

Mining in European History and its Impact on Environment and Human Societies –

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The Casa Montero Flint Mine and the Making of Neolithic Societies in Iberia

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Introduction

The Casa Montero flint mine is located on a bluff overlooking the confluence of two of the main rivers of the Spanish province of Madrid, the Jarama and the Henares. The selection of this particular mining area by Early Neolithic groups was no coincidence. Although the regional geology is known for its abundance in flint, Casa Montero's flint has a particular genesis that allowed the existence of frequent nodules with opal outer and quartz inner parts. This gave the somewhat unaesthetic flint a particularly suitable knapping quality.

The site occupies an extension of about six to eight hectares, out of which four have been completely mapped and partially excavated. The open area excavation revealed the existence of more than four thousand cylindrical mining shafts of one meter mean in width and up to ten meters deep, none of which cut each other on the actual surface. Our excavation design was specifically oriented towards the analysis of the potential variations in both the mining strategies and the chronology of mining events. Throughout the first two seasons we focused on defining the individual variability of shafts which later on allowed us to decide the best strategy for the third and final excavation campaign. For this last season, we designed and applied an aligned systematic sampling, digging all the shafts included in each one of the seventeen grid squares of ten by ten meters, regularly distributed throughout the site. The driving force behind this strategy was that comparing groups of shafts would be more enlightening than comparing randomly selected individual pits.

The Chronology of Mining Events

Twelve radiocarbon dates were obtained in order to define the complete time span of the mine and, if possible, observe the temporal growth of the mining site. We selected thirteen samples from the shafts covering the area, north to south, and east to west: ten fragments of Holm/Kermes Oak, two Common Juniper and a bone fragment of *Sus* sp. The latter was se-

lected in order to contrast the possible old wood in the resulting radiocarbon dates. The bone sample did not contain collagen enough for radiocarbon dating.

Eleven out of twelve dates fall between 5300 and 5200 cal BC. Out of them all except for one are statistical identical dates. These dates do not define any temporal pattern in the expansion of the mine field: at least two of the identical dates belong to the extreme northwest and southeast corners of the site. The fact that there are no possible stratigraphic relationships between mine pits precludes the possibility of any sequencing of mining events, and therefore we are left to accept that the four hectares of Casa Montero documented to date may have been in use during the Early Neolithic for no more than a couple of centuries.

The Dimensions of Mining Events

Quartzite pebbles and cobbles were brought from the close river terraces by the miners, and were used for percussion activities during the production process. Many tools broke while being used, and became part of the infill of open shafts. The possibility of refitting in and between shafts is only reasonably achievable, if one can count on a contextualized set of minor elements, mostly unusual in these kinds of sites throughout Europe. At Casa Montero this possibility was provided by these pebbles and cobbles. The striking results reveal that many shafts in each ten square meter sampling units (at least 21 shafts in some cases) were actually refilled in a single mining event. The refitting of several fragments of pottery recovered from different shafts distant 20 and almost 60 meters also suggests that mining events may have been bigger than expected.

To date, the interpretation of Neolithic flint mines has assumed “work-day per person” estimations as a reasonable explanation of past realities. These kinds of estimates are critical if we want to compare the labor deployed at different flint mines, or between different mining events. But, because the scale of these individual mining events tends to be elusive to archaeologists, we not infrequently assume that these estimations do not just have a comparative purpose, but actually represent the scale in which labor was effectively deployed. Thus, the most parsimonious interpretation of flint mines involve considering the minimum cost in both person and labor. When we cross these figures with the frequently long term temporal range of most sites, we end up assuming that labor was deployed in small amounts, by small groups of people, for domestic or down-the-line exchange purposes, in a seasonal manner, century after century, throughout millennia.

On the contrary, the information obtained at Casa Montero suggests that mining actions between the first and last mining event may have been the result of some few generations of early Neolithic aggregations mining for flint maybe not visiting the site in a continuous systematic way throughout millennia. But whatever the circumstances and tempos of the different mining actions, it seems reasonable to suggest that mining actions where sizable both in terms of the labor force involved and the number of mining pits open at a time.

Mining and the Transmission of Knowledge

The majority of the remains at the site are knapping residues. Considering that 65 tons of processed flint was recovered during the excavation of 300 shafts, the overall figures of the more than four thousand shafts mapped would suggest some 867 tons of stone was processed throughout the duration of the mine.

The main goal of these intense knapping activities was the production of blades and in less quantity bladelets, although flakes were also occasionally produced. The most common product would have been a 5 by 2 cm blade. The analysis of the knapping waste and especially of cores and refits has evidenced the presence of different skill levels among knappers. The way in which unskilled knappers tried and sometimes failed to reproduce the same schemes developed more successfully by others suggests that apprenticeship was a key part of the activities performed at the mine. The mining site was the space for both visually acquiring the behavior and selectively performing fragments of the operative chain, repeated through time until the complete sequence was learned. It is not unlikely that different age groups participated in most mining events. As a result, the transmission of knowledge and knowhow was embedded in the collective labor that took place at the mine.

