

>NEWS FROM ATAPUERCA IN ENGLISH



A selection of highlights from the previous issue

> 29 ATAPUERCA EXCAVATION SEASON

Forty June graduates and PhDs and 100 others, largely Spanish and foreign students, worked throughout July at the sites to ensure that new archaeological records of the human populations that inhabited these hills for over a million years would be unearthed in an optimum state as part of our effort to unravel the evolutionary patterns of the local environment, its people and the rest of the living beings here.

> In **GRAN DOLINA** we worked on the level containing Homo antecessor remains as well as the strata containing the first Middle Palaeolithic tools.

> In the **ELEPHANT PIT**, additional information was sought about the arrival of the first humans to these hills by digging at the lowest part of the site, beneath the current floor of the railway cutting.

> In **COVACHA DE LOS ZARPAZOS** (Bear Claw Cavity) we worked to conclude Unit III, the deposit containing Homo heidelbergensis bones with very little transit of humans through the cavity.

> In **PORTALÓN de Cueva Mayor** (Main Cave Porch) we continued to study the Neolithic and Bronze Age strata after cleaning out the mine shaft and documenting the potential archaeological wealth of the area beneath it where Upper Pleistocene evidence has been detected.

> As expected, **SIMA DE LOS HUESOS** (Bones Pit) has continued to yield more and better H. heidelbergensis remains, with sporadic evidence of carnivores such as wolves and bears. There is still no further sign of tools since a biface was unearthed in 1998.

> This will probably be the last vertical dig in **EL MIRADOR**. We have descended more than 10 metres and it seems wise to conclude the extraction of sediment from the late Upper Pleistocene levels and begin to plan horizontal excavation on the levels of the rich Neolithic and Bronze Age occupations documented previously.

> The only open air excavation conducted this year was at **HOTEL CALIFORNIA**, begun in 2006. Along with the nearby Hundidero site, it is yielding the first abundant record, with stratigraphic stone items from the Lower and Middle Palaeolithic.

> Washing and sieving work continued in the Arlanzón River, including anthracological (carbon) and palynological (pollen) analyses, stratigraphic and geological studies, and also new sampling aimed at dating the quaternary sites and deposits in the Atapuerca Hills.

RECONSTRUCTING HISTORY

> DIEGO E. ANGELUCCI

Geoarchaeologist. ERG Member. Portuguese Institute of Archaeology, Trent University

> In my student days, I used to chat with my grandmother Alceste about my work on climate, environment and landscape. Her usual comment was, "The climate isn't it used to be - it's all been turned upside down". Of course my grandmother was right. The climate is a complex system that undergoes natural changes which are reflected in the environment and the landscape, as well as in living beings. We now know that we humans also act in a way that triggers changes, not only in our own territory but also in the climatic parameters, and all of this has been happening since prehistoric times.

> As scientists, we can reconstruct the climate and the environment of the past through the study of indicators that have been preserved in layers that have built up on the surface of the earth. Some of these indicators are obvious at a first glance in the field, through the colour of sediments or the shape of particles, for example. The detection of others requires more or less specific analyses. The detailed study of stratifications in the field, in the lab and with the help of dating techniques provides information that we can use to define the characteristics of the climate at the time of our ancestors, understand how it has changed over time and even assess its potential future changes.

> Incidentally, the strata that can be seen in any road cutting or archaeolo-

gical dig provide further important information when seen through the eyes of a geologist.

> The examination of sediments yields information about the agent and the processes and have built up the material and the appearance and features of the basin where they have been deposited. We all know, for example, that well-rounded and more or less regular-sized stones are found in riverbeds, while angular stones with different dimensions appear at the base of rock walls.

> It is also important to understand how the deposits have changed since they built up, after their exposure to weathering agents. The analysis of soil profiles provides information about disturbance processes, the type of vegetation and, once again, climate and the environment. For example, look at the way the weathering processes have led to the development of red colours in sediments, as we can see in many parts of the railway cutting through the Sierra de Atapuerca. This colour may be an initial indicator of the age and the intense disturbance of the deposit.

> All of this information is useful for the reconstruction of our planet's history, and it is even more relevant when assessed from the perspective of a geo-archaeologist - a specialist who applies his or her knowledge of earth sciences to the field of archaeology.

> From the outset, hominids had a close relationship with their environment, adapting to it or changing it. So, the processes of sediment accumulation and landscape transformation not only have a natural origin but are also triggered - directly or indirectly - by human activity. Archaeological sites are the points where the traces of human "geological" activity are best pre-

an open book about the geological history of the earth and the types of interaction between hominids and the environment (now called human impact), which we can decipher using geoarchaeological interpretation.

