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In the elephant, everything is good: Carcass use and re-use at Castel di Guido (Italy)

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ABSTRACT

Castel di Guido is a typical Middle Pleistocene elephant site where intentionally fragmented bones of elephant and of other large mammals were found together with Acheulean biface-like industry, including bifaces made of various stone types and of elephant bone, associated with flint tools on pebbles and flakes. Following a first interpretation of the evidence, the site represented a single and short phase of use, and elephants, horses, aurochs and few other species were killed and butchered on site, or partly brought to the site to be butchered after having been killed elsewhere. The bones were intentionally fractured for marrow extraction and left to "season" before being used as raw material for artefact production. Further evidence deriving from more recent studies suggests that the site lasted for much longer time and is in fact an intricate palimpsest of several phases of human use and partial reworking.

Castel di Guido results largely from anthropic processes, deriving from peculiar behavioural aspects of the Early Neandertal groups that frequented the site. The carcasses of various taxa were exploited for food, and the elephant ones also for raw material in bone tool production. This choice was probably due to limited availability of good quality flint (or other hard rocks) in the area.

Because of these characteristics, Castel di Guido is an ideal ground for exploring the aspects of use, re-use and recycling of food and raw material resources, and of tools. Several stone and some bone tools show clear evidence of recycling, such as subsequent knapping or refashioning phases put into evidence by different wear of the surfaces. These characteristics point to long continuity of use of the site for similar purposes, which is in accordance with the very different preservation of the remains that were partly reworked by short-range fluvial processes. These aspects indicate that the bones of large taxa, mostly elephant, were part of a complex subsistence system characterised by hunting and scavenging on one side, and an extremely fuzzy boundary among use, re-use and recycling on the other one. This system was based on the recycling – or transfunctionalisation – of the carcasses, which were exploited for food consumption (meat and possibly marrow), and later for raw material procurement over a long time of permanence and availability on the surface of the site.

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1. Introduction

This paper aims at unravelling the complex pattern of use, re-use and recycling of elephant carcasses in the subsistence pattern of the Middle Pleistocene people that frequented the site of Castel di Guido, near Rome in central Italy, during the late Middle Pleistocene. Materials and aspects presented in previous papers (Radmilli and Boschian, 1996; Boschian and Saccà, 2010; Saccà, 2012a, 2012b) are reconsidered here under the light of recycling, together with new evidence pointing to complex patterns of repeated use and modification of different parts of elephant carcasses.

Recycling is the consequence of peculiar needs of human groups, resulting from cultural and environmental factors that affect their adaptive strategies. Its study can suggest clues about the cognitive skills of human species, their behavioural and economic plasticity, and the constraints of environmental change on cultural evolution.

Recycling is expected to result from temporary or permanent raw material shortage in the catchment area of the settlements, often depending on the mobility of the groups if the procurement

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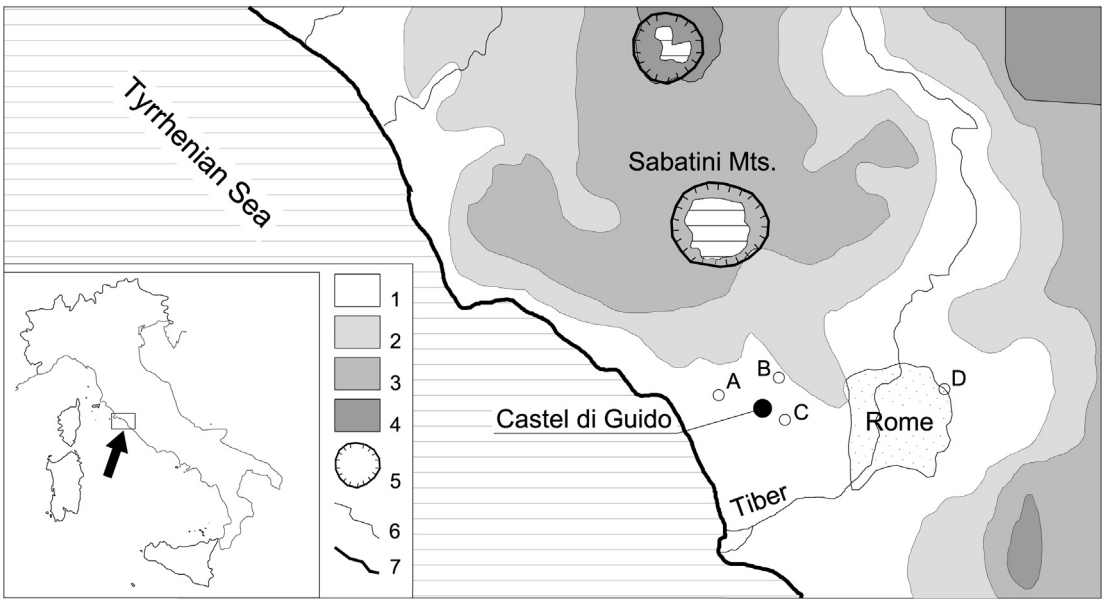

