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Before Levallois

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ABSTRACT

Bifacial technology can be realized by different ways. A simplistic, often outmoded view of western European prehistory cannot be imposed on other regions. The so-called "Acheulean" from China is in fact included in the specific technologies made on pebbles, which dictate the shapes, on the exact contrary than real bifaces whose forms are built up from any raw material category.

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1. Introduction

For early prehistory (prior to around 300,000 years), a perpetual contradiction persists regarding our ability to know whether the material evidence recovered reflects a "progressive" decrease in unfitness or simply random responses to immediate needs. Lithic assemblages for which the logical structure cannot as yet be deciphered (such as Bilzingsleben [Mania et al., 1980]) likely maintained highly complex relationships with other ephemeral organic raw materials. Only identification of such relationships will reveal the initial mechanical coherence. Significant advances concerning these kinds of relationships were made at Hoxne [Keeley, 1993], but provide only a general sense of the existing complexity and the desire to know more about it, the state of preservation of the edges of lithic tools at Hoxne being both ideal and rare. By contrast, the perfectly shaped wooden spears discovered at Schöningen (Thieme et al., 1993; Thieme, 1997, 2003) show the other side of the coin: technological capabilities, at first view, were total, but the modes of activities and the impact of the mechanical qualities of the available raw materials (e.g. Clark et al., 1994; Villa, 2001), as well as the much more important role of traditions, escape us almost entirely (Wymer and Singer, 1993).

So, the most subtle interpretations that could link evidence that is today completely obscured force us toward an absurd observation: to conclude that these were chaotic and random phenomena. Such wholly negative impressions are not without importance even within the discipline, even less among external onlookers who do not understand the underlying issues. The result is an onslaught of audacious comparisons with primatology and the rejection of any form of intelligence during these early phases of humanity (e.g. Tattersall, 1995; Mellars, 1996; Klein, 1999). Some even go as far as

to discuss the species differences of these early hominids and propose placing them outside the human sciences. This then leads to miscomprehension faced with a cultural fact, ever-present human pride shifts the absurdity to the side of the observed although it is only felt by the observer. Ethnology has only recently broken down these open doors (Lévi-Strauss, 1962), but prehistory is still far from doing so; worse, it has incorporated over time the combined contempt in which both savagery and primitiveness were held. Once the Levallois technique was adopted, all returns to normal and prehistorians who continue to deny the high level of such complex technical developments are marginal, almost as mysterious as the Paleolithic tribes themselves, but their position no longer advances the discipline. These phenomena of universal convergence illustrate the coherence of social behaviour, that we can see at present as structured as much through time as across space.

Here, this paper cautions against imposing a simplistic, often outmoded view of western European prehistory on other regions, point out that the relationship between handaxe and non-handaxe assemblages in the Lower Paleolithic is more than a matter of technological "progress", and shows that there are independent trajectories of technological evolution in many parts of the world.

2. Fluctuating boundaries of the Acheulean

In 1948, Hallan Movius (1948) sought to untangle certain aspects of "pre-Levallois" complexity by emphasizing that in some assemblages the tools were shaped (handaxes), while in others tools were created simply by the removal of sharp flakes (chopping tools): certainly an operational distinction, simple to rejuvenate and in direct connection with the collective thought that produced and benefited from such profound conceptual differences (Fig. 1). Movius went on to designate the geographic areas in which one conceptual world shifted to the other: a line cutting through the center of Asia. It became tempting to interpret this line as the axis of

