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Upper Palaeolithic and preventive archaeology in Portugal: challenges and opportunities

Abstract

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In the last 20 years, Palaeolithic archaeology in Portugal has produced some of the most revolutionary and important sites in the world (e.g., Côa Valley Palaeolithic rock art; Lagar Velho child-burial and the 400,000-year-old human skull from Aroeira cave) nonetheless, a hiatus visible the map of geographical distribution of these sites is obvious and means nothing but the lack of research and not the absence of human habitation in the past. Nevertheless, some new important Palaeolithic sites have been recently identified during preventive archaeological works. We will present new data concerning these new sites and a framework for a program that can help archaeologists working in preventive archaeology to ensure faster identification of sites, improving performance of archaeological interventions and reducing the economic impact for developers.

Keywords: Preventive Archaeology, Upper Palaeolithic, Portugal

▪ INTRODUCTION

In the last 20 years, Palaeolithic archaeology in Portugal has produced some of the most revolutionary and important sites in the world (e.g., Côa Valley Palaeolithic rock art; Lagar Velho child-burial and the 400,000-year-old human skull from Aroeira cave). Nonetheless, a hiatus visible in the map of geographical distribution of these sites is obvious and means nothing but the lack of research and not the absence of human habitation in the past. In the last 10 years, archaeological activity (preventive or research oriented) at Palaeolithic sites stands for less than 5% of all archaeological activity registered in the national database *Endovélico*, *Information and Archaeological Management System* (Cultural Heritage Portugal, Ministry of Culture).This is partly due to the reduced number of university archaeology departments with expertise in Palaeolithic and to the absence of academic training in geoarchaeology (site formation processes applying geology and geomorphology concepts) and lithic studies. This *deficit* in human resources results in insufficient knowledge of Palaeolithic and has serious implications for the level of time and money spent on preventive archaeology, in case of "accidental discovery" of these Palaeolithic sites in the last phases of infrastructure projects such as river dams, highways, etc.

▪ HISTORY OF RESEARCH

By the end of the 19th century, pioneers like geologists Nery Delgado and Carlos Ribeiro placed Portugal at the centre of the scientific discussion about the antiquity of the origins of man. Except for some isolated researchers, like M. Heleno or A. Viana, who did not dedicate themselves exclusively to the Palaeolithic, during the first half of the 20th century Palaeolithic research was conducted, mainly, by foreigners, like A. Breuil, J. Roche or G. Zbyszewski (Cardoso 2002). Palaeolithic research headed by Portuguese archaeologists started only after 1980. Lower Palaeolithic research focused in some river-accumulated terrace deposits (Meireles 1992; Cunha Ribeiro 1999). Middle Palaeolithic studies were undertaken not only in open air sites (Vilas Ruivas) but also in caves (Figueira Brava or Columbeira) (Raposo 2002). Nevertheless, in Portugal, both periods are still

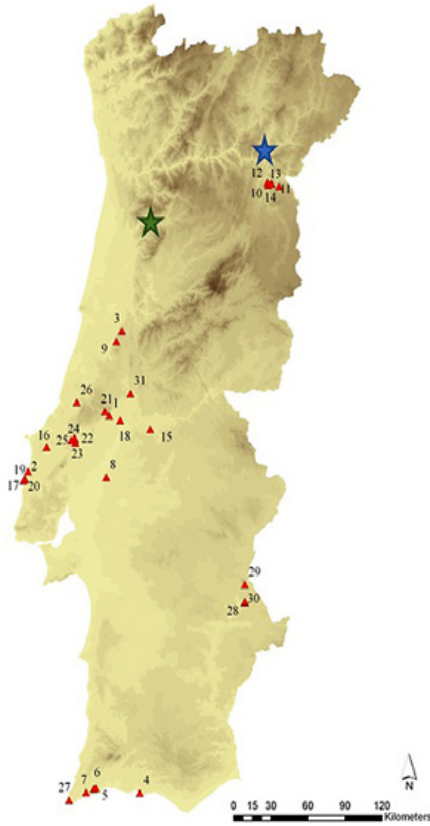* UNIARQ – School of Arts and Humanities – University of Lisbon, Portugal; e-mail: gameiro.cristina@gmail.com

Fig. 1. Magdalenian sites in Portugal: the gaps between regions are evident. The same happens with other Upper Paleolithic phases (Endovélico database, Cultural Heritage, Ministry of Culture). 1: Lapa dos Coelhos; 2: Rossio do Cabo; 3: Abrigo 1 de Vale dos Covões; 4: Praia da Galé; 5: Monte de Januário; 6: Cruz da Pedra; 7: Vale Boi; 8: Pinheirocas 2; 9: Buraca Grande; 10: Salto de Boi; 11: Insula; 12: Quinta da Barca Sul; 13: Devesa 3; 14: Fonte do Olmo; 15: Cadoiças; 16: Lapa do Suão; 17: Baio; 18: Bairrada; 19: Cerrado Novo; 20: Vale da Mata; 21: Lapa do Picareiro; 22: Vascas; 23: Pinhal da Carneira; 24: Cabeço de Porto Marinho; 25: Abrigo 1 de Bocas; 26: Olival Fechado; 27: Vale Santo 4; 28: Monte da Ribeira; 29: Malhada do Mercador; 30: Chancudos; 31: Gruta do Caldeirão.

