



Contents lists available at ScienceDirect

# Quaternary International

journal homepage: [www.elsevier.com/locate/quaint](http://www.elsevier.com/locate/quaint)

## Lithic recycling in a Middle Paleolithic expedient context: Evidence from the Abric Romaní (Capellades, Spain)



Manuel Vaquero <sup>a, b, \*</sup>, Amèlia Bargalló <sup>b</sup>, María Gema Chacón <sup>a, b, c</sup>, Francesca Romagnoli <sup>d</sup>, Pablo Sañudo <sup>b</sup>

<sup>a</sup> Àrea de Prehistòria, Universitat Rovira i Virgili (URV), Av. Catalunya, 35, 43002 Tarragona, Spain

<sup>b</sup> Institut Català de Paleoecologia Humana i Evolució Social (IPHES), C/ Marcel·lí Domingo s/n, Campus Sescelades URV (Edifici W3), 43007 Tarragona, Spain

<sup>c</sup> UMR7194 – Département de Préhistoire, Muséum national d'Histoire naturelle, 1, rue René Panhard, 75013 Paris, France

<sup>d</sup> Dipartimento di Storia, Archeologia, Geografia, Arte e Spettacolo (SAGAS), Cattedra di Preistoria, Università di Firenze, Via S. Egidio, 21, 50122 Firenze, Italy

### ARTICLE INFO

#### Article history:

Available online 2 July 2014

#### Keywords:

Recycling  
Middle Paleolithic  
Abric Romaní  
Refitting  
Core-on-flake  
Spatial analysis

### ABSTRACT

The aim of this paper is to present a general overview of the lithic recycling identified in the Middle Paleolithic layers of the Abric Romaní site. The archeological layers excavated thus far, spanning from 40 to 56 ka BP, have provided significant evidence suggesting that recycling of artifacts was a behavior fully integrated in lithic provisioning strategies. The characteristics of the Abric Romaní formation processes allow the recognition of most of the different types of data usually considered proxies of recycling: the reuse of patinated or burned artifacts, the use of a single artifact for different functions, successive knapping events on the same core, the reduction of flakes as cores, etc. In particular, the information provided by refitting and spatial analysis should be emphasized. We will pay special attention to the spatial and refitting data from level M, which is dated between 51 and 55 ka BP, by focusing on the intrasite transport of artifacts and of core-on-flake reduction sequences as potential evidence of recycling. The results indicate that recycling may have a spatial dimension that allows the differentiation between source areas and recycling areas in which technical needs are partly fulfilled by picking up previously discarded items.

© 2014 Elsevier Ltd and INQUA. All rights reserved.

## 1. Introduction

There are several reasons to believe that the recycling of lithic resources was a common practice throughout Paleolithic times. First, the ethnographic data suggest that recycling was fully integrated into the management of lithic resources of hunter-gatherers and pre-industrial societies in general, influencing the strategies of waste disposal and, consequently, the formation of the archeological record (Gould et al., 1971; Binford, 1977, 1986; Hayden, 1979; Camilli and Ebert, 1992; Weedman, 2005, 2006; Amick, 2007; Holdaway and Douglass, 2012). Second, various studies published in recent years have shown that certain aspects of the archeological assemblages, from the technological and typological characteristics to the spatial distribution of archeological remains, may be related

to recycling (McDonald, 1991; Galup, 2007; Clarkson, 2008; Hiscock, 2009; Barkai et al., 2010; Thiébaud et al., 2010; Vaquero, 2011; Vaquero et al., 2012a, b, c).

Two issues explain the importance of recycling in the interpretation of archeological sites and the interest aroused by this topic in recent years. First, the behavioral patterns of prehistoric groups may be influenced by the practice of recycling. Raw material provisioning strategies can be modified depending on the availability of recyclable resources, particularly in contexts characterized by a shortage of raw materials. Therefore, recycling could affect mobility and settlement patterns, determining the preferential occupation of certain places where the location of resources suitable for reuse was known. The availability of recyclable resources can reduce the dependency on primary raw material outcrops, decreasing the degree of mobility or changing movement paths. In addition, some forms of recycling may involve the planning and anticipation of needs, which are important for assessing human cognitive abilities. Second, recycling is an expression of the temporal nature of the archeological entities and site formation dynamics. Both assemblages and artifacts may be considered

\* Corresponding author. Universitat Rovira i Virgili, Prehistory, Zona Educacional 4, Campus Sescelades URV (Edifici W3), 43007 Tarragona, Spain.

E-mail addresses: [manuel.vaquero@urv.cat](mailto:manuel.vaquero@urv.cat) (M. Vaquero), [ameliabarg@gmail.com](mailto:ameliabarg@gmail.com) (A. Bargalló), [gema.chacon@mnhn.fr](mailto:gema.chacon@mnhn.fr), [gchacon@iphes.cat](mailto:gchacon@iphes.cat) (M.G. Chacón), [f.romagnoli2@gmail.com](mailto:f.romagnoli2@gmail.com) (F. Romagnoli), [pablo.sanudo@bolomor.com](mailto:pablo.sanudo@bolomor.com) (P. Sañudo).

palimpsests recording a succession of singular events. Therefore, through recycling, we can gain access to the temporal dimension of the archeological record, which is difficult to capture with the procedures commonly used in archeological research. When we discuss recycling, we are discussing the histories of artifacts, and these histories should be the first clues to the histories of assemblages. Therefore, recycling should be integrated into the dissection of palimpsests and into the temporal reading of archeological assemblages.

