Environmental Archaeology: What Is in a Name?

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1 By Whose Direction Found'st Thou out this Place?

Environmental archaeology as a distinct discipline begun at least 50 years ago, but if seen as an interest with the past environment, its roots go back in the XVIII and XIX centuries. The crucial information needed for building analytical and theoretical apparatuses for "natural sciences" had studies concerning the formation processes and stratigraphy undertaken by geologists, geographers and palaeontologists (such as Nicolas Steno, 1638–1686; Charles Lyell, *Principles of Geology*, 1850; Richard Owen, *Palaeontology or a Systematic Summary of Extinct Animals and Their Geological Relations*, 1850). These also contributed to the development of field techniques, sampling strategies and documentation (Evans 2003). During this period, there also began a shift from treating artefacts as "pieces of art" or "insular finds" to studying them in their "natural" context and detailing the information of their provenance (in particular as a help to establish chronology).

However, the most significant imprint on environment archaeology had the Darwinian theory of evolution. This inspiring idea of the transformation of all species through natural selection, adaptation to changing natural conditions and existence of strict relations between all living creatures had far going consequences (Darwin 1859; Wallace 1858) for both natural and social sciences. Transformations that often went hand in hand and at the same time influencing the way life and society was perceived to work, proceed and change. Creatures and societies evolved

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under the rule of "survival of the fittest" coined by Herbert Spencer (Spencer 1864). First of all, it implicated that all living beings come under the same one universal rule, and so are humans. This belief stimulated further investigation regarding the origin of the *Homo* species and resulted in studies such as those undertaken by Leakey's in Africa (1931 and next), Raymond Dart (on "Taung Child" – and the Australopithecus – 1924) or Marie Eugène François Thomas Dubois (on "Java man", 1891) to mention just few (Aiello 2006; Haviland et al. 2013).

Moreover, the assumption of species modification through time generated the questions of the environmental settings in which such modifications occur and thus have become a great motive for research on palaeoenvironment. These issues were raised, for example, in Ferdinand Keller's investigations concerning macrofossils of plant (1878) and palynological studies undertaken by Johannes Iversen (1941) or Ernst Jakob Lennart von Post (quantitative analysis of pollen, creation of modern pollen diagram, 1916) (Evans and O'Connor 1999, 1–9).

Additionally, the biological model of progression was also adopted in the grounds of anthropology and archaeology and improved by scholars such as Augustus Pitt-Rivers (1827–1900), Lewis H. Morgan (*Ancient Society*, 1877) and Edward B. Tylor (*Primitive Culture* and *Anthropology*, 1871), who deeply believed in the progressive nature of human culture and, as Morgan himself suggested, that the humankind went through some particular stages on "the ladder of development" from the lowest to the highest step (called by him as "savagery" through "barbarism" to reach a "civilization" step at the end) (Morgan 1877).

At the same time, studies regarding the interaction of past environment and human cultures were initiated, two well-known examples of which are the multidisciplinary project concerning the origin of agriculture headed by Robert John Braidwood (Jarmo, and later, Amuq Plain, and in SE Anatolia) and Jens Jacob Asmussen Worsaae in Scandinavian bogs in Europe (Braidwood 1960; Worsaae 1847).

Undoubtedly, the beginning of environmental archaeology might be characterized as a time of uninterrupted enrichment of science, interlacing of different disciplines and building the basis of modern methodology. Notwithstanding, environmental archaeology was still a rather weakly related group of various methods or analytical techniques than a separated discipline with finely defined scientific goals, approaches and paradigms, elaborated coherent methodology and clearly specified identity (Evans 2003; Dincauze 2000, 3–4).

The first half of the twentieth century brought vivacity in both perception of environment and diversification of approaches to the environmental archaeology. For a long time, the environment has been perceived as a passive background, setting of human activities, where "things happen". The researchers focused mainly on the reconstruction of past environmental conditions, or they examined the process of animal and plant evolution (or domestication of some species). These research perspectives have been modified, particularly, thanks to scholars such as Grahame Clark (1952, *Prehistoric Europe: the Economic Basis*) or Julian Steward (1955, *Theory of Culture Change: The Methodology of Multilinear Evolution*), who postulated studies on the interconnections between the habitat and past society. The

conception of cultural evolution coined by Steward (Steward 1955) highlighted the role of geographical or natural setting in the process of changing societies and the ability of communities to adapt to various environments.