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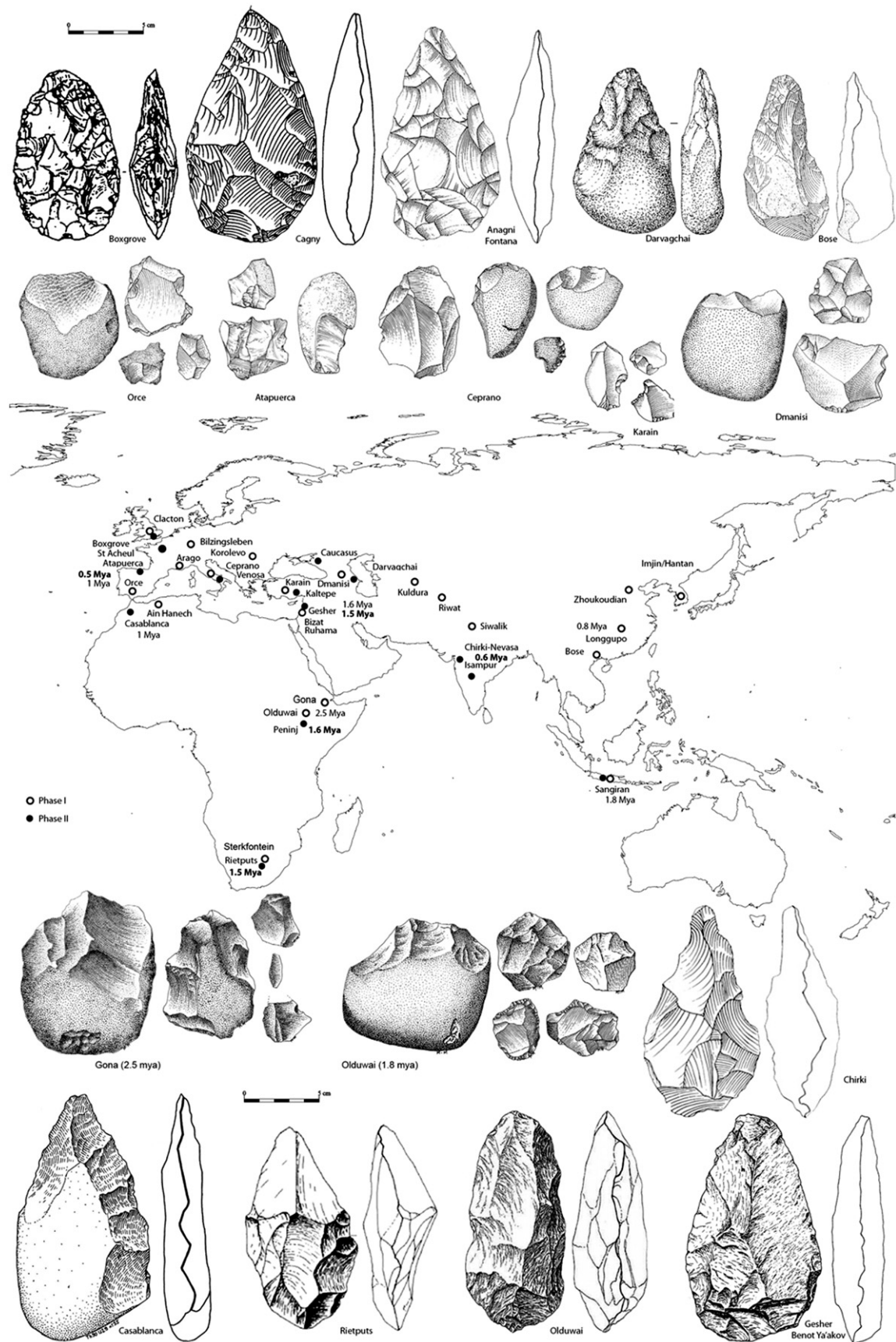


