

El Mirón Cave, Cantabrian Spain: The Site and Its Holocene Archaeological Record

Lawrence Guy Straus and Manuel R. González Morales (eds.)

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El Mirón is a Cantabrian site of major importance, with a long chronological sequence. It has been object of investigations since early on. This book discusses findings made in the more recent project—directed by Lawrence Straus and Manuel González Morales—in the Holocene levels.

The book starts with a comprehensive list of past and current collaborators and a framing of the funding that allowed the El Mirón Cave project. It then gives a backstory of all the history and even legends about the cave and its monumentality that made Charles V stand up in awe, staring (mirón) at the imposing mountains before him, namely the El Moro mountains, filled with caves, including El Mirón. The known history of the cave is then detailed with a summary of its varied uses throughout ca. 40,000 years, including the first archaeological interventions—when the real archaeological potential of the cave began to be discovered in the 1950s—although the authorship of these interventions is not completely clear. In the 1970s, Lawrence Straus, attracted by the mention of Solutrean artifacts, visited the cave, confirming the presence of archaeological remains but, at that time, he did not initiate any further investigations. In meanwhile, Manuel González Morales, excavating in sites nearby, also became interested in the potential of the area. The two would become the current archaeological excavation directors.

As opposed to the previous approach to these sites, which entailed excavating large areas (or the totality) of these big caves and rock shelters, and certainly limited by not only theoretical issues but also ethical and financial constraints, the more recent tendency adopts a different approach, sometimes re-excavating sites previously tested, but with spatially limited excavations with the goal of radiometrically dating them, collecting samples for analysis, and generating less biased assemblages through use of sieving or floatation and piece-plotting of the materials. Also, new, untouched cave (or other) sites with long sequences are not easy to find, as the authors mention. That being said, the new archaeological work at El Mirón aimed to excavate (the cave vestibule) and re-excavate the site with a total recovery of materials and recording of detailed stratigraphy.

The goal was to obtain a set of data that would allow comparison with the known Upper and Middle Paleolithic record for the area that came, mostly, from excavations

that are a century old. The authors (Straus and González Morales) started with the assumption that the site, because of its characteristics, should have been an important Upper Paleolithic residential site. In fact, it was only during the excavations that the site revealed its true potential. The first example was an intact Bronze Age layer, indicating that El Mirón not only contained an important Pleistocene sequence but also a Holocene sequence. The Holocene portion of the sequence is one of the most important in Cantabria and is the focus of this volume. Information about this period is invaluable to understanding food production in complex societies on the Atlantic fringe of the Iberian Peninsula, because some of the previous excavations of these sites discarded the more recent remains in favor of getting to the Upper Paleolithic levels.

The second example is the examination of the vertical and horizontal axes of excavation, even with some palimpsest problems, as these axes provided knowledge about not only chronological but also spatial organization. Thirdly, there were dramatic climatic changes (i.e., vegetation, etc.) that occurred at the end of the Pleistocene and the onset of the Holocene; the way that human communities dealt with them is an important subject and sometimes is not as thoroughly investigated at sites as it should be.

Chapter Two of the book deals with the Río Asón Drainage in Eastern Cantabria and the geomorphological scenario in which it occurs. The overlap of the east-west Ruesga Valley and the cordillera, and the communication paths leading down from the Viscaya and Burgos to the Asón, make the region in which El Mirón is situated a complement of the coastal zone and frontier between the Cantabrian and Basque Country and Castile. The third chapter gives a geographical framework for the cave, as well as a physical description, its recent uses, and a layout of the available conditions at the beginning of the project in 1995. Chapter Four deals with the stratigraphy of the site (1996–2007) giving a thorough description of the site's several areas (i.e., vestibule, mid-vestibule, cabin, Corral, W10, V7, 11R, and X10 sondages, Inner-Cave Trench). It also has an appendix, the stratigraphic designations, and informal descriptions of the latter.