Green star: Vouga Valley archaeological sites (Rôdo and Vau), identified in 2014 during minimization protocols in the scope of Ribeiradio-Ermida River Dam.

Blue star: Sabor Valley archaeological sites (Medal) identified between 2009-2013 during minimization protocols in the scope of Baixo Sabor River Dam.

poorly characterized. The Upper Palaeolithic chrono-cultural reference sequence was only established in 1995 (Zilhão 1997) for the Estremadura region, a karstic and flint-rich area, known and surveyed since the 19th century. Since the Côa Valley Palaeolithic rock art discoveries, this scenario has changed: other regions have been surveyed and preventive archaeology has been responsible for the identification of several Late Pleistocene sites, namely due to the construction of big public infrastructures like highways or dams.

■ **PREVENTIVE ARCHAEOLOGY AND UPPER PALAEOLITHIC RESEARCH**

Paradoxically, the emergence of preventive archaeology in Portugal is intrinsically linked with Palaeolithic archaeology. It was the discovery of the Côa Prehistoric Rock Art Sites, today listed as a UNESCO World Heritage Site, and the subsequent cancellation of the dam construction that originated a paradigm shift, which led to the creation of a new state institute (*Instituto Português de Arqueologia-IPA*) and new legislation accompanying the principles of the Valletta Convention for archaeological heritage (1992), ratified by Portugal in 1998. It was the IPA model that established preventive archaeology based on the activity of private companies.

Although the Estremadura chrono-cultural sequence remains the reference sequence, in other regions

(from the north: Côa Valley, Sabor Valley to the south: Guadiana Valley and Algarve) a considerable number of new sites have been identified (Aubry 2009; Almeida 2013; Figueiredo *et al.* 2014). These recently discovered sites are starting to fill the «desert areas» and the «stratigraphic hiatus» but, unfortunately, some of them remain unstudied and unpublished. In our opinion, increasing the number of trained archaeologists, able to recognize lithic artefacts and understand site formation processes in the context of preventive archaeology operations, may boost the identification of more Palaeolithic sites. A well-known example took place in 2000, during the construction of A14 highway (between Coimbra and Figueira da Foz, central Portugal): although this route crossed flint-rich limestone outcrops and many lithic artefacts were visible on the surface, the archaeologists in charge were not able to identify the Palaeolithic sites (Neves, Moura 2004). A good example of a well-conducted preventive project was the one that preceded the construction of the Alqueva river dam project (Guadiana Valley), where an experienced team excavated almost 30 sites and conducted all kinds of activities (including surface prospection) at some 80 sites, between 1998 and 2002 (Almeida 2013).

The construction of the Sabor river hydroelectric dam was at the reason for an ambitious preventive project developed between 2010 and 2015 in the northeast of Portugal. The project involved an integrated research
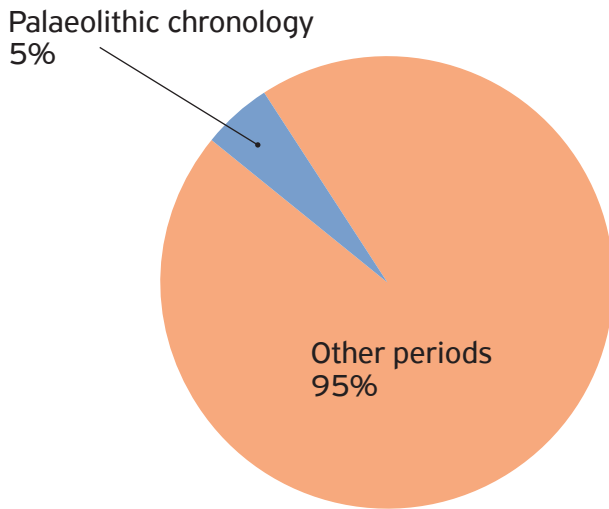
Archaeological works in Portugal: 2007-2016

Palaeolithic chronology
5%

Other periods
95%

Fig. 2. Archaeological activity in Portugal (2007-2016) according to the *Endovélico, Information and Archaeological Management System*, Culture Heritage Portugal, Ministry of Culture

approach to the dynamics of land transformation from Prehistory to the present day. Because of the geographical proximity to the Côa valley, the Ministry of Culture required a team with an experienced Palaeolithic coordinator. The Environmental Impact Assessment (EIA) study recognised 11 potential Palaeolithic sites. Fifty-four river terraces or platforms were tested (42 with mechanical means) and the objective was to probe platforms covered with vegetation but with potential for the preservation of Pleistocene sediments. A total of 13 sites yielded Palaeolithic habitation (6 only at surface, and 7 with preserved stratigraphy). The study and the publication of results are being prepared.

