>NEWS FROM ATAPUERCA IN ENGLISH


Atapuerca

"Publicar en Science supone un mayor esfuerzo que encontrar los fósiles"

En Atapuerca existieron musarañas que cazaban mediante veneno

Oceanía

TECNOLOGÍA Y COGNICIÓN

A selection of highlights from the previous issue

> HOMINIDS USED PITS, CAVES AND SINKHOLES AT THE SAME TIME

> A special issue of the British Archaeological Reports in December 2006 focused on studies of accumulated animal remains in palaeolithic contexts. One of the articles, by several authors including ARG members Carlos Díez, Rosa Huguet and Jordi Rosell, reviewed the importance of complete cave systems such as the Atapuerca complex, known as karsts, as part of European hominids' territorial strategies.

The article aims to prove that the Atapuerca hominids managed to control their karst environment and used the different cave formations in a complementary way, in the same way as they did in open-air sites, where the hominids could make complementary use of different types of geographic environments (rivers, valleys, lakes, mountains, etc.). At some sites they installed the camps, while others were used as water and/or animal supply points, seasonal refuges, bivouacs, staging grounds when hunting, etc. Therefore, the extrapolation of an activity that took place in one of the sites as being representative of the lifestyles of these hominids implies a reduction of their adaptive capacity to control and exploitation of their territory.

Similarly to the way that the uses by humans could change, carnivores used the karst systems and their varied entrances in multiple ways: as dens, hibernation sites, seasonal refuges, for weaning, profiting from accidental falls by animals, concentration points due to gravity or dragging, etc. Hominids were aware of all these possibilities, as well as the inhabitation features of each one, and they exploited them for their own benefit, leaving large piles of bones in some and small piles in others, with much or little activity, either seasonal or annual, and a diversification or concentration of tasks. Contrary to the traditional viewpoint, which regards some sites with barely any human involvement as accidental accumulations of cultural products at exclusively palaeontological or natural sites, the authors of the article defend the idea that Homo antecessor, Homo heidelbergensis and the Neanderthals employed pits, sinkholes and caves in highly varied ways at different intensities, combining hunting, gathering and scavenging, using them as campsites or just making fleeting visits, but in every case maximising the possibilities offered by nature and their own intelligence.

At sites like the upper part of Dolina, they set up camp, whereas in the lower part, they only paid occasional visits. A seasonal refuge site could define the base of Sima del Elefante (Elephant Pit), while Galería is an example of the use of animals that fell into a natural trap.

> OTHER ARG ACTIVITIES

Shrews found in Sima del Elefante and Gran Dolina hunted with venom

> In the autumn issue, we reported on the discovery of giant shrews (40-60 grams) at the base of the Elephant Pit site. The latest news about this animal broke shortly afterwards. Gloria Cuenca and Juan Rofes from Zaragoza University published evidence in the German journal Naturwissenschaften, showing that these shrews and others from Gran Dolina hunted by injecting poison into their prey, like many snakes. The evidence is based on the discovery of a duct leading to a channelled incisor. Today, there is only one mammal that hunts this way, Hispanian solenodon, exclusive to Haiti, but it is highly likely that in the past, many other animals developed this hunting technique.

>Prospecting in Sierra de Atapuerca> March 1 marked the start of a new archaeological prospecting season around the Atapuerca hills, led by members of the Burgos University Prehistory Area. Its goals include the definition of a perimeter for the scattered open-air sites from our most recent prehistory, and an attempt to define their chronology more accurately on the basis of the items that are discovered.

> GOLD BRACELET FOUND IN SILO CAVE

>Now even gold has been discovered in Atapuerca, in the form of a splendid bracelet discovered by several members of our team during the 2004 season. Hidden beneath several limestone blocks in the nearby Silo Cave, this jewellery is from the very end of the Bronze Age, and was discovered by chance during topographic survey and sampling work inside the cave.

> ATAPUERCA PALAEONTOLOGISTS IN "BEARS & HUMANS"

>Bears and Humans: a parallel history is a roving exhibition organised jointly by Caja Cantabria and the Oso Pardo Foundation, supervised with the help of two of the most prestigious palaeontologists from the Atapuerca project, Juan Luis Arsuaga and Nuria García. The exhibition is open in the city of León until April 8.