The Miners

Early Neolithic evidence is scarce in the 8000 km² of the Madrid region, an area with an intense – although patchy – archaeological activity. Only 13 locations are known to have Neolithic remains. Six of them have been systematically excavated in recent times and only two have architectural evidence. Out of these sites, barely one has radiocarbon dates that may be contemporary to Casa Montero. To date, this pattern suggests that the earliest Neolithic groups in the region were apparently very small and considerably mobile. The existence of the comparatively grand scale mine of Casa Montero would have necessarily required the mobilisation and cooperation of many of these groups in a collective action. Thus, the main and primary distribution of flint blades from Casa Montero most likely did not follow a down-the-line dynamic, but a direct procurement on site.

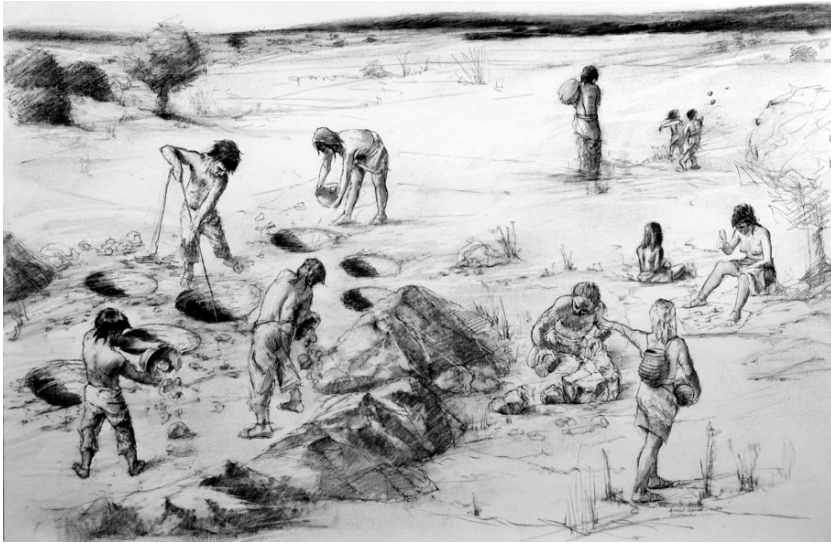


Fig. 1: Flint mining at Casa Montero, circa 5300 cal BC. Illustration by Juan M. Álvarez Cebrián.

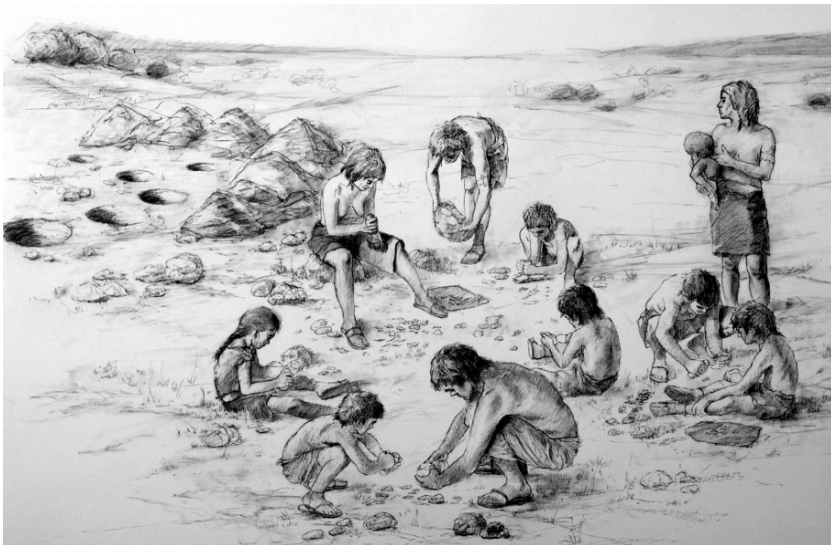


Fig. 2: A scene of apprenticeship at Casa Montero, circa 5300 cal BC. Illustration by Juan M. Álvarez Cebrián.

Making Society Anew

At Casa Montero, the different mining actions between the first and last events may have possibly been the result of some few generations of early Neolithic aggregations and not so much visiting the site in a continuous systematic way throughout millennia. The acts of gathering for collective mining actions at Casa Montero served as a basis for binding new political relations beyond the individual groups. Strategic, tactical and logistic preconditions were required for those gatherings, including the ability and capacity to convene, design and organize an orderly set of actions such as those deployed at the flint mine. Labor was then shared in the extractive activities, while the transmission of knowledge and knowhow laid the foundations for the reproduction of groups. Beyond those acts of social production and reproduction, mining brought together groups into a different society, with a new identity, shared experience, and fixed monumentalized places in the landscape. This allowed the emergence of a recognizable territoriality among the constituent groups. Mining became a political act, founding society anew.

Acknowledgments

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All references and open access publications about Casa Montero at:
<http://www.casamontero.org>