The role of environment in the process of altering the human societies was showcased by novel studies undertaken by Grahame Clark in Star Carr (in 1949) which proved the whole potential of interdisciplinary studies and engagement of many specialists in order to understand the economic efficiency of particular habitats and explore the ways of how the environment was used (especially in case of raw material acquisition) by humans (Clark 1954, 1972).

Despite of these few pioneering works, this period was rather a time of consolidation of this discipline and amplification of its methods. The development of new methods such as radiocarbon analysis (Libby 1952) and isotopic analysis (Emiliani 1954) and their application to archaeology made possible the precise dating of archaeological deposits and study on past climate (through examination of oxygen isotopes found at deep sea cores). These advancements demonstrated the significant role of ecofactual evidence, which earlier were often marginalized (see also Renfrew 1973).

The turning point in the formation of environmental archaeology as a discipline on its own right is associated with the movement of "New Archaeology" and later "New Geography" (Hagget and Charley 1969). Both argued for the strongest need of keeping scientific rigours in archaeological investigations and emphasized the role of environment, which affected and moderated human behaviours. The processualism understood the culture as "extrasomatic means of adaptation" sensitive to changes evoked in ecosystem and always striving to achieve homeostasis (Binford 1962, 1968). In other words, the transformation of the environmental component (such as climate) was expected to generate a modification in the cultural system. This means that through careful examination of the environmental settings and the archaeological site, it will be possible to explain the process of cultural system transformation through time. This approach metamorphosed archaeological goals and the way of perception of the habitat that is the archaeological site's surroundings. All data concerning the ecosystem were grouped together and perceived in a synthetic way. In consequence all areas of research within environmental archaeology became very important and integrated with the archaeological problem at hand. The "borrowing" strategy of simply obtaining the results of specialist analysis started to fade. Instead of using the descriptive matter of presenting the gathered information, the scholars used the data to create storage and manage the elaborated databases in order to testify or verify the scientific hypothesis, often adapting up-to-date methods and statistical models (e.g. Renfrew 1973; Clarke 1977; Watson et al. 1971).

These studies addressed chiefly questions regarding economy and subsistence strategy and acquisition of natural resources. This period was also associated with the birth of settlement archaeology and spatial analysis in archaeology (e.g. *Spatial Archaeology* by David Clarke 1977). The most influential works belong undoubtedly to Eric Higgs and Claudio Vita-Finzi. They proposed a new model called "Site Catchment Analysis" (SCA) to study the matter of exploitation of the land around

any given site and establish the limit/border of accessibility of particular important resources including features such as type of soil, land form and type of vegetation (Vita-Finzi and Higgs 1970). They assumed that the environment was used by past populations in the most optimal way in order to obtain necessary resources whilst at the same time minimizing the loose of energy needed to acquire them (Vita-Finzi and Higgs 1970). The other commonly applied method originated from the field of geography was "Thiessen polygons", which aims to define the territory exploited by any site and describe the settlement network (Kipfer 2000, 563; Hammond 1972; Hodder 1972; Renfrew 1973).

Another set of seminal studies at that time was concerned with site formation and depositional/post-depositional processes which influenced significantly the preservation of archaeological material, including ecofacts, and their context of recovery (Schiffer 1972; Limbrey 1975). In these inquiries palaeozoology and zooarchaeology have played important role with the development of the field of taphonomy (Efremov 1940; Lyman 1994; Behrensmeyer and Hill 1980). Simultaneously, paleoenvironmental studies were flourishing in terms of new methods such as micromorphology and sediments analysis (Butzer 1971, 1982) and new techniques for archaeological data collection such as sieving and flotation (Jarman and Higgs 1972; Kaplan and Maina 1977).

All these entangled "environment archaeology" stronger with "mainstream archaeology" (and archaeological departments as well) and had a significant effect on the perception of it, forming its "professional" identity and establishing its position within archaeology circles (Albarella 2001).