Fig. 1. The “Mouvius Line” does still exist, but is merely a veil than a line, moving from one place to another, depending on the period of time considered. It corresponds to an ethnic tradition, moving from south to north in Europe and from west to east in Asia. This tradition must not be confused with any bifacial technologie, happening here and there in complete independance, but not with the Acheulean technology. (Gona, Olduvai, Orce, Atapuerca, Ceperano, Dmanisi from [de Lumley et al., 2009](#); Casablanca from [Raynal et al., 2002](#); Karain from [Otte, 2000](#); Chirki from [Gaillard et al., 2010](#); Geshen Benot Ya'akov from [Goren-Inbar and Saragusti, 1996](#); Rietputs from [Gibbon et al., 2009](#); Olduvai from [Leakey, 1972](#); Anagni Fontana Ranuccio from [Grifoni and Tozzi, 2006](#); Bose from [Huang et al., 2001](#); Boxgrove, Cagny from [Gouédo, 2001](#); Darvagchai from [Derevianko and Zenin, 2007](#)).

expansion for bamboo, which is still quite frequently used for weapons, tools and building materials as a substitute for stone tools (Pope, 1989; Clark, 1992). However, the Acheulean area is also limited in Anatolia and cuts Europe in two at the Rhine valley.

An observation, valid everywhere that shaped tools (bifaces or handaxes) are found, is that they were not the first tools. The delimitation is thus chronological as well. Even worse, this delimitation is not synchronous: from one region to another; the transition may have lasted up to a million years! So, whatever the meaning of this difference could be with respect to the relationship to raw material, it cannot be a simple and continuous historical or temporal phenomenon since it appeared and disappeared in non-contiguous regions.

Another element appears to be constant and helps to clarify this chaos. The center of gravity is associated with Africa, by the number of sites known, the number of bifaces recovered and particularly by their great age: 1.6 Mya in Kenya (Isaac and Isaac, 1977). The Atlantic coast (Casablanca, Morocco) dates back to a million years (Raynal et al., 2002; Rhodes et al., 2006), but nothing similar is found across the Strait of Gibraltar until 500,000 years ago (Ambrona and Atapuerca, Howell et al., 1995; Carbonell et al., 1999, 2001, 2008; Aguirre and Carbonell, 2001; Berger et al., 2008; Falguères et al., 2010). This is particularly clear along the edges of the Strait since not only was it crossed much earlier (Orce at 1.2 Mya; Roe, 1995; Gibert et al., 2003), but was also scattered with now-submerged small islands (Collina-Girard, 2009) that would have facilitated crossing. Although divergent opinions exist (cf. Derri-court, 2005), this is one of those mysterious limits that nothing can explain, if not by a prehistoric convention that, as today, designated the delimitation of a territory, country or even a continent (e.g., where does Asia begin, south of the Urals?). Symbols appear as early as the Acheulean (bovid's head (Cassoli and Tagliacozzo, 1999), biface sculpture (Carbonell and Mosquera, 2006).

3. The rest of Europe

For reasons equally unknown, a brutal invasion by these African populations took place across Spain and moved north to England after 500,000 years BP, exactly as if a massive population explosion had taken place, moving people northward but curiously stopping at the Rhine Valley (Schol, 1970; Schwabedissen, 1970). When the complex technological organization observed is identical to that in a nearby region, but which occurred much earlier there (the Maghreb), the concept of physical displacement of ethnic groups transporting common values becomes the most parsimonious explanation. France and Spain are particularly clear examples since it is in these regions where the two traditions are most radically superimposed: it is considered that the first populations completely disappeared or that one population "absorbed" the other to the point of leaving no traces of the other. The case of England is even more eloquent (e.g. Roe, 1981; Ashton et al., 1994; Roberts et al., 1997; White, 2000; Preece et al., 2006; Wenban-Smith et al., 2006): here a "civilization" – the "Clactonian" defined on the basis of a pan-Eurasian technological mode disappeared when the Acheulean (biface assemblages) first appeared. To the east, as far as Vladivostok, not a single biface is found (Gladinin and Sitlivii, 1990)!