> NEW HONOUR FOR EUDALD CARBONELL>

>Carbonell was appointed Honorary Member of the Cuban Society for Biological Anthropology during his visit to Havana, after delivering a lecture at the University in the Cuban capital last December to mark the commencement of a joint scientific project on a world scale aimed at studying human evolution.

> "SCIENCE MAKES US GODS"

>On 14 February, Atapuerca Project Co-director Juan Luis Arsuaga was sworn in as a new academic member of Spain's Royal Academy of Doctors. His accession speech, published in the latest issue of Revista de Occidente, was entitled Men and Gods. The nature of human aggression. The new academic sang the praise of science, the malleability of human beings and their ability to shape their own destiny, defending the idea that knowledge provides us with enough resources and arms to vanquish human nature, which is sometimes manifested in an exclusive and violent form. For Arsuaga, humans are creatures that can reduce and control conflicts. Our own particularity as animals that can shape symbols and communicate through them is what allows us to use ideas to dominate and vanquish others. According to Arsuaga, it is only through research that we will be able to know and understand nature, the only way for us to have the chance to anticipate the future and change it to make us freer.

> EDITORIAL

> TECHNOLOGY AND COGNITION

>MARINA MOSQUERA MARTÍNEZ

Lecturer and researcher at the URV-IPHES. ARG Member

>When I first arrived at the Atapuerca sites in summer 1987, I was studying my fourth and second last year of prehistory, and I wanted to specialise in stone technology. It was Eudald Carbonell who introduced me to the secrets of the discipline and its "lights and shadows". Like anybody starting out in a speciality, at the beginning there are many more lights than shadows, then the shadows gain ground and finally you begin to ask yourself whether behind what you think is a shadow there is, in fact, any light at all. In other words, there comes a time when you don't think you can know any more, because we all begin thinking that the world can be explained from the perspective of our speciality, but we end up realising that it cannot be explained at all, because it is unfathomable: the most we can do is to understand certain parameters or variables that are specifically involved in some of the historic processes we are interested in.

> And so, little by little, my interest has gradually expanded into the area of cognition -knowledge itself and the way we know our surroundings and ourselves- of fossil hominids, because cognition does contain the essence of the way we see the world. It is a fascinating but immensely complex issue which involves the study of the brain, primatology, psychology, archaeological evidence and other disciplines. To top off the complexity of this field, although giant steps have been taken, we still do not really understand the relationship between our behaviour and the operation of the brain because it is an extremely malleable, agile, versatile organ that is constantly at work. Right now I have a wide-ranging personal challenge that stretches from my research into manual laterality in chimpanzees bred amongst humans to trying to ascertain the cerebral traces and activities involved in technological processes. We have already published some of our results on the first aspect: chimpanzees bred in humanizing situations exhibit similar patterns of manual laterality to those bred in the wild. Manual laterality is therefore not acquired by imitation or training. In the second case, we are now beginning comparative experiments aimed at analysing the gestural and motor sequences of several carvers with various levels of experience and skill. The truth is, we don't know where these paths will lead us, but they seem promising, don't they?

> JOSÉ MARIA BERMÚDEZ DE CASTRO ATAPUERCA CO-DIRECTOR SINCE 1991

> "THE ORIGINS OF HOMO ANTECESSOR COULD BE IN THE MIDDLE EAST"

José María Bermúdez de Castro Rivas (Madrid, 1952), PhD in Biology at the Complutense University (1985), co-director of the Atapuerca Project since 1991. He has published many scientific papers in prestigious journals like Science and Nature, as well as several books for the general public. In 1997 he and the rest of the ARG members were awarded the Prince of Asturias Prize for scientific and technological research, and since 2004 he has been the Director of the National Human Evolution Research Centre (CENIEH) in Burgos.

-How did your interest in human evolution arise?

-Each child's attitudes and trends are defined at a very early age, and in my case it was quite clear. Nature, the countryside and everything that has to do with human beings fascinated me. Although I began to study medicine, there was a terribly chaotic situation at the University in the early 1970s, with a series of wildcat strikes that lasted for a long time and destabilised everything for all of us. I got to know people who were studying biology, I visited the faculty, I discovered the environment, I liked it and I asked myself, why not this?

-Your thesis was about dental anthropology in the ancient inhabitants of the Canary Islands. What led you to focus your research on teeth?