Chapter Five discusses the sedimentology of the cave, describing methodologies for sampling and fieldwork, as well as making some stratigraphic observations, namely a summary of the stratigraphy in both table and text form

and the results of granulometry and lithology. At the end of the chapter, there is a discussion of the sources of the sediment, which describes its various origins, either sequentially or simultaneously and divides them in four major components accumulated more or less simultaneously: (a) rockfall, (b) eolian loess, (c) washing of fluvial/colluvial sediments from the cave area to the vestibule, and (d) anthropogenic input.

Radiocarbon dates are dealt with in Chapter Six. The effort toward dating the site's stratigraphy resulted in 76 radiocarbon dates from different materials (wood charcoal, wheat grain, bone, and bioapatite and collagen), with $\pm 1\delta$ deviation. The dates range from $41,280 \pm 1120$ BP (Mousterian) to the Middle Ages at 900–540 BP, with occupations ranging culturally from the Mousterian, Early Upper Paleolithic, Solutrean, Early Magdalenian, Upper Magdalenian, Final Magdalenian/Early Azilian, Azilian, Mesolithic, Chalcolithic, Early Bronze Age, and finally the Middle Ages. Preliminary data for archaeomagnetic and rock-magnetic results from the Holocene Fire Lenses, one of the most complete in Western Europe for Upper Paleolithic and the Holocene, are discussed in Chapter Seven. The fact that several burning episodes occurred in the Holocene stratigraphy of the cave made this approach especially interesting. Results have generally corroborated ^{14}C dates, but also gave important input in terms of site formation: archaeomagnetic directions obtained from Neolithic features show that they were formed in a short period of time which, albeit indicated by radiocarbon dates, also suggested formation during a short period of SV (secular variation of the earth's magnetic field). Furthermore, they allow one to ascertain if features are *in situ*. This work also was important from a methodological standpoint, as a means to establish a set of conditions that allow valid archaeomagnetic results. Although of major importance, these data are still preliminary and should (and it seems to be the authors' intention) be compared with other coeval sites and the sample from the site should be enlarged. Nevertheless, these are, as mentioned in the chapter, the oldest archaeomagnetic data obtained on burnt materials in the Iberian Peninsula.

Palynological and vegetational contexts reconstruction is discussed in Chapter Eight. A synthesis of the results suggests that arboreal taxa was the most representative taxa throughout the whole sequence. Two types of forest are present and seem to vary from mixed deciduous woods to gallery woods. The alder appears to be the most abundant taxon, a species that lives near water and on the banks of rivers or other water bodies, while the willow appears only occasionally. The onset of the Holocene and the landscape morphology (steep slopes, substrate instability, etc.) seem to have affected vegetation, as expected, with a predominance of oak near the river and its distribution higher upslope. The arboreal fraction was dominated by *Corylus*, which is common at the start of woodland expansion in the Holocene. The chapter discusses the anthropization of the landscape, with a woodland retreat during the Neolithic, and a gradual reduction of the arboreal fraction

and an increase of Gramineae suggesting agricultural activities. However there does not seem to be any evidence of farming immediately around the cave, but the authors conclude that that must be a consequence of the morphology of the surrounding terrain. Phytolith analysis, discussed in Chapter Nine, is preliminary and influenced by the scarcity of Holocene samples. Nevertheless, they seem to argue that, albeit preliminary, the results indicate the possibility of the plants being brought to the cave by humans. Future analyses are suggested as essential for a better understanding of question about agriculture and other uses of vegetal resources.

Evidence of the first farming communities is discussed in Chapter Ten using data from plant remains. Seeds and fruits from the Holocene levels are scarce although other remains result in an interesting assemblage in an area (Cantabria) that does not have an abundance of available data.

