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Cova Foradà (Oliva. Valencia)

1. Introduction

Cova Foradà is located in the west part of a low hill that, together with others, forms part of the set called Muntanyetes de Oliva, the last foothills of Serra de Mustalla over the coastal floodplain of the Gulf of Valencia, in the town of Oliva, Valencia. The setting where it lies is called Racó de Gisbert.

This opened in the limestone rock of the karstic system of Serra de Mustalla, offering two openings: the western one is the entrance, and the eastern one was opened after the beginnings of the Holocene when the vault broke in the deeper part of the cavity. The name refers to this structural particularity, meaning *holey cave*.

At the time of its discovery as an archaeological site in the early1970s, the cave appeared to be a small cavity, rather like a shelter, about 6m deep and 7m wide. The reason was an inner weathering of the limestone rock which produced the subsidence of the back vault that we pointed out, and also the subsidence of the front, or entrance, vault in a length of about 25m and a width of around 20m. The back blocks remained unchanged due to handling and extraction difficulties, while the blocks of the western vault had been rolled to the bottom of the ravine in order to take advantage of the rock for lime processing in a furnace, installed for this purpose, which still maintains its infrastructure *in situ*.

The importance of C*ova Foradà* de Oliva as an archaeological site was proved after the findings during 39 years of research and studies.

First of all, a powerful and thick stratigraphic sequence must be pointed out (Fig. 1) which,

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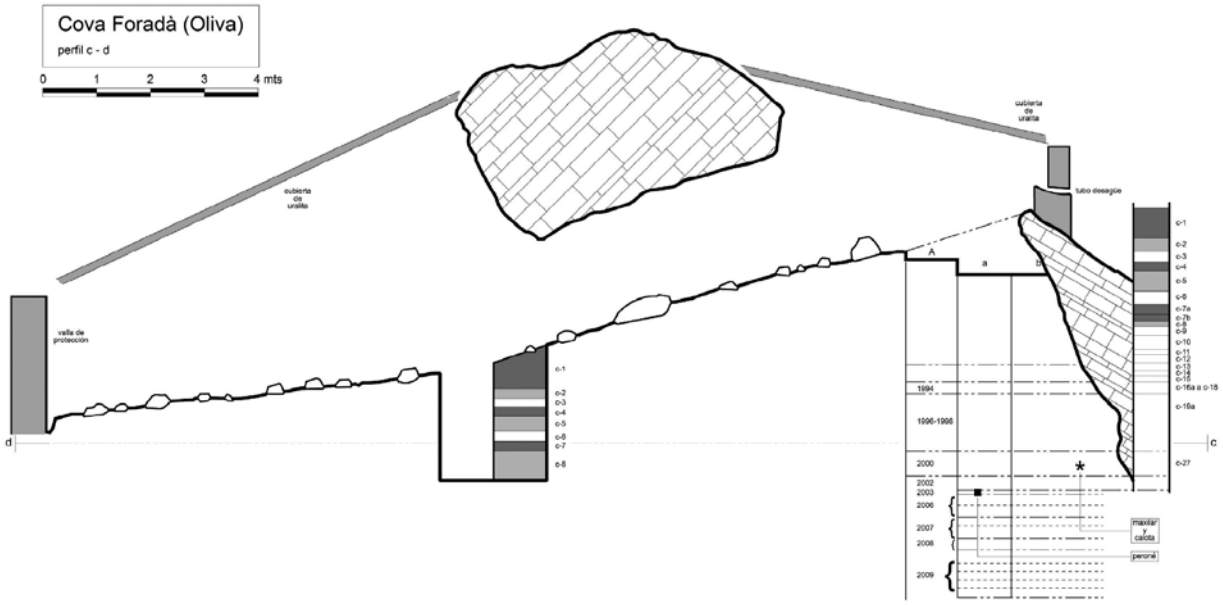

Figura 1. Section with the stratigraphy.

apart from minor remains on the surface, offers a continuity to life that start in the first levels of the Mesolithic, take roots in the Paleolithic, and whose density and capacity could lead to the extent of the Medium Paleolithic despite the lack of clear dating. Even so, there is a possibility of finding former occupations of the cavity by going deeper, without reaching the bedrock or the sterile riverbed.

Between the Mesolithic and the Mousterian we find, without a solution of continuity, the whole sequence known as Upper Paleolithic, Magdalenian, Solutrean and Gravittean-Aurignacian, not having the thickness of Parpalló but with a large quantity of discoveries, taking into account the small surface in which the activity took place.

From early Leptonian, Mousterian starts with many lithic and faunal discoveries, just like in former levels, differentiating from Parpalló by the presence of the Medium Paleolithic which is non-existent in the cavity of Gandía. The difference with *Cova Negra* de Xàtiva is also significant because of the lack of Upper Paleolithic levels.

