

# Neanderthals replaced by archaic Homo sapiens at Spy Cave in Belgium

Stuart L Harris, April 2012

## Summary

Two ancient skeletons from Spy Cave in Belgium appear to refute the proposition that Neanderthals miraculously acquired a suite of advanced technologies and social attributes soon after they vanished from central Europe. These skeletons are not Neanderthal at all, but archaic *H. sapiens*, our immediate ancestor, who survived in Africa until the end of the last ice age.

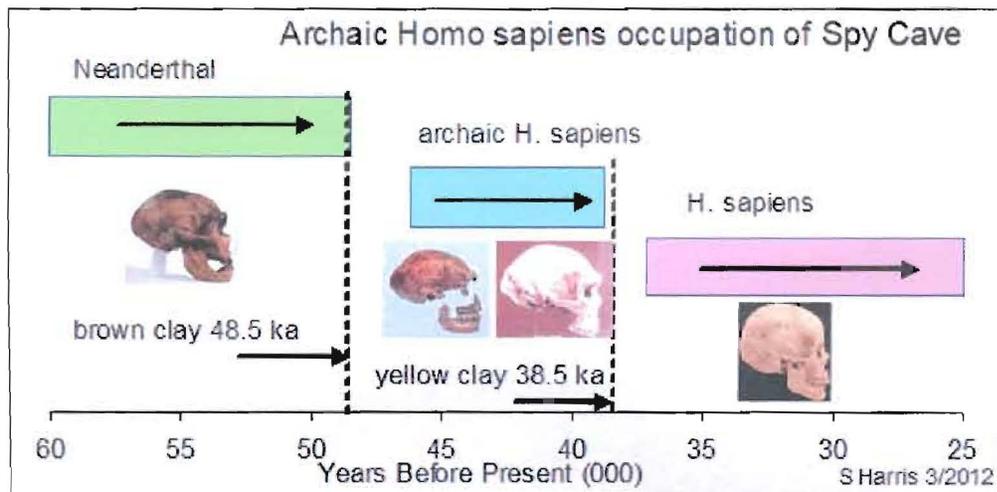
Spy Cave captures the controversial transition between Neanderthals and *Homo sapiens*. The relevant material lies sandwiched between two layers of clay. Brown clay overlies Neanderthal tools, while yellow clay underlies *Homo sapiens* tools. Both clay layers derive from immense tsunamis that swept the Atlantic coast. Between these clay layers rested two skeletons with brow ridges similar to Neanderthals but with slim bodies like our own. Accompanying these skeletons were modern artifacts never before associated with Neanderthals (Figure 1).

These skeletons most closely resemble archaic *Homo sapiens*, our closest ancestor, who survived in Africa until 13,000 years ago. Archaic *H. sapiens* possessed technologies like those found between the clay layers, and lived beside *H. sapiens* in Africa.

Reassigning Spy Cave skeletons to archaic *Homo sapiens* solves the vexing problem of how Neanderthals could suddenly acquire a suite of astonishing attributes, such as eating fish and shellfish, cooking starchy foods, playing flutes with modern tones, spreading ochre on burials, tanning and sewing leather clothing, and flaking delicate leaf points.

It also explains how DNA from Neanderthal look-alikes at Vindija Cave in Croatia could be so closely related to *Homo sapiens* (6%).

*Figure 1: Chronology of Spy Cave in Belgium. In the center panel, a brown skull from Spy Cave more closely resembles archaic *H. sapiens* than Neanderthal.*

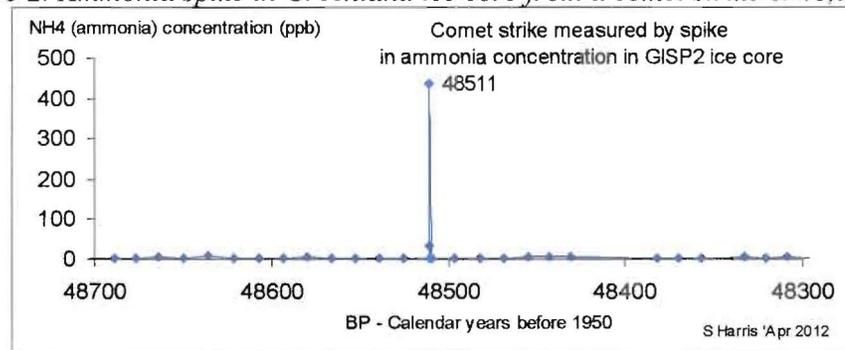


## Neolithic Catastrophes

Improved dating and stratigraphic techniques suggest that Neanderthals perished en-masse in central Europe around 48,500 BP<sup>1</sup>. At that time, a catastrophe appears to have killed all mammal life forms in Europe, not just Neanderthals, an event that had not occurred for ages.