-Initially I wanted to do my thesis on human evolution, but my supervisor, Pilar Julia Pérez, told me that was impossible because in Spain there was not enough material to do that sort of work. She opened up a cabinet in her office, and what I saw inside was a veritable ossuary of mediaeval bones. It didn't strike me as being as nice as I had thought, but I spent a year taking anthropometric measurements of a mediaeval community in Sepúlveda. She then proposed that I should study the teeth of the Canary Islands aboriginals. I liked the idea, and I have been enthusiastic about the issue ever since.

-What can we learn from studying teeth?

-Although people have almost always worked with skulls and jawbones, which are more spectacular, our teeth an incredibly important anatomical feature in taxonomy. They have a considerable genetic influence, they can tell us about a person's age at death, their diet, their sex and their growth pattern. Teeth grow irregularly- they are like trees. If we know these growth patterns, we can define the hominid's maturing time. That is how we have come to know that the maturing time of the first hominids was similar to gorillas and chimpanzees.

-When did you meet Emiliano Aguirre?

-Juan Luis Arsuaga and I shared the same thesis supervisor, and she introduced us to Emiliano in the faculty café. I will never forget the scene: Pilar Julia mentioned to him what we were doing, he turned around and we thought he hadn't even seen us. But that was not the case. Emiliano never forgets anything, and a few months later he called us to his office and asked if we wanted to take part in the Atapuerca project, studying the teeth that Trino Torres had discovered in the Bones Pit in 1976.

-What was your first impression of the Atapuerca Hills when you arrived?

-That was in 1983, before the digging season, when I accompanied Emiliano to pay the debts from the year before. When I saw the range that was so small, so low, so... I was surprised, because I imagined an extraordinarily striking chain of mountains 1,500 or 2,000 metres high, and when I realised it was just a hill, I was disappointed at first.

-What can you remember from your first dig?

-That is like your childhood recollections- it is unforgettable. They were 10 truly memorable days. I enjoyed myself and learnt more than you could imagine. My first discovery was actually a practical joke they played on me in the Gallery. Eudald taught me how they dug, and I soon found a stone that went into the bucket. Eudald and Carlos Díez immediately pounced on me, asking "What are you doing, what are you doing, what's that?" "Well, I don't know, a stone", I replied. "But don't you realise it's a hammer?" They had quickly realised that my knowledge about archaeology was minimal, and they gave me a much more appropriate tool. It was a pneumatic drill, and I spent the rest of the digging season using it to remove sterile sentiment. Great fun!

-What has been your most important day?

-There is no doubt it was July 8, 1994, the day the Homo antecessor remains began to appear. It was extraordinary, awesome. We had been working extremely hard on Gran Dolina since 1990. Those remains where the reward for many years of work, digging up sterile sediment.

-What was it like to discover a new species in a country with a clear inferiority complex about science?

-That was the most difficult part. In a country like Spain, that has very little science, trying to make yourself known in the outside world requires an even greater effort than the discovery of the bones, and I say that with all the emotional implications that it implies. Being able to publish a new species like Homo antecessor in a high-impact journal required an incredible effort, because we ran into the brick wall of the official scientific world, primarily English-speaking, which controlled and still controls everything that is done in the scientific community.

-What are the origins and the features of the species?

-It has a contrast between extremely primitive teeth and a very human face. It is still the oldest modern human face known to date. An explosive combination. Its origins have to be sought in Eurasia. The hominids from Dmanisi (Georgia) (1.8 M BP) possibly evolved into both Homo erectus (Java, Indonesia) and Homo antecessor. If human remains appeared at the lowest levels of Sima del Elefante (1.2 m BP), we could be talking about a pre-antecessor, with quite similar forms to the Dmanisi bones.

-Is the CENIEH a new way of managing science?

