**C**) layer V-6, unburned microartifacts; (**D**) layer V-6, burned microartifacts. Relative densities have been standardized by the maximum values of each data set. Densities are represented as surfaces.