After these adequately conducted big preventive projects only the PIN (National Interest Project) designation can perhaps explain why in the Ribeiradio-Ermida hydroelectric dam, in the Vouga Valley (central Portugal), had, for two years, only two archaeologists working in an area for a planned 100hm³ reservoir. In this case the Environmental Impact Assessment (EIA) didn't mention Palaeolithic sites at all: this was seen as a «deserted area» because not a single Pleistocene human settlement was known. However, three Palaeolithic sites were identified during deforestation just before the dam began operating. These three sites were excavated during late 2014 and in the beginning of 2015, just before this area was flooded. The "accidental discovery" of these Palaeolithic sites in the last phase of this infrastructural project, obviously, had serious implications for the level of time and money spent and made the recovery of scientific data more difficult.

Following the 2008 economic crisis, the construction of major infrastructures was abandoned and urban revitalisation in historic centres gained importance. We believe that this also explains the low percentage (< 5%) of archaeological activity reported for Palaeolithic sites over the last decade. On the other hand, the reduction of work following the 2008 economic crisis across Europe, led to «a drop in the quality of commercial excavations, as well as reduction in their cost» because developers' «only concern is for their land to be released as quickly as possible and at the lowest cost» (Demoule 2016, 9). Considering that the economic crisis is coming to an end, we may predict that some postponed projects will be relaunched; thus, it would be wise to anticipate this movement and create better working conditions.

The Endovélico, Information and Archaeological Management System (Cultural Heritage Portugal, Ministry of Culture) indicates the existence of 15 research projects focusing on the Palaeolithic, corresponding to only 8 excavated sites, over the last 10 years. Most of the research was carried out at already known sites. Most of the new sites are identified in preventive context. Although developers must legally finance excavations and subsequent technical reports, the study and publication of results are often not considered.

Analysis of the distribution of archaeology degrees offered at Portuguese universities reveals that only 3 (out of 7 universities) have Palaeolithic experts among their teaching staff. Prehistory courses are limited to only one semester (about 150 hours). Paradoxically, only a comparatively smaller number of teaching hours is devoted to the longest period in the history of humankind

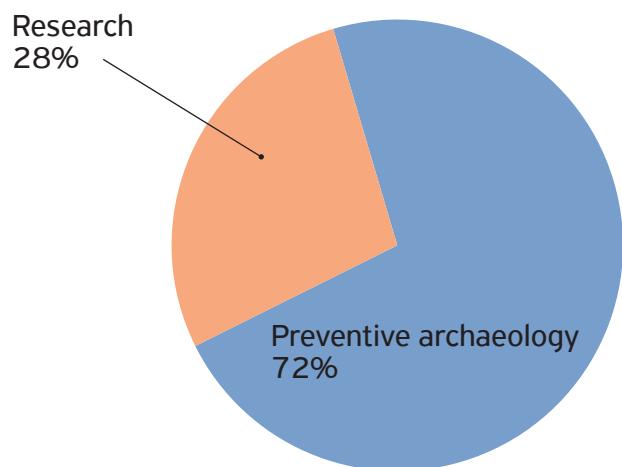**Palaeolithic related interventions: 2007-2016**

Research
28%

Preventive archaeology
72%

Fig. 3. Palaeolithic related interventions in Portugal (2007-2016) according to the *Endovélico, Information and Archaeological Management System*, Cultural Heritage Portugal, Ministry of Culture

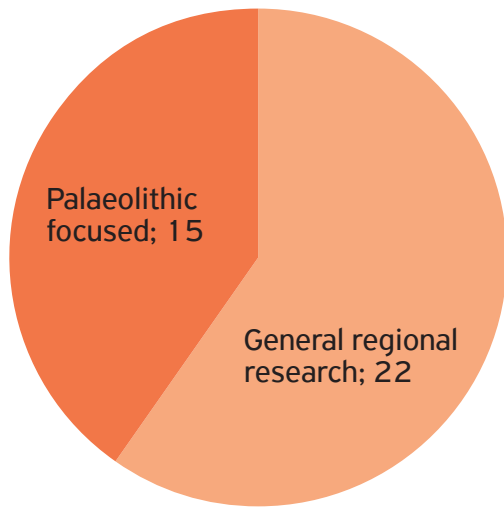**Palaeolithic research orientation: number of research projects between 2007-2016**