Here is a problem that is, alas, very common in prehistory. When the Neandertals wanted to make bifacial pieces, because it pleased them, they went straight to the end because their absolute technological mastery allowed them to do so. There was no longer an issue of sculpting a block and seeking a form as new as it was non-existent: a Mousterian knapper produced an appropriate flake, retouched it on both faces and then finalized it. If, by misfortune, a prehistorian, still possessing an

endearing naivety, found an artifact still in the first stage (generally abandoned near geological outcrops), he would call this rough tool by the prestigious term of "biface", once again encumbering the literature, already difficult to access in all the languages that authorize a patriotic sentiment. It is not polite to cite the works in which one takes no faith, only to destroy them in the next sentence. Simply, this confusion occurred everywhere that the Mousterian contained foliate pieces, which were interpreted as Acheulean bifaces (e.g. Runnels and van Andel, 1993; Tournaloukis, 2009).

To cite just one, most beautiful example: at Micoque (Dordogne), the Acheulean is not present, there are no bifaces, and yet the expression "Micoquian biface" (e.g. Gouédo, 2001) infests the literature. These tools are Keilmessers, asymmetric bifacial pieces made on a removal by alternate retouch, tools produced by the thousands in Central Europe, where not a single Acheulean biface has been found. The most extreme confusion reigns around the theme of the Micoquian, because the English, who believed it to be true, called their pointed Acheulean bifaces "Micoquian", although there are no Keilmessers in England.

4. The southern margin

Another buffer zone, often assimilated, via southern France, with Spain, is the Italian Peninsula, and extremely relevant to this discussion. Many sites have been discovered here and are particularly well-studied, e.g., Isernia la Pineta and Monte Poggiolo (Peretto, 1992, 1999; Peretto et al., 1998, 1999; Coltorti et al., 2005; Thun Hohenstein et al., 2009). They belong to the hazy and unfathomable wave dominated by stone flakes, shapeless but definitely worked, which still await interpretation. Suddenly, coming from the south and earlier than elsewhere in Europe (around 650,000 years BP, Piperno et al., 1999; but see Villa, 2001), bifaces abound and spread up the peninsula! Here there is no question of closing of the strait between Sicily and Tunisia, only a constricting between the two coasts during glacial periods, probably making it possible to see from one continent to the other, particularly from a hill or elevated position. Be that as it may, the ethnic groups transporting the Acheulean were successful in making the crossing! Once again, we need to re-examine the concepts held about the nature, history and thought of these early hominids, rather than bending them to what was formerly taught, based on Biblical interpretations, dogma which not even Darwin could influence. In scientific theories, we willingly state that only the facts count. The fundamental epistemological problem in prehistory is that one looks for "facts" or "data" that fit the theory, and not the opposite. Daily, or nearly so, horrible collisions take place on this basis alone: Australia was clearly colonized despite more than 100 km of open sea (at least 50,000 years ago) (Bowler et al., 2003); Florès Man (Morwood et al., 2004; Falk et al., 2005) buried his dead despite having a small cranial capacity; dates from Brazil and its art are older than those of North America (Bahn, 2003). That which is periodically rejected in the name of the quest for comfort should, in contrast, be promoted to the rank of fascinating in the search for our origins, matched with the deployment of the appropriate critical approach.

5. To the east

The case of Anatolia is even more curious because the two technological systems are opposed in the middle of the country: Yarımburgaz (European side), Dursumbu and Karaın (in the middle) (Taşkıran, 2008; Kuhn, 2010). These unsophisticated flake assemblages west of the Taurus Mountains (Güleç et al., 2009)