A plausible mechanism is a comet impact, whose heat would incinerate the land beneath. As the comet approached Earth, gravity would break it into small pieces that blanketed a region and brought widespread destruction. Such an impact would leave behind a spike of ammonia in Greenland's ice sheet.<sup>2</sup> Sure enough, a huge spike occurred at 48,510 BP (46560 BC), give or take ten years (Figure 2).

Figure 2: Ammonia spike in Greenland ice core from a comet strike c. 48,510 BP.



In Swabia, Neanderthals disappeared forever, never to return to their traditional caves or leave tools called Mousterian. For a thousand years European caves lay vacant, unvisited by man or animal.

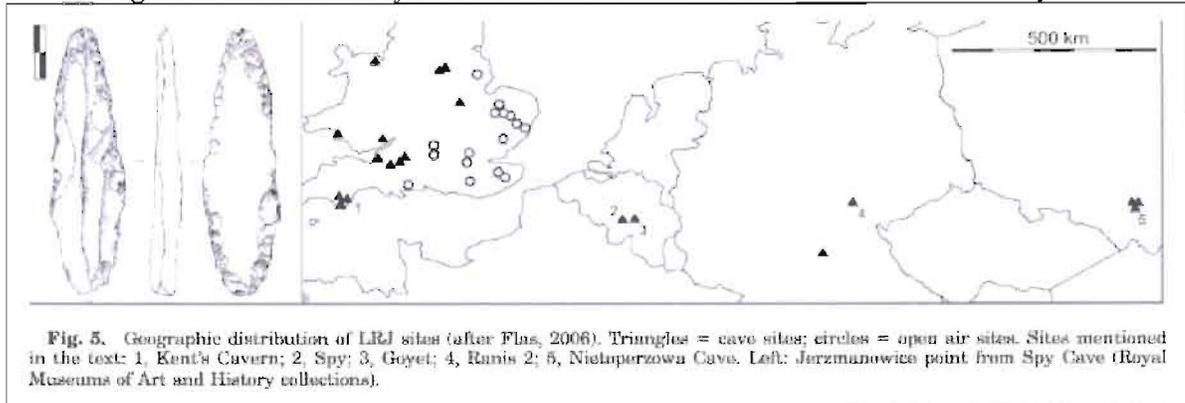
Hominids next appeared in Spain, a different people who built boats to cross the Strait of Gibraltar. They gradually worked their way north along the coast of Portugal and France to England, where a dense settlement left delicate double-edged blades called LRJ (Figure 3). Teeth from Spy Cave in Belgium and Shanidar Cave in Iraq show traces of cooked starchy food, a drastic dietary change for Neanderthals.<sup>3</sup> DNA from a fossil at Vindija Cave in Croatia, wrongly attributed to Neanderthals, had 0% of our genes, but we had 6% of its genes, which indicates that the two species could interbreed.

<sup>1</sup> BP = Before Present, before 1950.

<sup>2</sup> Baillie, Mike; 2008, "Chemical signature of the Tunguska Event in Greenland Ice," International conference: 100 years since Tunguska Phenomenon: past, present and future; Moscow, p. 80. Baillie correlated peak NH4 with several comet strikes, including the 1918 Tunguska impact in Russia. The peak occurred within a month of the strike.

<sup>3</sup> Henry AG, Brooks AS and Piperno DR. (2011) Microfossils in calculus demonstrate consumption of plants and cooked foods in Neanderthal diets (Shanidar II, Iraq; Spy I and II, Belgium). Proceedings of the National Academy of Sciences USA 108(2):486-491.

Figure 3: Distribution of LRJ sites with distinctive tools between 38 and 45 kya.<sup>4</sup>



Others who crossed at Gibraltar had double-edged blades similar to Mousterian used by Neanderthals. Spy Cave in Belgium preserved two of their skeletons, with slender bodies like ours and a brow ridge not quite as strong as Neanderthal. Compared with Neanderthals, they had a less robust jaw, flatter face, less pronounced occipital bun and less pronounced chin. These were archaic Homo sapiens (aHs), not Neanderthals, people who thought and talked like us, dressed warmly, caught and preserved fish, cooked tubers, and accompanied their songs and dances with music from flutes.