However, despite its importance for human behavior and for the formation of archeological sites, recycling poses major problems for both its definition and its archeological identification. We have discussed these terminological issues in a previous paper (Vaquero, 2011), starting from the seminal work of Schiffer (1972, 1976, 1977), and notably, currently, there is not a consensus regarding this matter. According to some authors (Camilli and Ebert, 1992; Amick, 2007), functional change is essential in the characterization of recycling. The recycled implement should be utilized in a function differing from that of the first use event. Lithic technology shows several examples of this concept of recycling: the use of hammerstones as cores, cores as hammerstones, bifaces as cores, cores as tools, etc. However, our approach to this issue also considers the temporal dimension of recycling. Strictly speaking, we think that recycling corresponds to the use of a previously discarded artifact (Baker, 2007), irrespective of whether there is a functional change between the two use events. This definition allows emphasis on the distinction between recycling and other practices, such as reuse or resharpening, which can indicate similar archeological consequences but which do not involve this previously discarded characteristic of the recycled items. However, although the conceptual distinction may be clear, this is not always the case in the empirical world, in which this waste stage before the recycling event is often invisible. A combination of the two criteria (functional change and the use of discarded artifacts) seems the most useful strategy to address recycling in archeological contexts.

The problems for archeologically identifying recycling in lithic assemblages have been discussed in previous studies (Vaquero, 2011; Vaquero et al., 2012a), and different criteria have been proposed depending on the above quoted definitions of recycling. The use of previously discarded items is often more easily identified in those artifacts that have experienced some type of surface alteration and, therefore, allow two different temporal events, one anterior and one posterior to the alteration, to be distinguished. The best examples are the artifacts showing patinated or thermally altered surfaces and retouched or reduced after surface damage. These artifacts should be considered the best evidence of recycling because these artifacts clearly indicate a time span between the two use events and a waste stage before recycling. This criterion has been the most commonly used to identify recycling in Paleolithic assemblages (Galili and Weinstein-Evron, 1985: 40; Nishiaki, 1985: 221–222; Debenath, 1992: 55; Mora et al., 2004: 428; Navazo and Díez, 2008: 136; Barkai et al., 2009: 66). However, the usefulness of patinated and burned artifacts in research regarding recycling strongly depends on site formation processes favoring such surface damage. This criterion is rarely useful in assemblages in which altered artifacts are scarce. Therefore, it seems desirable to find other types of data that can be considered proxies of recycling.

Another type of artifacts that have also been used to suggest recycling are those artifacts showing two different and successive uses, particularly when there is a functional change between the use events. This functional change would be the case for cobbles used at an early stage as hammers and then exploited as cores, or vice versa, cores that were retouched and transformed into tools after their reduction, tools reduced as cores and double tools. In these cases, it is often difficult to determine whether the second

usage event is recycling or only reuse because it is not evident that the artifact was discarded after the first usage event. However, some data, such as the association between double tools and recycling documented in the Molí del Salt site (Vaquero et al., 2012a), suggest that the use of these artifacts as a proxy of recycling may be justified in some cases. Similarly, the use of blanks normally considered waste can indicate the practice of recycling. This would be the case, for instance, for core-on-flakes. On a case-by-case basis, although a direct relation between these artifacts and recycling is highly questionable, the possibility that both artifacts with a double function and core-on-flakes would be more abundant in a technical context in which recycling is a common practice may be considered a working hypothesis.

A third approach to recycling is provided by data from the spatial distribution of remains and refitting. Human-induced movements may be intentional or unintentional. The latter are related to trampling, since humans walking on the living floor may inadvertently kick artifacts out from the activity areas, as pointed out by Theunissen et al. (1998). Recycling can be a factor that explains the intentional displacement of artifacts within the sites. The differential scattering of knapping areas and the directionality of refits provide the temporal criteria for suggesting that some artifacts were discarded before displacement. This type of approach has been used in previous works concerning recycling in different levels of the Abric Romaní (Vaquero, 2008, 2011; Vaquero et al., 2012b, c) and will be the subject of further development in this paper.

Having noted the practice of recycling in archeological contexts, the next step in this research is to determine the variability of recycling throughout prehistoric times and the causes of this variability. At first glance, we should distinguish two different levels of variability. The first one is to establish the various forms of recycling and their archeological implications. In this regard, a distinction should be made between two different ways of recycling that correspond to extremely different behaviors and technical contexts and that involve different archeological consequences. Recycling can be somewhat anticipated and planned in the first event of artifact use and discard. This strategy is often associated with refuse disposal strategies that make further waste recycling easier, a practice well documented not only in ethnographic contexts (Hayden and Cannon, 1983; Chang, 1991) but also in modern industrial societies. In these contexts, a spatial segregation between recyclable and non-recyclable items tends to appear. At the Inupiat fish camp described by Chang (1991), discarded items that may be reused or recycled are disposed around the cabin, whereas non-recyclable garbage is moved to the refuse midden. Refuse having some reuse potential also exhibits specific disposal strategies in traditional Maya villages (Hayden and Cannon, 1983). This refuse is placed in provisional discard locations and is moved to the final dumping areas only when this refuse loses its recycling potential. In these cases, there is a social and cultural continuity between the two events of artifact use. A link exists between the individual who discarded the artifact in the first instance and the individual who recycled the artifact; the individual may even be the same. This type of recycling has clear implications from the standpoint of the ability for planning and anticipating needs and seems more likely in the framework of the storage practices characteristic of sedentary and semi-sedentary contexts.

In contrast, recycling can be performed in a purely casual way, without considering its possibility at the time of discard. There are not specific refuse disposal strategies according to the recycling potential of the artifacts; therefore, spatial segregation between recyclable and non-recyclable items cannot be expected. In these cases, there need not be any cultural or social continuity between

Download English Version:

<https://daneshyari.com/en/article/1040933>

Download Persian Version:

<https://daneshyari.com/article/1040933>

[Daneshyari.com](https://daneshyari.com)