Palaeolithic focused; 15

General regional research; 22

Fig. 4. Palaeolithic research in Portugal (2007-2016) according to the *Endovélico, Information and Archaeological Management System*, Cultural Heritage Portugal, Ministry of Culture

(between 2 Ma and 10 ka BP). We can assume that in the absence of Palaeolithic experts, typo-technological lithic studies are not taught. In the case of geomorphology or geology courses (including stratigraphy and sedimentology), the situation is even worse: it is possible to obtain a B.A in archaeology without any training on these subjects. If for historical periods the importance of anthropic activity is fundamental for site formation, and the lack of such training is less critical, the same cannot be said about Palaeolithic sites: site formation cannot be understood unless archaeologists have basic geomorphological/geological knowledge. Despite the improvements that took place during the last 25 years, the training deficit continues to be notorious and this is reflected in the amount of Palaeolithic research and the quality of Palaeolithic sites identified during preventive archaeology interventions. Given that 95% of archaeological activity in Portugal is carried out by private companies, with a total private investment of between

500.000 and 1 million Euros a year, it is these private companies that need to develop skills to identify, excavate and study Palaeolithic sites.

▪ **CONCLUSION**

For the reasons mentioned above, we submitted for funding a project designed to fulfil a series of gaps in Palaeolithic archaeology in Portugal. In this project, named PALEORESCUE, we proposed: a) to develop a program of specialized training, in order to encourage better relations between archaeology entrepreneurs and universities, by disseminating theoretical knowledge and developing technical field protocols; b) to analyse Palaeolithic sites previously excavated in the context of preventive archaeology; c) to compare and cross data on site location, type of geological and geomorphological contexts, using GIS and predictive modelling for archaeological potential mapping (showing high-susceptibility areas for the preservation of sedimentary packages containing Palaeolithic habitation). We expect that, in the future, this land use planning instrument can help archaeologists working in preventive archaeology ensure faster identification of sites, improve the performance of archaeological interventions thus enabling them to have additional time for extensive excavation of these sites and reduce the economic impact for developers. Construction of a GIS-based mapping showing potential areas for the location of preserved Late Pleistocene sites is one of the major aims of PALEORESCUE project. Recent technological developments in GIS allow for the use of different variables and today one can obtain accurate cartographic models. Furthermore, the use of predictive models in archaeology has evolved as well (Wescott, Brandon, 2000; Conolly, Lake, 2006; Mehrer, Wescott 2006; Verhagen 2007). As far as we know, the use of this approach in the scope of preventive archaeology is new. In Portugal, some work has been developed for the Iron Age (Costa 2009), proto-history (Estanqueiro 2016), the Mesolithic (Gonçalves 2014)

University with a degree in Archaeology	Palaeolithic Expert	Prehistory Course	Iberian Prehistory Course	Lithic Studies	Geology/ Geomorphology Course
Universidade do Minho	NO	1 semester	1 semester	NO	NO
Faculdade de Letras da Universidade do Porto	YES	annual	annual	NO	NO
Faculdade de Letras da Universidade de Coimbra	NO	1 semester	1 semester	NO	NO
Faculdade de Letras da Universidade de Lisboa	YES	annual	annual	YES	NO
Faculdade de Ciências Sociais e Humanas da Universidade Nova de Lisboa	NO	1 semester	1 semester	NO	NO
Universidade de Évora	NO	1 semester	NO	NO	YES
Universidade do Algarve	YES	1 semester	1 semester	YES	YES

Table 1. Distribution of Palaeolithic and geomorphology experts at Portuguese universities offering a degree in archaeology

and the Middle Palaeolithic (Manuel *et al.* 2014) sites but the purpose was theoretical (or strictly research focused). In general terms, the principle underlying all predictive models in archaeology is based on the idea that the implantation of archaeological sites is closely associated with the natural and/or cultural characteristics of the surrounding environment. Thus, by studying the surrounding features of known sites and establishing the relative importance of each of these characteristics at the location of the sites, it is possible to extrapolate this knowledge to a wider region and thus create a map expressing the "predictability degree" for the existence of sites sharing the same characteristics.

This project's results may also be useful for updating museum contents in subjects such as prehistoric habitation and specifically the Palaeolithic, thus encouraging cultural tourism, seeking a closer relationship with the communities and fulfilling the social responsibilities of archaeological science.

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