

## Geoarchaeology as *Geoarchaeology*

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### Short Communication

This contribution collects our reflections on the current role of Geoarchaeology, an idea in which, together with many other researchers, we have been working for decades. It has seemed to us that sharing our point of view on this matter could help to maintain the debate on a scientific task that, like it or not -and as much as its predicament has not stopped growing since, from the seventies of the last century C. Renfrew, K. W. Butzer and other precursors formally coined the expression Geoarchaeology and endowed it with a meaning similar to the one we currently assign to it- is still a budding discipline.

As we have already stated on other occasions [1,2], we understand Butzer [3] when he considers that the main dichotomy of the current geoarchaeological research is whether its practice gives priority to technical issues or, by contrast, to its objectives. And although this observation is absolutely timely, from our point of view it really talks about of the existing dissension between an orientation conducive to a subsidiary consideration of the discipline, against another one that encourages a proactive approach, more autonomous and integral of them. Thus, this disagreement is not something specific to the current geoarchaeological praxis, but, on the contrary, it is a matter that could be considered inherent to the discipline itself since its beginning. Since the sixties of the last century [4], indeed, technical and scientific applications at the service of archaeological research not ceased to grow and diversify [5], such that auxiliary sense of the Geoarchaeology above mentioned soon became one of its main hallmarks. From there, there was but a small step to think of it as in an “auxiliary branch of Archaeology”, making of the application of the concepts and methods of Earth Sciences to archaeological research its main task [6-9]. Thus, the geoarchaeologists were progressively choosing among a discipline understood as an Archaeology that uses procedures other sciences in his research, that is, a Geoarchaeology as Archaeology; or a

discipline understood as a Geology that finds its study subject in the archaeological sites, that is, a Geoarchaeology as Geology.

However, whereas this notion of the Geoarchaeology conceived as an accessory instrument progresses in either of its two variants (Geoarchaeology as Archaeology or Geoarchaeology as Geology), a different way of understanding the role that Geoarchaeology can play in the study of History gradually emerges. Seen from the present, this other concept was not an alternative within said subaltern notion of the Geoarchaeology, but a new strategic overview from which must be consider: first, that the commonly known issues as “archaeological problems” really are geoarchaeological troubles [10], so all stratigraphic sequence concerned by human action could be read as a geoarchaeological record, because is the result, both genetic sense as chronological, of the joint action of natural and cultural processes; second, that the Geoarchaeology should only be responsible for solving geoarchaeological problems, and not of the other kind, meaning those that are derived from historically established relations between human groups and their natural environment [11]; and, lastly, that the final characterization of any human occupational context depends, ultimately, of the historical process of “anthropization” (that is, of the particular evolution of the human activity and its capacity to modify the structure and/or functioning of natural system), so that any transformed area by humans should be categorized, even from the historical perspective, as a “anthropized environment”; that is to say, as a sector of the earth’s surface whose configuration and / or dynamism can be explained, at any time of historical evolution, as the result of the combination of natural and human factors [12-15]. Therefore, emphasizing the importance of the natural component of the historical process from a comprehensive perspective, the Geoarchaeology not only hopes to obtain its own interpretation of the archaeological evidence [16], but also aims to enunciate a specific scientific narrative and, consequently, have its owns subject

of study, objectives and methodology [1,12, 14,15,17], and, thus, become a Geoarchaeology as Geoarchaeology.

This other conception of the Geoarchaeology provides it a sufficient autonomy to raise new questions and answer them for itself; new issues, therefore, arising from the historic co-evolution among humans and nature, that never before were considered neither from the Archaeology nor the Geology. This would mean further a discipline especially interested in understanding and reconciling the natural and anthropogenic causes of the recent evolution of the natural environment, both in terms of balance between each other, as in terms of thresholds [18], which allows a interpretation differentiated of the effectiveness of morphogenesis according to what extent the alteration that human action may have led to a certain territory (through land use change, mainly). In current terms, this answer game could be equated with the concept of resilience.

Seen from this strategic way, the natural environment acquires a positive role as an ingredient of the human society evolution, as a component of the historical process understood in its widest possible sense [19, 20]. In this way thinks, for example, CA French [21], who argues that the Geoarchaeology should focus on the combined study of archaeological and geomorphological records, and to recognize how any process, both natural (i.e. climate change) or manmade (i.e. land use), can modify the functioning of the physical environment in which human groups develop. This author also believes that the mission of our discipline is to build integrated models such as "human system / natural-system", asking nature what are the sequence and the natural or human causes of historically recorded changes in the landscape. Also, Goldberg and Macphail [22] insist on this idea, specifying that the goal of the Geoarchaeology should be to help understand "human impact on the landscape", arguing, as they did in the early nineties concerning to the concept of, in Spanish, *formaciones superficiales antrópicas* (anthropic formations) [12], that old soils and "occupation deposits" are the real object of study of discipline.

Thus, today more than ever it is feasible to implement an approach to Geoarchaeology that is more concerned with contributing on its own, as independent but necessarily interdisciplinary knowledge (in the sense of K. W. Butzer), to the study of History, than applying mechanically instrumental procedures. A Geoarchaeology that focuses its main objective on the comprehensive study of the relationships established between human activity and the dynamics of the natural environment, reflected in the geoarchaeological record, both from the point of view of its temporal dimension, and in terms of its spatial expression [1, 12, 14,17]. So, from a generic approach, this substantive conception of geoarchaeological discipline concerned with the study of the anthropized environment, while from an operational point of

view, soils and sediments affected by human activity (*formaciones superficiales antrópicas*/anthropic formations) would be its true subject of study.

Finally, as regards the methodological procedure, this integral vision of the Geoarchaeology also must operate with a specific protocol, whose ultimate goal is to access the geoarchaeological synthesis in terms of palaeogeographic reconstruction (temporal dimension) and of geoarchaeological sectorization (spatial dimension). The first one consists to identify different developmental stages of the relationship established between the physical environment and human occupation, determining the causes of the transition from one stage to another, and whether they are of natural or anthropogenic kind; while the target of the second one is determine potential areas into the man-made environments (the sites, in the broadest possible sense of the term) which share similar geoarchaeological records, and proceed with the elaboration of its cartographic delimitation.

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