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INTRODUCTION

The thickness of a soil is usually less than one millionth of the Earth radius, about one magnitude order less than a plastic film wrapped on the back of an elephant. Even if so thin, soils are places where relevant things do happen. Humans and animals live on the surface of soils (and the latter often inside them); plants push their roots into soils to pick up nutrients, and farmers help them in this task by various agricultural practices, having their crops back in change. Waste of human, animal, and vegetal activities are incorporated into soils. At the very end of our life, our grave will probably be dug out into a soil.

Human life is therefore strictly connected to soils – or it would be wiser to say that it depends on them –, as most of our subsistence is in some way linked to this fuzzy interface between lithosphere, biosphere, and atmosphere. The study of soils is then one the ways we can follow to outline the subsistence of the ancient human groups and understand part of the story of ancient societies.

Soils keep a note of the characteristics of the mutable environment where we live, which we tame and domesticate, and are also logbooks where the footprints of our cultural evolution are printed. The contribution of their study to the reconstruction of climate and landscape change is highly appreciated in environmental studies, and environmental archaeologists rely greatly on soil studies when investigating on culturally mediated relationships between humans and landscape.

Reworked relicts of soils may contribute considerably to the growth of sediments, and can be interpreted in terms of palaeoenvironmental processes; and even when scarce, their occurrence within anthropogenous deposits is a good hint to the interpretation of the environmental context of the archaeological sites. Soils and archaeological sediments are therefore equally relevant in geoarchaeology, as they play the same role in the reconstruction of site formation processes. Conversely, valuable information upon the timing of soil formation can be retrieved through archaeological data by the soil scientists who work on long-term soil genesis and landscape evolution.

Moreover, archaeology is not limited to the investigation of isolated spots, but aims to the understanding of complex networks of sites, which interact with and within the landscape on the basis of cultural and social factors. Within these networks, the «unsettled» spaces between sites cannot be considered as a blank background surrounding dots on an archaeological map. In fact these areas include soils that should be mapped and studied, retrieving data about the cultural use the social groups made of them while living in the settlements and using the surrounding spaces as fields, gardens and foraging areas.

The identification of anthropogenous inputs and modifications in soils is therefore a major task in landscape archaeology, and scientists have become more and more interested on these topics in recent times, as also shown by the recent publication of *Advances in geoarchaeological approaches to Anthrosol chemistry*, edited by E.C. Wells and R.E. Terry on Geoarchaeology. An international journal (2007, 22, issues 3 and 4).

The papers published in these proceedings deal with all the above mentioned subjects, giving a general idea of the current interests of the geoarchaeological world, and including aspects not directly linked with soil science but that may be relevant to it. Special attention is given to the characterisation and cultural significance of organic matter in soils; though still relatively poorly known, this topic is of utmost interest in archaeology, as it provides clues about the agricultural practices of the early farmers, like manuring, shifting agriculture and general land management. Organic matter is also an essential component of most archaeological deposits, e.g. domestic waste accumulations, pit infillings, and other features whose use is still often unknown and could be elucidated if the origin of these organic components was understood. In several instances problems and questions are faced actualistically, through the analysis of more or less well known recent or modern contexts, or even by direct experimentation; in this case, long-term research projects of experimental archaeology had to be carefully planned, dealing with peculiar organisation problems, as for the study of the slash-and-burn practice.

One of the major constrains to agriculture, and consequently also to cultural development, is the suitability of the landscape to agriculture, including soil fertility and the availability of arable land around settlements; this subject is also dealt with extensively, including possible soil amendment techniques, with examples ranging from Europe to Mesoamerica.

It must be appreciated that the application of multielement analysis and soil micromorphology has become generalised, showing that also these techniques have become a routine tool in geoarchaeology. The application of GIS is also generalised, mostly in the effort of filling in the above mentioned «blank areas» between sites, and in order to handle large amounts of spatial data; predictive models are also particularly interesting when applying GIS studies, mostly if we consider our need to preserve the archaeological heritage in front of the expanding infrastructural network.

As to the other subjects taken into account in these proceedings, cave geoarchaeology is always a fashionable

topic, even if it is apparently not of direct relevance to pedo-archaeological studies; nevertheless, this relevance becomes evident if we point out that almost all the presented cases discuss aspects of the pastoral use of caves, inserting these sites in the context of complex agropastoral systems that have strong impact on land exploitation and soil evolution.

Not surprisingly if we consider when agriculture and consequent extensive soil management started, all papers but one deal with cultures of Holocene age. Nevertheless, special attention goes to the only one Pleistocene age case, M. Cremaschi and F. Ferraro's paper on Grotta Paglicci: the occurrence of Campanian Ignimbrite ashes in the cave is connected with one of the hottest current problems in Palaeolithic archaeology, *i.e.* chronology and stratigraphical correlation difficulties at the transition between the Middle and the Upper Palaeolithic, when Neandertals were substituted by our species. Tephrochronology plays a fundamental role in the timing of this period, when radiocarbon becomes poorly reliable, as ashes of Southern Italian volcanoes fell out down to far off sites of Eastern Europe.

Eventually, one paper is dedicated to the sad fate of our bones when buried in soils; it is an interesting tentative to simulate bone diagenesis under controlled environment and with a relevant acceleration of the process.

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