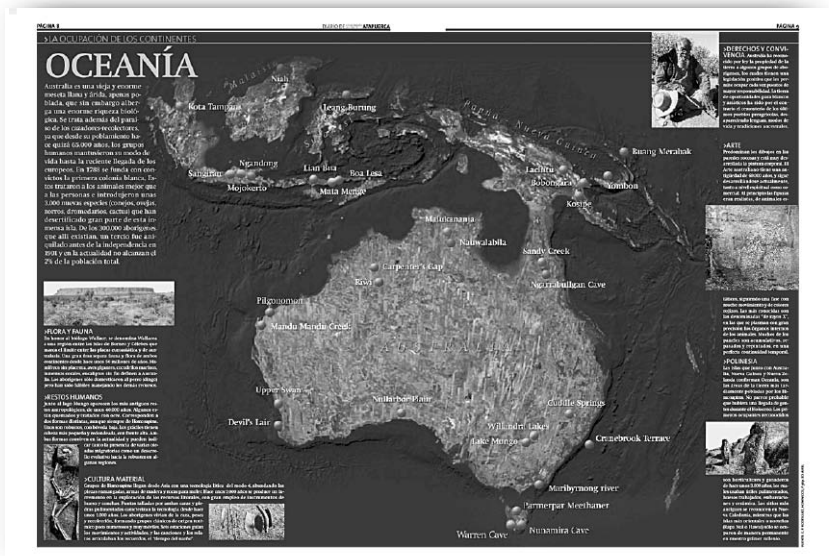
-It is a model that is appropriate to the 21st century. Unlike the classic functionary mentality, it will conduct ongoing assessments of its scientists to make sure that the CENIEH remains at the forefront on the world stage.

-What is its relationship with the Catalonian Institute of Human Palaeoecology (Iphes) and the Centre for Evolution and Human Behaviour, headed by Carbonell and Arsuaga?

-Our idea is that all three centres should be part of a single institution but at the same time be managed independently, which would enable them to undertake common projects such as, for example, the publication of a Spanish journal that could compete on the international stage in the field of human evolution.

-Which evolutionary enigma or mystery would you like to unravel?

-I would like to resolve the Gordian knot, the core problem, the perfect origin of the common ancestor between Homo sapiens and the Neanderthals. We have suggested that it is Homo antecessor, but where are its origins? I think they are in the Middle East. Human evolution did not happen in the outer limits like the Iberian Peninsula or Flores Island (Indonesia), but in places where there were more genetic variations and more chances for speciation to happen, like the Middle East, which is at the crossroads between three continents, Africa, Europe and Asia. The problem? It is extremely hard to dig in countries like Iraq, Iran, Syria and Israel. They are fraught with so many political problems that the idea of working there is almost a utopian dream. I am convinced that many of humanity's mysteries concerning human evolution are going to be resolved there.



>Aggression and Violent Behavior, 2007

EXAMINING THE EVIDENCE FROM SMALL-SCALE SOCIETIES AND EARLY PREHISTORY AND IMPLICATIONS FOR MODERN THEORIES OF AGGRESSION AND VIOLENCE

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> (...) Many Middle Pleistocene hominid skeletons from Africa, Asia, and Europe show evidence of skeletal trauma, particularly cranial trauma, caused by interpersonal violence (Klein, 1999).

(...) We suggest that the high frequency of head trauma seen in Neanderthals was the result of interpersonal violence. While there are far fewer skeletons complete enough to allow assessment of injury by anatomical part, other early Homo sapiens populations in Africa and the Near East also show elevated rates of head trauma, suggesting that this pattern is not unique to Neanderthals (Klein, 1999).

It is also interesting to point out that five of the Neanderthal skeletons showing cranial/neck trauma where sex could be established were male, and only one was female. While this sample is quite small, this supports the idea of increased levels of male/male violence seen among modern human populations. In addition to the frequencies of skeletal lesion by anatomical part, there are two cases of injuries that strongly suggest attack with weapons.

Many physical anthropologists have seen signs of cannibalism early in the hominid fossil record. For example, Weidenreich (1943) saw the patterns of skull breakage among Asian Homo erectus as clear evidence for the removal and consumption of hominid brains by other hominids.

Other putative cases of early hominid cannibalism are more compelling. For example, there are cutmarks on the various hominid skeletal remains from Sterkfontain, South Africa, Atapuerca, Spain, Bodo, Ethiopia, Klasies River Mouth, South Africa, Moula-Guercy, France, and other more poorly documented sites too numerous to list here. It is interesting that essentially every large deposit of early hominid remains from the Lower and Middle Pleistocene show some signs of butchery by hominids. It is important to recognize that the inference of cannibalism from these remains is often difficult, as other carnivores and natural forces can create damage on bones that resembles that caused by butchery. It is also the case that cannibalism does not necessarily imply violence or murder.

While the evidence examined here is highly fragmentary, it appears that some aspects of interpersonal violence among our early hominid ancestors were comparable to modern cases.