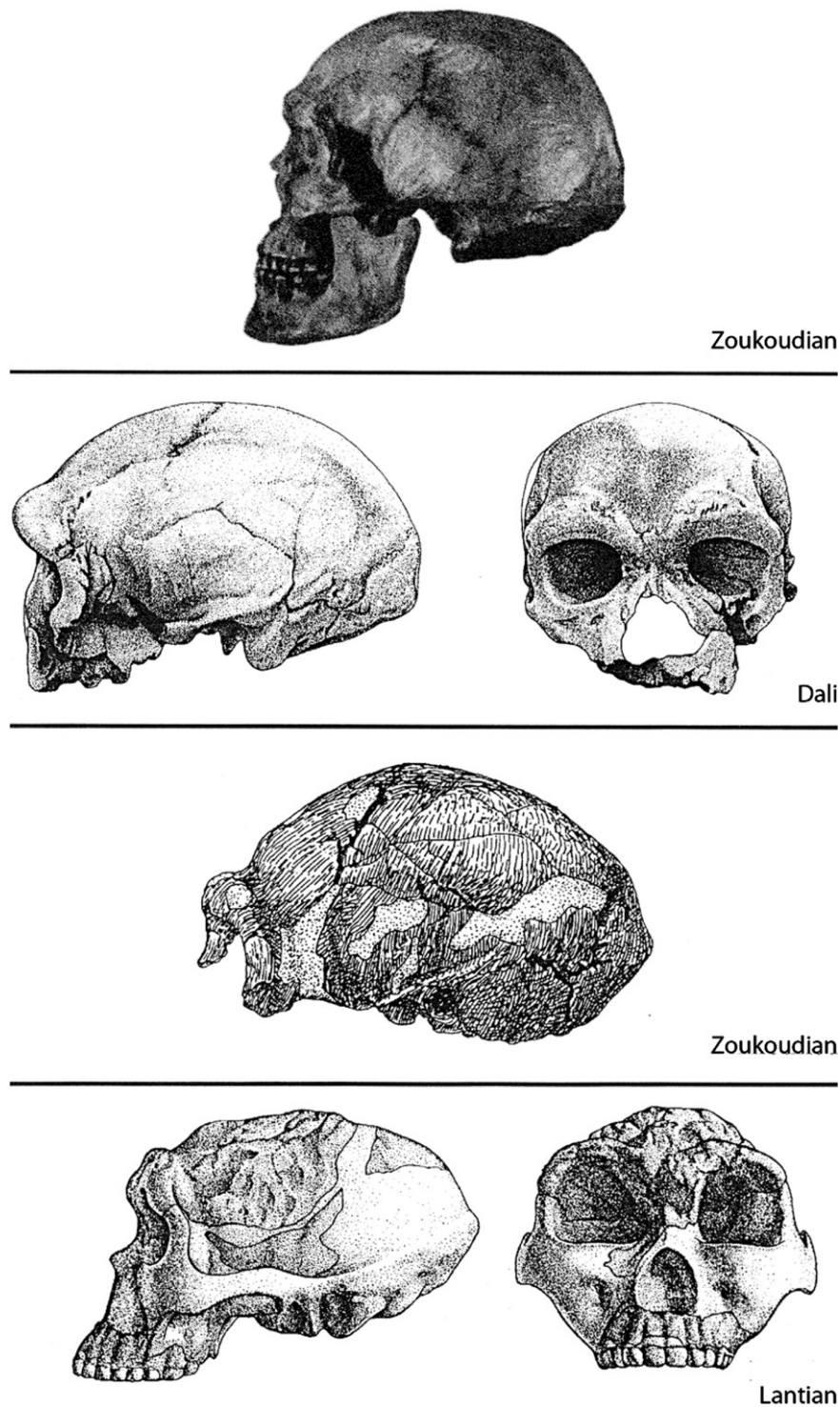


Fig. 2. Anatomical mechanisms lead, everywhere in the world, to “modernization” of the skull, a trend that is more or less rapid depending on the isolation effect. The Chinese situation works, like Africa, where huge areas are involved in the evolution to the current population, as long as this process takes place within a single species.

contrast with a mass of Acheulean bifaces from all periods, in all forms and qualities found throughout the Upper Euphrates Valley and along its tributaries. Here, the sites are on the same continent, and yet the two systems persist and are independent during the entire Lower Paleolithic. In any case, Turkey is only a very recent political reality, imposed on a highly complex geography in which the eastern regions in particular (Kurdistan, Armenia) form part of

the north-south axis rooted in Israel (Ubeidiya), and thus in Africa. This axis ends in the Caucasus Mountains where the Acheulean is well-represented (e.g., at Tsona [Lioubine, 2000]), but does not go beyond them (if one can express oneself in this way with regard to Paleolithic ethnic groups). In this Near East, the “task” defined by Movius is quite clear, somewhat as if Africa began just south of the Caucasus.