A number of paleontologists disagree with a catastrophe scenario, arguing that Neanderthals survived ten thousand years longer on the Atlantic seaboard, based on skulls with a brow ridge and Mousterian tools. In support of this argument, certain caves in Spain and the Middle East preserve alternating layers of two different lithic industries, as if Neanderthals suddenly allowed H. sapiens to live in the same region. "Perhaps the dates are wrong," said critics, "or the stratigraphy is in error." But Patrick Semal et al (2008) established reliable dates at Spy Cave, whose relevant material lies between two layers of clay, brown and yellow.<sup>5</sup>

French archaeologists rejected the idea that Neanderthals could suddenly invent advanced tools and behavior, so they called them near Neanderthal with a tool set named Chatelperron, or Proto-Aurignacian with a tool set called LRJ. Chatelperron tools included hide scrapers to make leather, burins to drill holes in leather, backed knives with thin blades to cut leather, and bone artifacts. Compared with Neanderthal, skulls from this period at Vindija Cave in Croatia had:

A reduced midface prognathism and a less projecting upper face.

Thinner and less projecting supraorbitals.

A narrower nasal aperture, more prominent nasal spine, and a smaller facial height below it.

A reduced breadth for the anterior teeth.

The absence of occipital bunning.

Thinner cranial bones.

Definite presence of a mental eminence (though not prominent).

DNA from one Vindija skull was the primary source of DNA for the Neanderthal Project, which wrongly assumed that they were measuring Neanderthal DNA. This **major error** that has led to

<sup>4</sup> Image taken from Patrick Semal's paper in the next footnote.

<sup>5</sup> Semal, Patrick; Rougier, Helene; Crevecoeur, Isabelle; et. al; 2008; New Data on the Late Neanderthals: Direct Dating of the Belgian Spy Fossils; American J. of Physical Anthropology, 138:421-428 (2009)

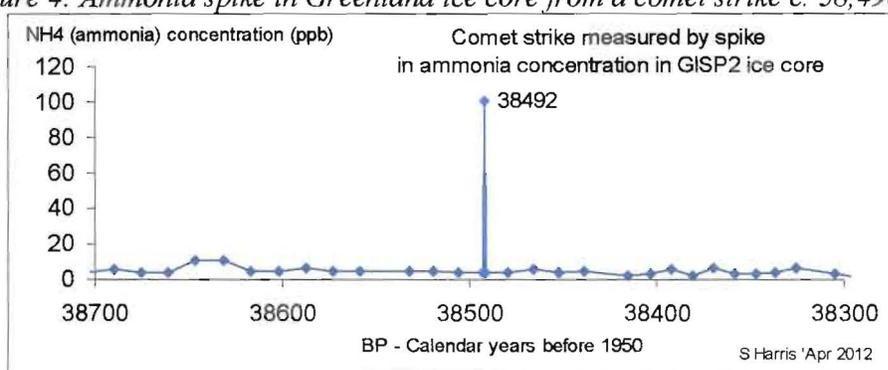
widespread criticism of the results that seem to make no sense. The data is good, just assigned to the wrong species.

Just as perplexing are Neanderthal-like skulls from both North and South America. To reach the Americas would require boats and navigation skills to cross the Atlantic.<sup>6</sup> For example, a long stratigraphic sequence near Puebla, Mexico, began more than 250,000 years ago, before *H. sapiens* existed. A female skull from Puebla, dated to this time, had a brow ridge and sloping forehead.<sup>7</sup> A skullcap found 65 feet deep in a Kansas hillside looked like skulls from Spy Cave.<sup>8</sup>

Then, just like Neanderthals before them, these near-Neanderthals utterly vanished. Their last occupation at Spy Cave was sealed by yellow clay from a tsunami. Deposits from within the cave lay scattered down the hillside, including bones of an infant. The tsunami collapsed the roof above the cave entrance and thrust material into the cave.

Assuming this clay layer coincides with a comet impact, then a major strike occurred in 38,490 BP (36540 BC), the same date as the bones of the infant.

Figure 4: Ammonia spike in Greenland ice core from a comet strike c. 38,490 BP.



For the next thousand years, no hominids lived in Europe, nor did any cross at Gibraltar. Far away in South Africa, a modern people called Aurignacian chose to migrate north en-masse. They apparently built boats and paddled up the east coast of Africa to the Middle East. Here they cultivated flax to make cloth, the earliest example yet found of selective breeding and weaving. During a warm spell, they left the Middle East to venture into Europe. Based on slight differences in tool kits, there were two groups. Some followed migrating herds along rivers to Hungary, Germany, thence to France, while others followed the Mediterranean coast to Greece, Italy, Spain, then inland to the Spanish Pyrenees. Both groups painted cave walls in France and Spain and lived in double-ply tents with a layer of insulation between. The northern group