The interpretations made in this chapter are limited by the previously mentioned low number of cereal grains from the Neolithic levels. That being said, there seems to be heterogeneity in the sample with a significant variety of species represented—einkorn, emmer, and free-threshing wheats. A tentative comparison is made with other sites, especially from the Basque Country. Agrarian practices are discussed not only using the results of studies of plant remains but also using the combination of these with microwear analysis and ethnographic investigations. These sources augment the potential of the results, especially on how crops were managed. The role of fruit trees and wild plants also is discussed, showing the importance of *Quercus* and *Corylus*. Other wild species occur in very low numbers in El Mirón. The Chalcolithic levels provided a more consistent archaeobotanical sample, albeit still poor, showing a wider range of wild species and two species of cereals (emmer and free-threshing wheats). The pea, however, is a novelty, being the only record of cultivated legumes in the Cantabrian region. The higher number of remains from these sites and others in the region is suggested to be a consequence of the expansion of agricultural activities.

Wood charcoal analysis and results constitute Chapter Eleven. The importance of the results derives from the sampling made possible by a very big site with abundant floatation samples and, although the chapter's results are from two contiguous areas of the vestibule, they allow a good general picture. Biostratigraphy and climatic change is approached in Chapter Twelve through micromammalian remains. Once again, the results presented are from water-screened sediments. Results presented are from 14 Holocene levels from the cabin and outer vestibule areas. Twenty-one species of micromammals were identified and prepared for future curation from the Rodentia, Eulipotyphla and, Chiroptera orders. They were grouped together as micromammals along with some small carnivores because they were all found in the microvertebrates samples. After a thorough presentation of data with description of the species, their habitats, distribution, and taphonomic analysis, some climatic and ecologic inferences are made for the Holocene sequence based on that data. The authors

conclude that human occupation may not have been continuous in the Vestibule during the Holocene because the commensal micromammals are not a constant in those levels, as they would had there been a continuous human occupation. Also, the later appearance of modern murids in the Holocene levels probably results from the appearance of agriculture. In terms of climate and environmental reconstruction, the micromammalian remains allowed the authors to suggest at least five phases in the Holocene, including Level 3, demonstrative of colder conditions and coinciding with the Bronze Age.

Chapter Thirteen deals with bird remains from El Mirón and their interpretation. The authors discuss the fact that, though not being very representative, the sample allows them to suggest an environmental surrounding very similar to those of the present edge of the Cantabrian Cordillera. Only 40 specimens were identifiable from a total of 648 skeletal remains, mainly due to fragmentation and general preservation. The fact that there was no evidence of butchery on the bones, or burning, prevents their attribution to human subsistence, leading the authors to suggest that these fauna did not represent an important food resource for the human groups using the cave. They claim that they are a consequence of a middle-sized raptor accumulation.

The herpetofaunal remains are discussed in Chapter Fourteen. A description of the several species present at the site is made, as well as some discussion about taphonomic issues and inter-level comparisons. Being highly conditioned by environmental conditions, herpetofauna species are good environmental indicators and they are used in this chapter to make some zoogeographic and paleoclimatic analysis that lead the authors to arrive at the same conclusions as the ones derived from other vertebrate remains.

A taphonomic study of the large mammals, from a sample of 47,234 skeletal remains, of which 4,220 are identifiable, recovered in the Holocene levels is the subject of Chapter Fifteen. Most of them are small fragments, a consequence of trampling, and compatible with the intense use of an enclosed space. Also, cut marks from stone tools (both in domesticated and wild animals) and dog bite marks are not frequent and, therefore not the agent of high breakage levels. Burning on the other hand is variable between levels and quite rare in the Mesolithic layers. The next chapter (16), deals with a large assemblage of mammal remains (with a NISP number of 6,008 remains). Again, the high fragmentation levels are mentioned as a limitation for biometric investigations, namely the distinction between *Ovis* and *Capra* and thus the investigation of the process of some species' domestication. Nevertheless, available data points to the *in situ* domestication of aurochs. The importance of ovicaprine fauna is clear in the Neolithic layers with a slight increase towards the end of the Neolithic and a more significant one in the Chalcolithic occupations. The use of milk is suggested by the presence of mature and old cattle and ovicaprine remains in contrast to pigs (that also become more important in the Chalcolithic) that seem to have been killed before maturity. Data show that hunting

was an important activity in the Mesolithic and still in the Neolithic, clearly losing importance in the Chalcolithic. The origin of wild animals like fox, wildcat, bear, and mustelids cannot be safely imputed to humans.