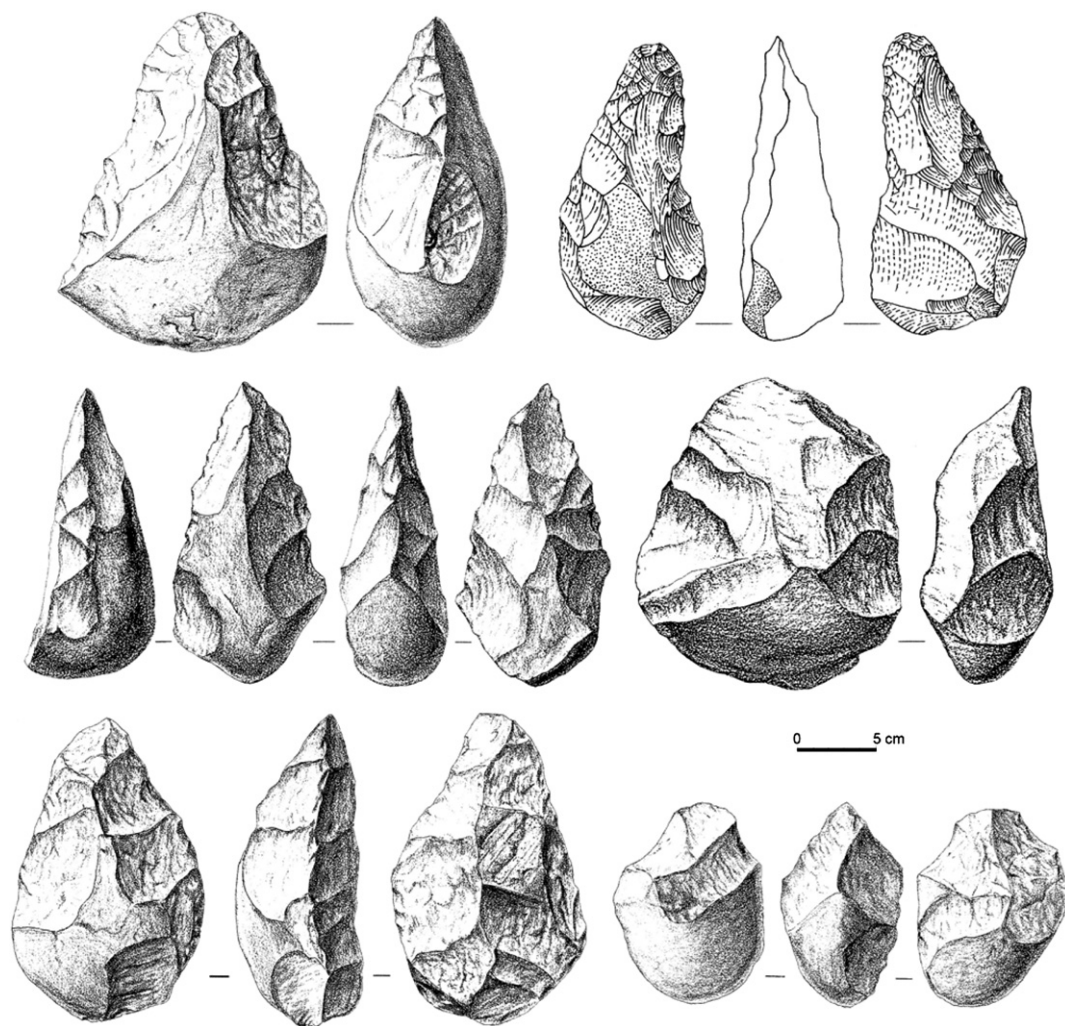


Fig. 3. Chinese bifaces are in fact pebbles whose shapes are selected and remain as such to the end, exactly opposite to the bifacial conception whose shape is extracted from any block of raw material. The “Chinese Acheulean” is an artifact of research. Top: Bose; Middle: Lantian; Bottom: Liangshan (from [Leng, 2001](#)).

6. To the southeast

The Arabian Peninsula remains poorly known despite its great size, countless open-air sites and its biomass potential, particularly during glacial periods when the grassy steppe was dominant. New research has confirmed its incredible and misunderstood importance ([Petruglia, 2003](#)). While the cultural area of this sub-continent appears to be similar to Africa, we still do not understand in what direction influences were spread, given the degree to which this immense peninsula appears to have been favorable to hunter-gatherers during cold periods. For example, the prestigious sites in the coastal Levant (Latamne, Gesher Benet Yakov [[Clark, 1969](#); [Goren-Inbar and Saragusti, 1996](#)]) could reflect the margins of a center potentially located on the Arabian Peninsula.

Iran has recently yielded several good assemblages that one would consider copies of African assemblages ([Biglari et al., 2004](#)): an industry identical to the classical Oldowan and others dominated by crude bifaces that would be classified in the highest stages of the Early Acheulean, and also in East Africa. If the goal is to disengage from our own preconceived notions and if we stick to the facts as they come to us, it must be accepted that an extremely active southern route existed, from Djibouti and Bab-el-Mandep, along the Yemen coasts and through the Strait of Hormuz to the Middle East, entirely independent of the Levantine route leading to

the Caucasus. The southern route, in contrast, follows the same latitude in stable environments and in particular, opens onto the immensity of the Indian sub-continent where the Acheulean is extremely abundant and also where it stops ([Gaillard and Mishra, 2001](#); [Gaillard et al., 2010](#))! The Acheulean traditions is present further south (Indonesia, [Simanjuntak et al., 2010](#)), but is absent in further north and east (cf. *infra*).