<sup>6</sup> Hueyatenco, the youngest site beside a lake in the Valsequillo region south of Puebla. Upper Hueyatenco has leaf-shaped points, knives, burins, scrapers, percussion and pressure flaking from a prepared striking platform, bone tools. The site has since been deliberately bulldozed over by the Mexican government to prevent further research. The three most prominent archaeologists were Cynthia Irwin-Williams, Virginia Steen-McIntyre and Juan Armenta Camacho. The opposition was led by Spanish archaeologist J. L. Lorenzo, who detested professional women and confiscated the artifacts sent for safekeeping to Mexico City. Pleistocene Coalition News, May-June 2011,

<sup>7</sup> Dorenburg skull, housed at Grassi Museum in Leipzig until destroyed by bombing in 1943. At least one reviewer gambled his professional credentials by fabricating evidence that the skull was a hoax.

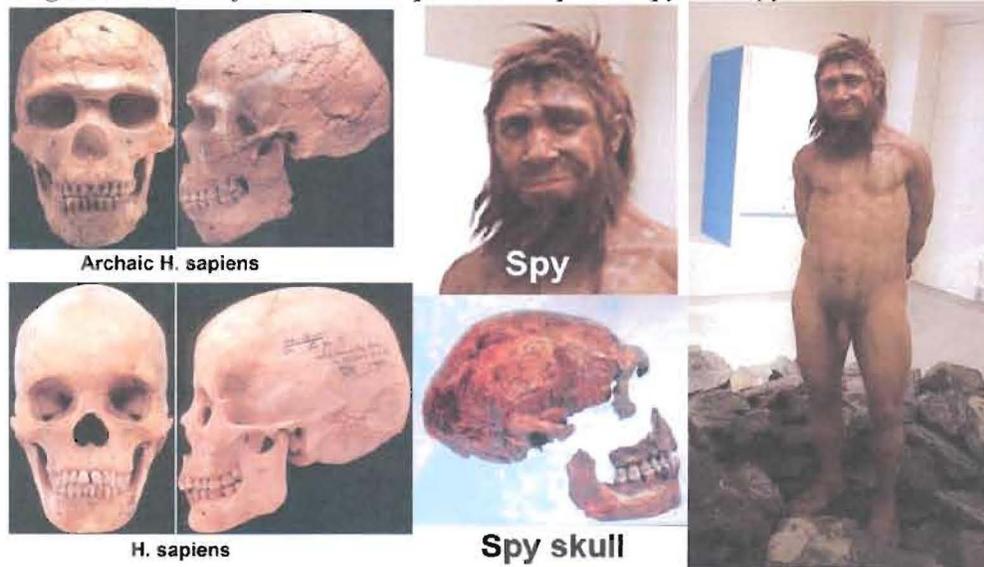
<sup>8</sup> "Curator of Kansas City Museum Likens Local Find of a Giant Skull to Spy Neanderthal", Marion Daily Star, April 7, 1902. Reprinted on the web at Frontiers of Anthropology. The skull was sent to the Smithsonian, where it disappeared like countless others that did not fit the Smithsonian's view of history.

carved realistic images of animals and people, fired ceramic figurines, and wrote in a script called Old European, previously attested in South Africa. The religion of the Triple Goddess stems from the northern group, with roots in South Africa.

### **Spy Cave Fossils**

To answer the paradox of Spy Cave requires a closer look at the two skeletons. These fossils were not typical Neanderthals, the kind from Germany whose DNA was sequenced, with deep triangular chests, long fingers, broad hips, thick bones, massive occipital bun and large brain. Rather the fossils of Spy were slender, with skulls similar to ours, perfect teeth, handsome chin, delicate brow ridge, hardly worth a second glance in a subway. Compare the skulls and reconstruction for yourself. These mysterious people were archaic H. Sapiens, our direct ancestor, who survived in Africa until 13,000 years ago.

*Figure 5: Skulls of archaic H. sapiens, H. sapiens, Spy and Spy reconstruction.*



### **Spy Cave Description**

Belgium boasts so many deep limestone caves that spelunkers don't bother to list Spy Cave. Nevertheless, Spy Cave has something the others lack, fossils that make it famous, the youngest collection of Neanderthal-like skeletons in Europe.