The singularity of the Medium Paleolithic levels is determined by the anthropological discoveries corresponding, at least for the moment, to three individuals among whom one, the CF10, matches with a Neanderthal specimen with a whole skull, a large part or the complete rib cage, vertebrae and ribs, maybe many of the upper limbs and some yet to be identified from the lower limbs.

At this point, we have decided to intensify the investigation of the whole archaeological site, an essential requirement, adding to the anthropological studies already done and those which are being done currently, such as faunal, edaphic, lithic, palynological, environmental, economical, etc., which are more and more necessary in order toreach a holistic vision about the site´s activity.

2. Ecosystem

The most remarkable feature of the territory's ecosystem is the bio-diversity, as it participates, at present, in four environments: the maritime, due to the proximity to the coast, although we can´t forget the fluctuations along the Pleistocene and the Holocene; the mountain, with the whole Serra de Mustalla that we pointed out; the inner aquatic, due to the presence of the river Bullens whose drains run at the foot of the hill where it is located; and the mentioned Serra, located between the municipalities of Oliva and Pego, which also feeds the Las Aguas gap, marsh, or lagoon depending on the time of the year. The ecosystem is clearly reflected in the remains of the consumed fauna which have been recorded in the archaeological activities in the cave which we will mention later.

The richness of this ecosystem explains the permanence and continuity of this cavity's habitat, frequented during the Middle Ages, the Iberian Age, the Bronze Age, and consistently from the Mesolithic to the Medium Paleolithic, despite not knowing the moment of the first occupation due to the impossibility of reaching the bottom of the cavity.

3. Archaeological Activities

The explorations made in 1975 brought together a batch of lithic material found by an amateur archaeology group which delivered it to us for examination. We observed that, for the most part, the material belonged to the Medium Paleolithic or Mousterian.

In 1977 we made the first dig campaign, digs which are still being performed. In 2013 we carried out the XXX campaign.

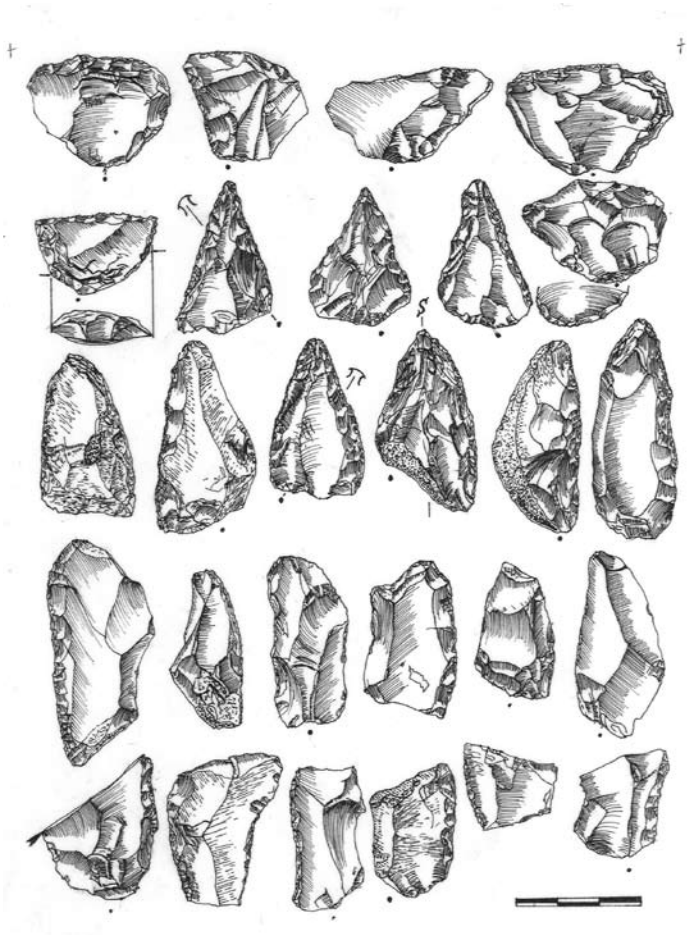

Figure 2. Lithic tools from the Mousterian level.

However, the first years were discouraging. The first campaign confirmed the existence of Mousterian levels, powerful and rich, both in industry and fauna, but a certain number of signs made us suspect of the contamination on the mentioned levels in the western part –charts E and D, 8 and 9 respectively of those first activities–, confirming the first dating with C14, done at the CSIC, showing the existence of Magdalenian levels. Digging in the range of charts K, J, I, H, G, F, E and D, 7, 8, 9, also in the west part, as well as the removal of levels, very deep into this part when digging charts I11, I12 and I13, fully confirmed this fact. Such an intense removal could be ascribed to treasures hunts in the Middle Ages, an activity that awakened an interest in this whole area and which we thought corresponded to the site´s entire surface.