JUAN LUIS ARSUAGA FERRERAS

Atapuerca. odirector since 1991 "PEOPLE THINK CULTURE IS A DECORATION, BUT IT IS THE MAIN ECONOMIC INDUSTRY"

Juan Luis Arsuaga Ferreras (Madrid, 1954), Professor, Palaeontology De-



partment, Geology Faculty, Complutense University, Atapuerca Project co-director. Currently Director of the UCM-ISCI Joint Centre for Research into Human Evolution and Behaviour. Author of hundreds of articles in the world's leading scientific journals as well as many essays including El collar del Neandertal (The Neandertal's Necklace), El Enigma de la Esfinge (The Enigma of the Sphinx) and La Especie Elegida (The Chosen Species), with 24 reprints. In 1997 he was awarded, along with the rest of the ERG members, the Prince of Asturias Prize for

to study biology?

-I always wanted to study the place of the human being in nature. The natural world has been regarded as the virgin world in which man has played no part. I have a different viewpoint. I cannot conceive of nature without people; I am interested in studying the relationship between us and that natural world. The perspective provided by age has shown me that I had some excellent university lecturers who now have legendary status: Francisco Bernis, Bermudo Meléndez,

Lucy (Kenya, 3.5 m. a.), with part of her hip still preserved. That allowed us to start working on important aspects such as biped locomotion, childbirth, body size and sexual dimorphism. Nowadays, a good pelvis can "fetch" more than a skull.

-When did you hear the word Atapuerca for the first time?

-In 1976, when the first human remains were discovered, I already had a direct relationship with Emiliano Aguirre. In fact, the jawbone that Trino Torres discovered was in my office for almost a year. I looked at it and tried to understand it, but Emiliano was studying it with Lumley. Later on I dared to ask Emiliano to let me study human remains.

-What do you remember of your first digging seasons?

-I started in Galeria, they set me in a grid... and like everybody else, I thoroughly enjoyed it. We were young, and we behaved as such. We had a lot of energy for everything, for laughing, for enjoying ourselves, for fooling about... and for working long hours. I get tired just thinking about it! Later on I began to work in Sima de los Huesos (Bones Pit), which is a different world, a different environment, a place that has been frozen in time.

-Did you expect to come up with your great discoveries?

-At first, Sima was not particularly productive. We scarcely found any human fragments, and the site didn't seem to be any great shakes. We were confident all the same, and the rewards came in 1992 when we reached the level of the 30 pre-Neanderthals. Just before that year's dig, we organised a congress in Mota Castle where we excitedly brought together the world's leading experts to show them our initial discoveries: several teeth, skull fragments and the odd tool. I think they looked at us in a way that seemed

expand the Homo antecessor record - it's just a matter of time, and in the Elephant Pit, older remains. I don't share other people's obsession with the Neanderthals. It would be good to have the species that is still missing, but for all purposes, Valdegoba cave is quite sufficient and it's nearby. If I could make a choice, a bit of Paleolithic art wouldn't be bad.

-What was the most important point in the path of human evolution?

-The appearance of Homo sapiens. We were a great novelty in evolution, a new, revolutionary design in both cognitive and anatomical aspects.

-Which site has astonished you most?

-I had the privilege to see Little Foot (Sterkfontein, South Africa 4 m BP) for myself in its cave. A complete Australopithecus skeleton, from head to foot. There is not one phalanx missing. When they finally bring it out it will be The fossil, par excellence. The icon. Last spring you were digging in Conde Cave in Asturias.

-It was like going back to our beginnings. Atapuerca is so huge that you start hankering for a small dig with your friends. We prospected a whole valley, and we located two more sites with cave paintings. Meanwhile, we are using Conde Cave to study the transition from Neanderthals to Cro-Magnons.

-When did symbolic behaviour begin?

-More or less half a million years ago is when a fully conscious mind appeared, for many reasons: a great encephalization, phonetic capacity and the start of our control of fire.

-Which is the common ancestor between us and the Neanderthals?

-The best candidate at the moment, on the basis of the information we know, is Homo antecessor. What goes before that is much more primitive, and what comes afterwards is quite different. -Is science affected by political interests?

-Of course it is. Research plans respond to those interests, more than they should. I am a utilitarian in the sense that I think science should be placed at the service of society. We are not paid for me to entertain myself - that would be immoral. I think we are involved in applied science. There is a whole economy geared around our work. Our research is contributing to the growth of the entertainment and culture sector. When I talk to politicians, I insist that the leading sector of the world economy is the leisure industry. I tell them I want to speak to the Minister of Industry, not Culture, because what I do is an industry: 10 million (Pesetas) to dig a site is a lot of money for Culture but it is nothing for Industry, and what we are doing, value-adding to our resources, is generating wealth. But no matter how often I repeat it, I think we will have to wait for a new generation to come along because the current one will never be able to understand that. The majority of the politicians and ordinary people believe that this culture thing is an adornment, a refined, educated thing for people with good taste, which brings you prestige, but they don't realise that our future is at stake.

-What future?

-In Spain we have missed out on all the economic revolutions: the industrial revolution, the information revolution, the biotechnological revolution... we have missed every train imaginable. We have to keep the culture industry at least. Nobody thinks that Burgos Cathedral is the city's main factory. But the Museum of Human Evolution is going to be another factory - another important economic resource. Our heritage is our source of wealth - that is what our economy has to be based on. We have nothing else. It's no joke.