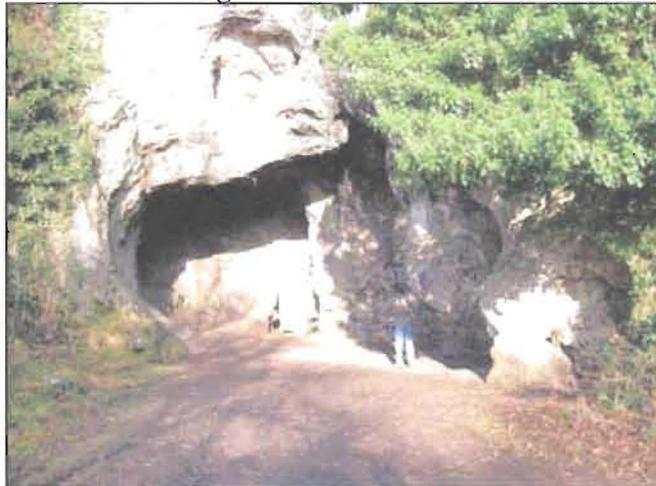
Grotte de Spy lies 48 km southeast of Brussels, close to the E25. To reach the cave from the nearest parking lot requires a short climb up a wooded hill, the first range of foothills that face the Atlantic. From the top of the hill on a clear day, the setting sun glints off the sea, 128 km away across a nearly level plain, a vantage point to look for migrating herds (Figure 6).

*Figure 6: View toward the Atlantic from Spy Cave.*



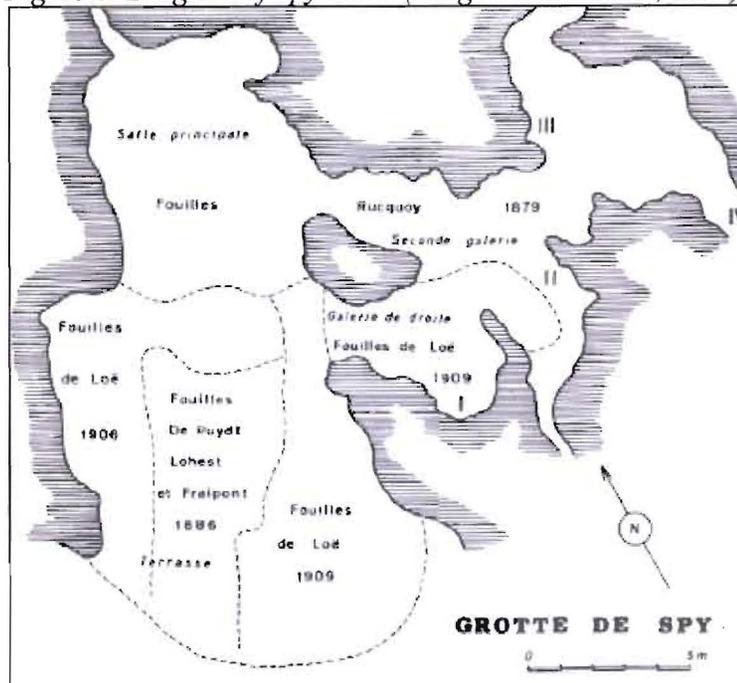
A small stream Orneau courses southeast through a wooded valley at the foot of the hill and joins the Meuse, which flows north to the marshy delta of Zeeland in the Netherlands. Forty thousand years ago the Meuse flowed north toward Norway. It crossed a broad plain that connected England, Denmark, Netherlands and France, a plain now sunk beneath the sea. At that time it supported herds of migratory animals such as mammoth, whose teeth are sometimes caught in the nets of fishermen.

*Figure 7: Originally there were three cave openings, but a rockslide filled the largest. Excavators removed the scree blocking the main entrance and lowered the entryway by 12 feet.*



The main opening faces southwest, 43m above the plain, 130m above sea level. Forty thousand years ago, sea level was 70m lower, so the entrance was 200m above sea level. The cave floor slopes downward toward the back, 16m deep. In the cave diagram below, the areas marked with dotted lines signify the cave walls as originally found, so that a great amount of collapsed material in the front of the cave had to be cleared away.

Figure 8: Diagram of Spy Cave. (Jungels and Houzer, 2006)<sup>9</sup>



### Spy Cave Excavations

Spy Cave was excavated in a great hurry without tagging the artifacts, so that reconstruction requires a certain amount of ingenuity.

In 1879, amateur Dr. Rucquoy Namur excavated part of the site and found hyena teeth, antlers and mammoth tusks.

From 1880 to 1884, amateur Louis Stassin Wavre collected a large number of objects.

In 1885, archaeologist Marcel De Puydt and geologist Max Lohest, dismayed by the disturbance of previous excavations, still managed to discover a fragment of a human skull, flints, fragments of pottery and bones. The next year they returned in earnest.