Given these circumstances and as a last option, we considered that if the large existent blocks in the east part, irremovable for their dimensions, corresponded to the wrecked vault, they would seal and correctly preserve the sedimentation and its archaeological content in the deeper part of the cavity. This comes from the Bronze Age as, among the blocks, the existence of burials was detected, confirming the dig and the dating with C14 of the CSIC.

The digging of charts A 12-13 and 14; a 12-13, 14, 15 and 16; b 12, 13, 14 and 16 and c 12, 13, 14 and 15 confirmed our hypothesis, and behind a thick humus layer of 50cm, among the blocks and under their layers with the burials´ remains, fruitful archaeological levels arose, both in thickness and in content, exceeding all our hopes.

The digging´s continuity as we have pointed out, has allowed us, through the thirty campaigns done since 1988, to configure a powerful and rich stratigraphy (Fig. 1) from the Mesolithic to the Lower Mousterian, established as follows: Mesolithic I with the line coast within the economical limits and the subsistence area –Mesolithic I with the line coast pushed away and outside the limits –Magdalenian with plenty of significant bone industry –Solutrean with Parpallean cutout points –Medium Solutrean –proto-Solutrean –Aurignacian –Gravettian and Mousterian (Fig. 2).

Currently, the survey is in full Mousterian, with plenty of material and extraordinary fauna but without signs of the proximity of the cavity´s base, thus the necessity to follow up with a sur-

vey to reach the bottom area, the initial settlement, and in such a way finish the survey, starting later with digging in extension from this area, is necessary.

The discovery of human remains in the Mousterian level increased the interest and the richness of the content, reinforcing the protection fence with a cover over the unprotected sedimentation by the vault.

4. Human Remains

In the year 2000, during the XX digging campaign, we foundin layer 28 and chart C14/C15, a piece of human jawbone and a piece of skull, both studied by D. Campillo; M.E. Subirà; E. Chimenos; A. Pérez and S. Vila (see Cypsela, nº 14, pages 143-148, Barcelona, 2002), whose conclusions were the following: "The pieces definitely match two individuals, an adult and a child".

The neurocranium fragments are not-excessively swelled, and there is a small fragment corresponding to a very developed *torus frontalis* due to its morphology and thickness.

The preserved fragment of the jawbone, although is damaged, affirming that both the alveolar process and the nostril are quite broad, as well as its vestibule. The teeth are bulky and show in the x-ray the existence of a moderate taurodontism. All the arguments expressed are consistent with a Neanderthal diagnosis, probably a female.

In the digging campaign in 2010, it was decided to continue with the digging of charts C-14 and C-15 where in the year 2000 some remains of a jawbone and skull fragments of a Neanderthal were removed. This is why the digging team joined forces with the anthropologists M. Eulàlia Subirà and Jordi Ruiz, both belonging to the Unitatd'Antropologia Biològica of the Universitat Autònoma de Barcelona (UAB), and who in the last years have conducted the study of human remains of the cave in coordination with Gala Gómez Merino and Carlos Lorenzo from the Institut de Paleoecologia Humana I Evolució Social (IPHES), Tarragona.

On 9 August, the remains of quite a complete skull of a Neanderthal were discovered. In the following days, the chances of discovery of the upper part of a Neanderthal skeleton that included the skull to the first sacral vertebrae rose.

The discovery is important because the skeleton was very complete and the bone joints were in close anatomic connection, that is to say with connections among the bones similar to those while alive, with no displacements at all. In most Neanderthal discoveries in caves, the remains are limited, fragmentary, and scattered, with signs of having been moved and eaten by predators. The different digging campaigns in the cave have proved the presence of hyenas which alternated with the Neanderthals in the use of the cavity.

The digging was really slow at every moment because the bones were immersed in calcareous formations. This is why it was decided to extract the whole cemented block, including the immersed remains, for later digging in a laboratory.

The fossils' condition is very delicate. They are quite fragile and are cemented into a block of a very carbonated sediment. This is why, before being dug in the laboratory, they were submitted to a computerized axial tomography (CAT) and other image treatments in order to know the preservation condition of the bone remains, facilitating in this way the block´s digging in the laboratory. To extract and clean the remains from the block, mechanical equipment under binocular loupe was used. The treatments started, and are still continuing, in the Restoration Laboratory of the IPHES in Tarragona headed by Gala Gómez Merino, which has the necessary facilities for dealing with this type of bone material,. Furthermore, corresponding samples for later studies were taken.

Once the bones are unlocked, the anthropological study, headed by Dr. M. Subirá of the UAB in coordination with the IPHES members, will take place.