-Are we really in a process of climate change?

-On a geological scale, the current global warming is insignificant if we compare it with 5 million years ago, when Spain was like Africa. However, it is a critical problem for the human species because it is going to affect millions of people who live beside the sea. A 3 metre rise in ocean levels, which is nothing in geology, will mean the forced migration of hundreds of millions of people. That will trigger a massive crisis. It may not be terribly important for the planet, but it will be important for our children.

A wish: for the motorway not to affect the Sierra

"I hope and wish that the future Logroño Motorway will not pass through the Sierra de Atapuerca or its immediate surroundings. It should go further north, beyond Montes de Oca, to connect up with the A-1 freeway at Brújula Pass or further on. That is my hope, which I think is good, reasonable, worthwhile and satisfactory."

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EVIDENCE OF EARLIEST HUMAN OCCURRENCE IN EUROPE: THE SITE OF PIRRO NORD (SOUTHERN ITALY)

MARTA ARZARELLO & FEDERICA MARCOLINI & GIULIO PAVIA & MARCO PAVIA & CARMELO PETRONIO & MAURO PETRUCCI & LORENZO ROOK & RAFFAELE SARDELLA

> (...) The Pirro Nord vertebrate assemblage comprises 20 species of amphibians and reptiles (Delfino and Bailon 2000), 47 species of birds (Bedetti 2003), and over 40 mammal species (Abbazzi et al. 1996; Rook et al. 2004; Rook and Sardella 2005). The latter assemblage is characterized by the occurrence of many carnivore remains, (...). The hitherto oldest European occurrence of lithic artifacts, coassociated with vertebrate remains, have been found in Spain, at the sites of Barranco Leon-5, and Fuente Nueva-3 (Andalucía), and at Atapuerca/Trinchera Elefante (Castilla-León) (Oms et al. 2000b; Martínez-Navarro et al. 2004; Palmqvist et al. 2005; Pares et al. 2006). All the aforementioned localities are referred to the European Early Pleistocene. (...) The lithic material of Pirro Nord, un-

til now, comprising only three cores and six flakes, is insufficient for a complete techno-economic analysis, whereas it does constitute crucial documentation of hominid lithic production in Europe during an archaic phase of the Early Pleistocene (...). Despite the small quantity of human lithic material recovered thus far, the Pirro Nord lithic industry compares closely with that of Dmanisi, Georgia (Dzaparidze et al. 1989; Vekua 1995; Gabunia et al. 2000; De Lumley et al. 2005), as well as to their younger counterparts from Fuente Nueva-3 and Barranco León-5 (Oms et al. 2000b; Palmqvist et al. 2005), and from Atapuerca Trinchera Elefante (Parés et al. 2006). Hence, it is possible to envision a more ample geographic context, within which lithic industries cha-

racterized by relatively brief reduction sequences, that finalize the attainment of flake products from one or more striking platforms employing a generally centripetal or orthogonal method, accompanied ancient European hominin occupation. In a broader context, the Pirro Nord site confirms that it was within the first half of the Early Pleistocene that the genus Homo, with Mode 1 technology (Leakey 1975; Roche 1989; Texier 1995), first extended its range out of Africa into Europe (and western Asia). The Pirro Nord lithic artifact sample represents a recognized technocomplex, perfectly coherent with that of the hitherto known early human spread into Europe, but in this study documenting its first appearance to a time span older than 1.3 Ma.

served, and where we can study the interactions between hominids and the environment. The detailed analysis of the layers on a site can reveal how hominids stockpiled the material they carried or manufactured at the site, how they changed it (through the use of fire for example), the type of materials they added to the floor and their activities there. In some cases, intense human activity "creates" sediments that have no comparison in natural settings. One example is the El Mirador site in Atapuerca, where part of the stratification has built up from the fires of Neolithic and Bronze Age shepherds, while natural input is almost non-existent.

> Landscape, sediments and strata are

Scientific and Technical Research and the Castilla y León Social Sciences and Humanities Prize. He has recently been inducted into the Spanish Royal Academy of Doctors.

-What can you remember about your first contact with palaeontology?

-As a child I was fascinated by the ancient world, the origins - I felt attracted by nature and in fact I still watch documentaries and we have even made a few ourselves. Palaeontology is a discipline which, if well done, links the past to the present. Unlike those who think that it is the science of the past, I say it is the science of continuity, which allows us to understand the present.

-Was that fascination what led you

to say, "These guys are so tenacious!" The Congress ended, and a week later we discovered three almost complete skulls and a jawbone in a grid measuring barely a square metre. Discovering human remains is amazing - it always used to happen to other people who appeared in National Geographic. Now our skull is the greatest bone icon and it features on the cover of the biggest selling book about human evolution.

-What would you like to discover during this season?

-In the Sima (Bones Pit), we could do with another pelvis. We already have the most complete one in the world, so with two... a woman's, for example. In Dolina it would be wonderful to