Fig. 1. Location map. 1: 0–100 m; 2: 100–200 m; 3: 200–300 m; 4: 300–500 m; 5: calderas; 6: rivers; 7: coastline. Solid circle: Castel di Guido; open circles: other sites; A: Torrimpietra, B: La Polledrara, C: Malagrotta, D: Rebibbia-Casal de'Pazzi.

areas are restricted and/or far apart in the territory. It may probably be favoured in low-mobility contexts, where the accumulation of waste makes large quantities of dumped material available for further use, originating artificial "outcrops" of anthropogenic raw material. More complex psychological causes (human innate "laziness", etc.) may underlie the choice of recycling, though these are mostly speculative.

The so-called "elephant sites", mainly Middle to Early Upper Pleistocene fossil contexts where Proboscidean species represent a relevant component of the economic system (Gaudzinski et al., 2005; Mussi and Villa, 2008; Yravedra et al., 2010, 2012, 2014; Panera et al., 2014), are especially interesting, though quite intricate and difficult to interpret (Haynes, 1988, 1991, 2005; Chazan and Horwitz, 2006; Haynes and Klimowicz, 2014) because of the peculiarity of the "raw material", which is represented here by the carcasses of the Proboscideans. These can be used as sources of food, or of bone raw material in the production of tools by flaking.

Fig. 2. Stone biface with yellowish patina partially removed by second-generation flake detachments (see colour image for proper chromatic contrast). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

In the latter case, these contexts are peculiar because of the size of the bones, which can be used to produce large-format tools such as bifaces that could not be shaped from bones of smaller species. It can be argued whether primary bone use for making tools can be considered strictly as recycling, but it may also be observed that bone and also stone tools were reused, for the same purpose or for other uses on the same site.

Nevertheless, the interpretation of these contexts is problematic in several occasions. The influence of non-anthropic components (early- and late-stage weathering, carnivore activity, trampling, taphonomic processes, etc.) (Behrensmeyer, 1978; Haynes, 1980, 1983; Binford, 1981; Andrews and Cook, 1985; Blumenschine, 1988; Olsen and Shipman, 1988; Shipman and Rose, 1988; Lyman, 1994; Fisher, 1995; Villa and Bartram, 1996) can occur with the anthropic modification processes at any stage of the process of bone modification. Recycling may complicate this picture. Consequently, remarkable uncertainty may result in such cases, mostly when the contexts are comprised of small quantities of tools. The very small number of flaked bone tools per site and their high variability strongly restrain the likelihood of correctly assessing their real nature, whether they should be considered as ecofacts or artefacts. Since the very beginning of these studies, such aspects favoured the formulation of now-defunct (but quite innovative at their times) hypotheses like the osteodontokeratic industry of Dart (1957), and stimulated or even poisoned the dispute among scholars (Binford, 1981, 1983; Freeman, 1983; White, 1982). Whatever their value and tone, these arguments fostered the retrieval of novel and now widely accepted evidence of more or less elaborated flaked bone industry in an increasing number of Lower and Middle Pleistocene sites in Europe (Segre and Ascenzi, 1984; Radmilli and Boschian, 1996; Anzidei and Cerilli, 2001; Bidditu and Celletti, 2001; Dobosi, 2001; Gaudzinski et al., 2005; Mania and Mania, 2005; Boschian and Saccà, 2010; Rosell et al., 2011; Anzidei et al., 2012; Saccà, 2012a, 2012b), Africa (Leakey, 1971; Shipman, 1984, 1989; Backwell and d'Errico, 2004).

Within this framework, Castel di Guido represents a unique case and is an ideal ground to study in detail and with statistical reliability the relationships between humans and proboscideans. Unlike the majority of the sites studied, the remains of several

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