Together with the study of human remains, complete paleontological, sedimentological, antracological and palynological studies will also be handled, and the existent dating number will be expended by the C14 or by using other means which the C14 cannot reach. Dr. Eudald Carbonell has promised his complete collaboration from the IPHES and his management.

5. C14 Dating

We now offer the dating set obtained throughout these years from the different remains subjected to the corresponding analysis.

Cova Forada (Oliva)		
C-575	9.645 ± 327	12.081-10.000
	7.695 ± 327	10.101-8.050
Cova Forada (Oliva)		
C-277	12.500 ± 800	16.855-12.871
Layer 7. Son. I	10.550 ± 800	14.905-10.921
Cova Forada (Oliva)		
C-276 ó C-126	11.500 ± 1.000	16.127-10.787
Layer 4. Son. I	9.550 ± 100	14.177-8.837
CSIC-1492	6.196 ± 34 BP	
Charcoal		5.279-5.046 BC
Layer 2, part E o back part.		
CSIC-1493	5.633 ± 31 BP	
Charcoal		4.533-4.363 BC
Layer 1, superficial Part E o back part.	16.960 ± 100 BP	
UBAR-935 / CNA 089		
Fauna bones	16.960 ± 100 BP 18.133	18.355-18.255
Marjal de Pego (essential on the ecosystem next to the cavity)	[14 Samples UBAR]	
	From 1.660 ± 50 to 10.120 ± 460 = 13 samples	
UBAR-45	28.240 = 1 sample	

6. General Conclussions

As formerly explained, C*ova Foradà* de Oliva constitutes one of the most complete archaeological sites and therefore, one of the most important to the study of Prehistory on a national level. In our autonomous region, it is possible that the site might be one with the largest stratigraphy comparable to the total of the strata of C*ova Negra* (Xàtiva) and C*ova del Parpalló*, (Gandia). It is one of those places which seems to acquire a larger extent after each archaeological exploration campaign –taking place regularly since 1977–. This particular site, so named because of becoming a crossing cavern after its vault´s partial detachment, quintessentially embodies the prototype of a Prehistoric site.

C*ova Foradà* is one of those places which will always provide news. Among its countless virtues, it has a stratigraphic richness that makes the cave exclusive, and this is something just a few sites can maintain. Although early Medium Paleolithic strata have been reached in the last campaigns, the fact that the basal rock has still not been achieved is an opportunity that may bring many surprises.

Among the exhumed remains, prolific and abundant lithic tooling points out consistent morphologicality with the different periods represented by the stratigraphy. It also appears that a large quantity of fauna remains: some heavy mammals, but above all little rodents, among which the rabbit stands out due to its abundance. Coprolites, and other vestiges related to the periods of animal occupation combined with human groups, have also appeared.

However, this cavity is famous for the discovery of Neanderthal remains, among which the half-fossilized body of an individual is a highlight, and up to now represents one of the most important discoveries added to other remains formerly found in our Peninsula.

The vestiges of this specimen appeared in 2010, in a small niche emerging naturally from the east wall at the bottom part of the cave, about 7m deep from the reference point –0–. They were immediately set, the whole skull, part of the face, some

vertebrae and part of the rib cage. All these bone vestiges were almost petrified by the action of the carbonate exchanging and the incipient mineralization inherent to such ancient remains. They were part of a concrete block in which mineral and bone parts were a whole.

As it was the only way to recover the set without damaging it, the entire dug block had to be extracted by removing part of the cavity´s stone support. In order to be transported and studied in a place with the necessary means for the objective, a box-nest was prepared to make movement and handling easier.

Thus, the petrified remains of the Neanderthal body were moved to the IPHES laboratory, in Tarragona, where the restoration team could start a micro-digging, which still continues today, to separate the human parts from the mineralized matrix.

Formerly, in the year 2000, a fragment of an upper jawbone had appeared, being attributed to a Neanderthal individual by the anthropologist team headed by Dr. Eulalia Subirà.

The different studies done on this bone piece gave very significant data of anthropologic and pathological nature which provided new proofs about the traditions of these societies. The use of sticks to palliate the pain produced by different processes of gingivitis was recorded and the results were published in a prestigious scientific magazine.

Throughout the years, there have been many studies covering a complete investigation of the archaeological site´s sequences. Samples of the different grounds were taken, the slopes deposition sequences were delimited, C14 dating was done, samples for palynological studies were kept, remains of presumably extinct animals were collected, vestiges of remote human activity were recorded and, in short, connections between all these discoveries were sought.

During 2011 and 2012, some ashes and coal from two fireplaces with an estimated dating close to 100,000 years was recovered, and recently in 2013, a limestone piece was identified as a probable bear head with traces of parallel incisions resulting from a human-induced action, this will give rise to future studies as the piece is considered to be related to some ritual or symbolic activity.