In 1886, De Puydt and Lohest excavated the cave down to a brown clay layer that covered the cave floor. Embedded in the brown clay were Neanderthal spear points. Above the brown clay were animal bones, tools more advanced than Neanderthal, and skeletons of two hominids. Paleontologist Julien Fraipont called the fossils Neanderthal with a Mousterian tool kit. A thin layer of yellow clay sealed these artifacts. Above the yellow clay were Aurignacian artifacts. After discovery, the bones from all layers became mixed up and never marked, so reassembly depended upon memory and excavation notes.

Spy I was incomplete, missing its legs, difficult to assess. It dates to  $41,450 \pm 300$  BP from a tooth inside the cave and  $41,380 \pm 500$  from a vertebrae on the hillside below the cave.

<sup>9</sup> Cécile Jungels and Anne Hauzeur, 2006, Restudying old collections: first results from the Paleolithic cave of Spy (Belgium); power point presentation, posted on the web.

Spy 2 lay on his right side, hand resting against his lower jaw, head facing east, feet west, with a Mousterian point nearby. It dates to 38,800 ±125 BP.

Spy 6, a 1½ year old child whose bones were later found scattered down the hillside, dates to about 38,500 BP, later than Spy 2, but the same age as the yellow clay layer, dated 38,490 ±10 BP.

From 1906 to 1909, Baron A. de Loe and E. Rahir explored the western part of the terrace and found traces of an ivory cutting factory to make pendants, overlain by a flint workshop.

From 1927 to 1933, Professor J. Hamal-Nandrin removed much of the spoil from previous excavations, leaving the site as seen today.



From 1952 to 1954, Professor Francois Twiesselmann opened a trench from the cave down to the Orneau. She discovered extremely rich material, and collected more than a thousand human remains from different periods. After analysis, she moved the leg bones of Spy 1 to Spy 2, and an arm bone of Spy 2 to Spy 1, so that Spy 2 was nearly complete per the original report. She also found the jaw and teeth of the infant Spy 6 down the slope (1952-54).

In 2006, Patrick Semal and his team combed through the spoils, found a thousand more bones, and accurately dated selected samples (Table 1 below). With one exception, every sample dates to a warm period, when herd animals migrated this far north. Radiocarbon dating also deleted four relatively modern bones from the two skeletons, thus exposing the extent of careless mixing of artifacts.

In 2006, Patrick Semal identified 22 leaf-shaped bifacial points from LRJ culture at Spy Cave, plus two burins for drilling holes in leather. LRJ culture occurs mostly in England, but also Belgium Germany and Poland, during the time between Neanderthal and Aurignacian. Spy cave brackets these sites, being both older and younger: Poland 42.5 ka, England 41.2-41.9 ka.

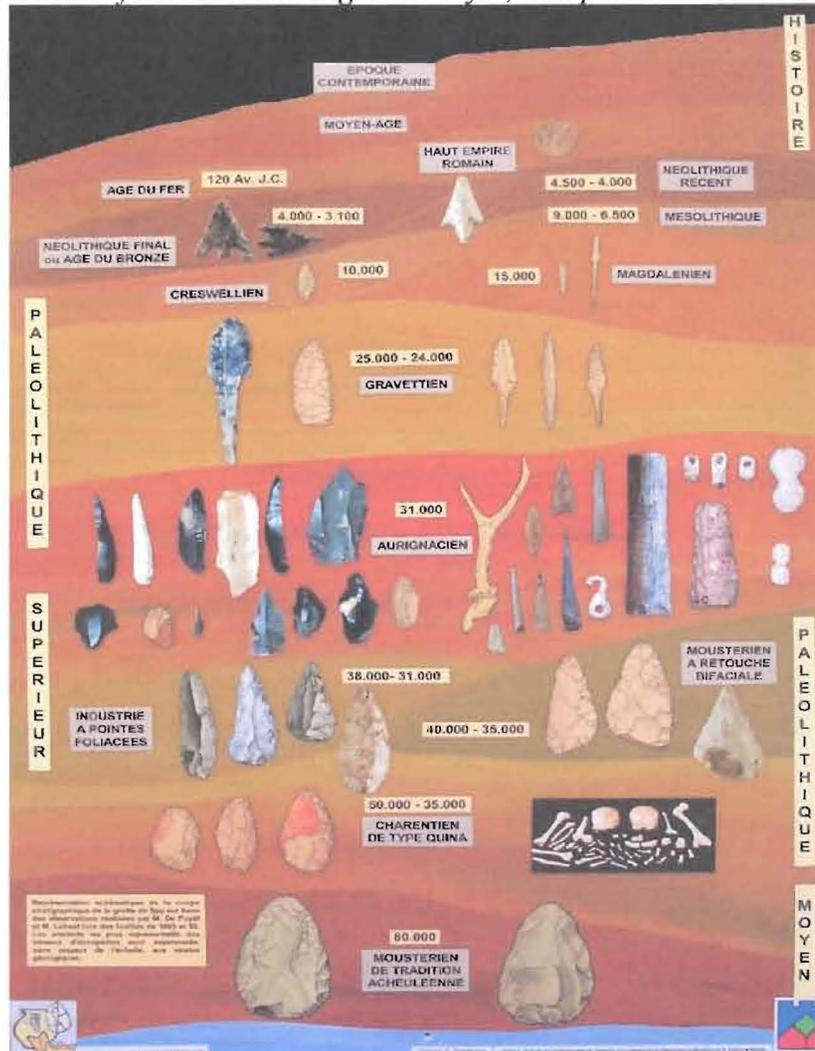
In 2011, a team led by Amanda Henry found grains of cooked starch on the teeth of near-Neanderthals of Spy Cave, from water lily roots and possibly sorghum.<sup>10</sup> She also found starch from date palm on teeth at Shanidar Cave in Iraq attributed to a kind of advanced Neanderthal who supported a crippled man and sprinkled flowers and ochre on his grave.<sup>11</sup>