Chapter Seventeen provides a description of human made structures like pits and hearths in the Neolithic, Chalcolithic, and Bronze Age levels, almost all in the cabin area, through various sources from the field notes. These features were uncovered during the 1990s excavations that had the goal of ascertaining if there were still some Paleolithic levels conserved, which therefore were excavated and documented. These descriptions are one of the most complete for the region.

Chapter Eighteen addresses post-Paleolithic lithic industries through a summary of what is referred to as a small assemblage of 8,664 items that includes burin spalls and splintered pieces (with only 151 retouched pieces). It also describes an awl from the Early Bronze Age and excludes manuports such as fire-cracked rocks and cobbles. The stratigraphy from which these lithics were recovered seems to present some issues of mixed deposits in which older lithics and fauna are found in association with modern artifacts and therefore, those lithics were not considered in the analysis. Also, some lithics in superficial levels, seemingly maintaining stratigraphic integrity, could, as a consequence of prehistoric pit digging, have moved around. The assemblage (the 151 retouched artifacts) was divided into 41 types; tools making up no more than 1.2% of the total lithic assemblage. The only consistent type is backed bladelets, although not for the Mesolithic layers. Burins, although rare, seem to be generally distributed throughout the assemblage.

Ceramics are dealt with in Chapter Nineteen. The pottery research was organized in three axes: abandonment (excavation, laboratory processing, and distribution in the cave and post-depositional transformations), morphology, and manufacture. The assemblage made available for this investigation consisted of two sub-assemblages—sherds and reconstructed vessels—which in turn led to the loss of some information. Again, the majority of the assemblage came from the cabin area. The conclusions are made quite clear in a set of points/issues for future research such as: (1) the fact that there is no evidence of large scale storage in the Neolithic, raising the question of where was the surplus of well-documented agricultural activities being stored; (2) the Chalcolithic layers suggest a diversification of activities that lead, among other things, to the appearance of new types of vessels; and, finally, (3) at the end of the Chalcolithic there was a change in ceramic vessels consolidated in the Bronze Age, namely an increased vessel capacity, that suggested storage that in turn leads to the questions of what was being stored and why, and if that meant the appearance of social differences. The last chapter (20) gathers the results from the previous ones in a summary and concluding remark about human uses of the cave in each chronological period.

This volume is a multidisciplinary approach to a very important Cantabrian site. This approach is thankfully

becoming more and more common in archaeological research, together with the re-excavation of important sites with long chronological sequences, previously excavated in very early stages of archaeological science, such as Pech IV (Dibble et al. 2005) in France or Kehf el Hammar Cave in Morocco (Barton et al. 2005), that have, in the last decade, delivered pivotal information about pre-historic communities. The multidisciplinary approach of this volume has the advantage of allowing validation/comparison of data from diverse sources and leads to essential knowledge of past societies, especially prehistoric ones. Paleoenvironmental reconstructions and especially the attention given to previously slighted materials, such as micromammalian and botanical remains, seem to have finally gained due attention in archaeological investigations and, this volume is a good example of it. Although sometimes in a preliminary fashion, data presented here is a very solid base for further investigations and is a justification for them, not only

at this site but in all sites with similar characteristics, so that comparisons can be made with coeval sites and between different chronologies. If nothing else, the volume makes the reader eager for other volumes about the Pleistocene levels at El Mirón.

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