7. China

Based on this, things become clearer in China because no African influence is discernible at any point in time during Chinese evolution. We cannot say that Chinese prehistory is simple and harmonious, but at least the geographic isolation of this huge country makes it a laboratory where all evolutionary data can be considered as coherent and independent. Curiously, this simple observation provokes a sudden emotion among certain colleagues (non-Chinese, of course), as if a divine law had been violated when we consider that humanity does not proceed by migration alone and that Paleolithic inventions can all be as convergent as, for example, writing or agriculture, for which no one questions multiple and independent appearances. We could wonder when autonomy would be permitted in the history of humanity: we suggest at all times, although this is not the only factor in action, as all wars periodically remind us.

Humanity has been present in China for more than two million years (Renzindong, Longgupo), demonstrated by fragmented human remains and knapped flakes (Huang and Hou, 1997; Huang et al., 2001; Leng, 2001; Wu, 2004; Dong, 2006; Huang and Pu, 2007; Shen and Michel, 2007; Wolpoff, 2009). A long independent anatomical evolution continued, following the same trends as everywhere else, from Lantian to Zhoukoudian ("Sinanthropus"). Balancing of the cranium on the vertebral column tends to give it a spherical form; the bony attachments for the neck muscles descend nearly vertically, the face is raised and flattened by atrophy of the maxilla, whose functions have been transferred to the hands. All of these mechanisms combined lead to "modernity" of the skeleton (including Dali, Maba, Upper Cave) without the necessity of a single invasion, and because humanity is defined by the importance of symbolism over genetics, wherever and whenever we find it on the planet. This anatomical path (Fig. 2) is fascinating for more than one reason: it demonstrates the universality of trends and is counter-balanced by the same universality in technological production.