<sup>10</sup> Henry AG, Brooks AS and Piperno DR. (2011) Microfossils in calculus demonstrate consumption of plants and cooked foods in Neanderthal diets (Shanidar II, Iraq; Spy I and II, Belgium). *Proceedings of the National Academy of Sciences USA* 108(2):486-491.

<sup>11</sup> Ralph Solecki, 1960, *The Flower People*.

A drawing of artifacts and layers at the museum of Grotte de Spy depicts a rather vague yellow clay layer midway between Aurignacian and Neanderthal layers. I trust the original report that says a distinctive, thin yellow clay sealed everything below Aurignacian with no subsequent intrusions.

Figure 9: The museum at Grotte de Spy presents a different interpretation of the artifacts and their layers. The yellow clay layer is shown as an irregular layer half-way between the brown layer on the cave floor and the Aurignacian layer, with points embedded in the clay.



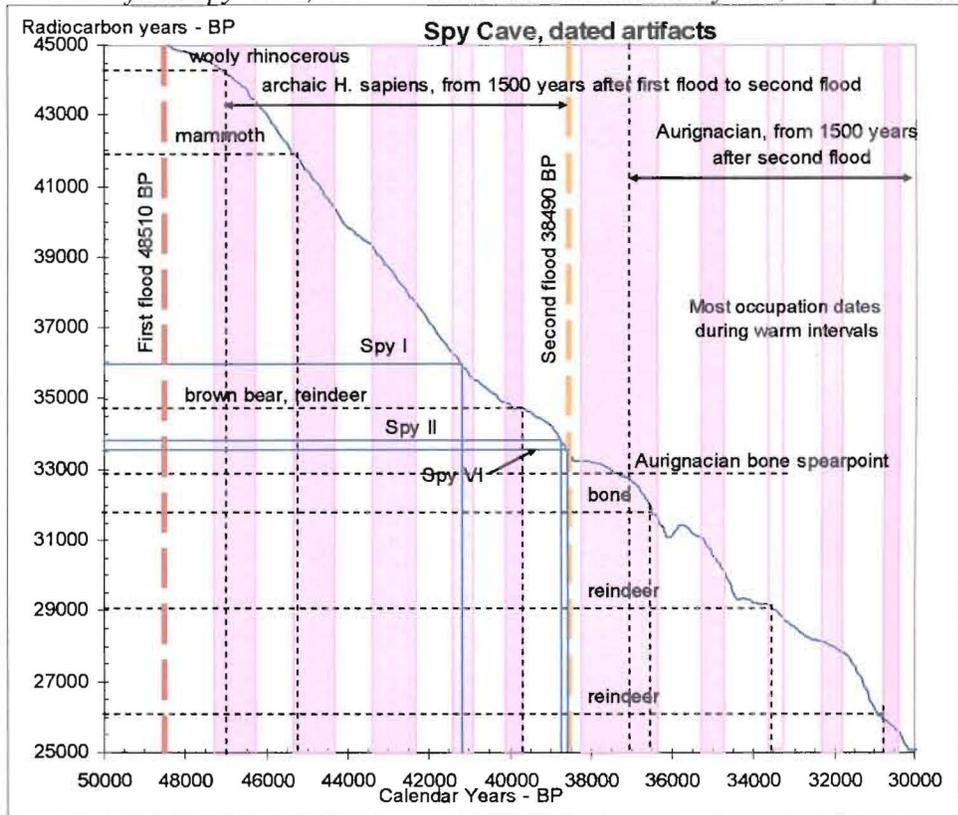
### Spy Cave Dated Remains

The following calendar dates apply to Spy Cave, starting at the bottom. Dates on bone come from Semal et al; dates on clay come from GISP2 ice core.