Stone flakes dating to the beginning of this trajectory tend to have been invested in a complementary mass that humans borrowed from the extremely abundant cobbles found in the long and winding river beds, or on the hillside terraces. In this way an original technological combination was created and persisted for nearly two million years, extending from Vietnam to Korea. The stone used, knapped at one end, offers the durability of its cutting edge, associated with the force of its mass and facility in holding. These three factors together are reduced to a single gesture born of a single thought: the choice of the appropriate cobble out of thousands. All of the successive standards are dictated by the choice of mass, form and adequate material so that subsequent technological activities (use included) would be possible. Among the enormous assemblages of the Chinese Lower Paleolithic, this compound operation is endlessly repeated (Hou et al., 2000, 2008; Huang et al., 2001; Norton et al., 2006; Xie and Bodin, 2007; Der-evianko, 2008; Feng, 2008; Norton and Bae, 2008; Petraglia and Shipton, 2008; Bodin, 2009; Zhang et al., 2010), but in combinations with subtle variations on the same general theme. During the Middle Pleistocene, each technology leads to prepared cores, in China as in any place in the world. Levallois has no traditional meaning: it occurs anywhere, any time. Its invention simply shows the universal human capacity for planning and control.

8. The confusion

A drama worthy of prehistorians once again inflames the literature! In assemblages as abundant and numerous, dispersed across this China without bounds, a poor Paleolithic knapper was allowed to turn his tool and strike it again! A million years later, we are still talking about it because this unfortunate, apparently harmless, gesture is now found deprived of its ordinariness and propelled to the rank of "proof" of an African origin (again) for the entire Chinese Paleolithic. A fatal superfluous gesture!

During my archaeological promenades, I was able to study the material from Bose, where these sacrilegious objects come from, as well as other sites (Donggutuo, Xiaochangliang, Lantian, Longgupo, Yuanmou, Damei, Jiangfeng, Dafa, Xiaomei, Datong, Suyanggae, Renzidong, Liangshan, Guanyindong, Hungsi, Zhoukoudian, Chenjiawo, Xihoudu, Chenjiawo, Yunxian, Shilongtou), thanks to "traditional" Chinese courtesy. It is true, bifaces are present, but extremely rare (about one out of a hundred) and the same few are quite often reproduced in the literature. In reality, they were made following the three conceptual stages applied to all worked cobbles and share the same selection criteria: form, density, raw material. Some of those among the thousands were flaked on the opposite

face, but remain worked cobbles: they could not be transformed into Acheulean bifaces because nothing would be left, the two faces of the cobble being too close (Fig. 3). Considered more broadly, we note that, for thought processes at least, the techniques of the Chinese Paleolithic ("bifaces" included) reproduce exactly the inverse symmetry of the Acheulean in Europe and Africa. Here where the rocky mass initially used had no particular morphological value, the Acheulean knapper sought the form intended, based on his own thoughts and concepts: tradition imposes constraints on the raw material. Tradition uses the mechanical laws of flint to confer upon it a cultural value, regardless of its intended function. By contrast, the entire Chinese Paleolithic is marked by the uniformity in form selected from the infinitely rich and varied range offered by nature. In other words, the "Chinese" knapper invested all of the mechanics of the action before the gesture; this is why it appears so mysterious to us. The technological principle of the Acheulean is probably clearer, because the debris, from knapping to shaping, and the final abandoned tools have been recovered, sometimes completely (as at Boxgrove). This formula, aiming to master both form and material, reconstructs the stages traversed by thought processes prior to the making of the tool. One would be more courageous to collect flint from the bottom of a chalky cliff where blocks of flint are eroding than to walk along the beaches of Chinese rivers looking for suitable cobbles. In this way one becomes British or Chinese: again a question of tradition...

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