- 48,510 BP, brown clay layer containing Neanderthal tools
- 47,165 BP, bones from a baby woolly rhinoceros
- 45,570 BP, bones from a baby mammoth
- 41,300 BP, aHs male named Spy I, with lower torso missing and bones deranged.

- 39,535 BP, bones from a brown bear, covered with ochre
- 39,195 BP, bones from a reindeer, covered with ochre.
- 38,800 BP, aHs male named Spy II, laid on his right side, hand resting against his lower jaw, head facing east, feet west, with a Mousterian point nearby.
- 38,500 BP, aHs child, whose skeletal parts were scattered down the slope of the entrance.
- 38,490 BP, thin yellow clay layer, covered by a hard reddish breccia
- 37,260 BP, bone spear point made by Aurignacians.

Figure 10: Dates from Spy Cave; both radiocarbon and calendar years; warm periods in pink.



### Origin of the Clay Layers

At the time of the brown clay layer that covers the bottom surface of Spy Cave, a comet disintegrated above Europe and incinerated the land below. It left a characteristic ammonia spike in Greenland ice cores dated  $48,510 \pm 10$  BP.

The shock of the impact triggered a Texas turbidite on the south coast of Texas, the first of many. The turbidite slipped rapidly down a 2% grade, plunged into the Gulf of Mexico, and crossed the bottom toward the Yucatan Peninsula. Behind it, the loss of pressure released gas that carried a deadly combination of oil and dust high into the atmosphere, where hurricane winds carried it around the globe. The turbidite measured roughly 300 km long, 80 km wide and 1.6 km thick at the southern edge, tapering to zero at the northern edge. As the turbidite crossed the Gulf, it raised sea level by 1.6 km and left a similar 1.6 km void behind it. The resulting two-mile high tsunami crossed Florida and the Atlantic Ocean toward Europe. To a first approximation, wave height declines linearly with distance. The distance from Houston to

Antwerp is 8100 km, which gives a wave height approximately  $2 \times 1600\text{m} \times 300\text{km} / 8100\text{km} = 118 \text{ m}$ . Run-up on a gentle slope is approximately two times wave height, so the wave could reach 236 meters above sea level, high enough to flood Spy Cave, 200m above sea level.

The Texas tsunami breached a large opening into Spy Cave and filled the downward-sloping cave with silt and muddy water. This sediment coated the cave floor with brown clay that trapped a few Mousterian artifacts made by Neanderthals.

Within this clay should be found particles of charcoal from burning forests.

Ten thousand years after the first layer of clay occurs a second layer of clay, not as thick. Again a comet strike in 38,490 BP triggered a Texas turbidite that flooded the cave, washed many artifacts out of the cave and down the facing slope, and collapsed the cave roof. The damage was so severe that two or three waves may have hit the cave. Where the comet struck is not known, but unlikely to have hit Europe twice. Nevertheless, coastal communities would have perished, and also inland communities if the wind blew the deadly dust toward Europe and Africa. Those living in South Africa survived unharmed.

### **Conclusions**

Fossils, tools and social mores attributed to Neanderthals during the ten-thousand year period after their demise belong to look-alikes called archaic Homo sapiens, our direct ancestor, who lived in close association with Homo sapiens in Africa. This explains the sudden appearance of advanced technologies at Spy Cave in Belgium and elsewhere throughout Europe.

DNA sequenced by the Neanderthal Project from a fossil at Vindija Cave in Croatia belonged to archaic Homo sapiens, not Neanderthal, which explains the close relationship (6% DNA).

Two clay layers at Spy Cave in Belgium derive from tsunamis that originated as turbidites off the coast of Texas in  $48510 \pm 10 \text{ BP}$  and  $38490 \pm 10 \text{ BP}$ . Each tsunami extinguished all coastal life around the Atlantic Ocean.

These tsunamis were triggered by comet strikes with the same dates. The earliest comet strike incinerated northern Europe, thus ending Neanderthals.

Fossils attributed to Neanderthals in the Americas belong instead to archaic Homo sapiens, who possessed the skills to construct boats and navigate across the Atlantic.

You are invited to contact Stuart Harris about this or any other archeological topics at PO Box 60281, Palo Alto, CA, 94306; Stuart.Harris -at- sbcglobal.net; 650-888-1859