At the same time period, "environmental archaeologists" established their own associations such as "Association for Environmental Archaeology (EAA)" in 1978 dedicated to "the study of human interaction with the environment in the past through archaeology and related disciplines" and popularize the results. The "International Council for Archaeozoology (ICAZ)" is another one such association promoting zooarchaeological studies. Simultaneously, international peer-reviewed journals with single focus on science and environment were published such as *Journal of Archaeological Science* (since 1974), *Circaea* (between 1983 and 1996, change in 1997 into *Environmental Archaeology: The Journal of Human Palaeoecology*) and *Geoarchaeology, Vegetation History and Archaeobotany*, to mention a few.

Whilst environmental archaeology seemed to be a most promising inquiry right at the heart of archaeological research, doubts arose for the usefulness of *any* "science in archaeology". The main subject of critique was directed towards the processualist's belief in the objectivity of archaeological sciences and the possibility of revealing the "truth" of past processes by applying of scientific methods. On the contrary, the new movement, post-processualism, addressed the issue of subjectivity in the archaeological investigation and pointed out the relativeness of archaeological records (e.g. Hodder 1986). The post-processual approach has not been a coherent movement, and many theoretical theses have been crystalized through time within it, but they shared a basic body of ideas. It highlighted the dominant role of the archaeologists in the interpretation of the data whose viewpoints were determined

by many conscious or unconscious factors (Hodder 1986; Shanks and Tilley 1992; Tilley 1997). It disputed the idea of rational exploitation of environment by humans and emphasized the contribution of cultural and social agents in the way of its usage. The environment has been seen not as something universal, staying in opposition to human culture, but as a part of a social word with which it became contextualized and might have been perceived and experienced in various ways. In other words, the environment is not the environment: It is an artefact "created" by human actions/perceptions, entangled in social processes and should be analysed as a part of the later (Albarella 2001). Thus, the interpretative post-processual archaeology does not reject the need of collecting and managing the archaeological/environmental data, but, for a part of it, it postulates to diversification of research perspectives (resurfacing themes from the progenitor of it, the historical archaeology) and closer integration of theory with the material records (Albarella 2001).

Under this influence, research intensively focused on social structure and ideology questions. For instance, the study of past diet has not been any longer just a simple matter of subsistence strategy, but it became a media for building social and cultural meanings, negotiating social status or expressing the gender role (Tringham 1991; Wylie 1992; Gibbs 1987). The elements of the environment have now obtained agency (Evans 2003; Ingold 1996; Poole 2015). Many of these are not totally novel topics but rather a move for emphasis to be put on these aspects of the data. Most importantly perhaps the ground was created for the construction of new theoretical frameworks, and new labels for those were proposed such as social zooarchaeology (Marciniak 2005; Overton and Hamilakis 2013; Russel 2012; Sykes 2014; Vandergugten 2015) and social palaeoethnobotany (Bruno and Sayre 2017; Palmer and van der Veen 2002; Madella 2014; Morehart and Morell-Hart 2015). Long-lasting and more important consequence of this line of thought is the abandonment/critical application of descriptive and rational models of human behaviour that was the flagship of processualism and the (partly) replacement of them by flexible and multilayered interpretations, cut to case.

A large number of publications pay tribute to the immense growth and diversifications of approaches that environmental archaeology experienced and developed in the last 30 years or more, to a large extent under the influence of the changing face of mainstream archaeology. These surely demonstrate the deep involvement of environmental archaeology with mainstream archaeology. It is also an outcome of the fact that the demographics and attitudes of its practitioners have changed. Whilst at first scientist of various disciplines were called upon when needed to provide consultancy for archaeologists resulting to the notorious "laundry lists" of species present, now archaeology graduates are trained on the fields of environmental archaeology, and researchers coming into it with a science background delve deeply in the methods and theory of archaeology. Thus today "environmental archaeologists" have developed a vast array of detailed studies touching directly to questions right in the heart of any conceivable archaeological inquire.

Today, the simple lists of species is a thing of the long past. We are also past the *first* attempts of environmental archaeology to define its goals and develop its methods and techniques (mostly within processualism). In the past has been left the

post-processual critique too. We are now in a stage where, whilst still armed with the old "processualist" models but well versed in their drawbacks, we have developed and are developing a plethora of new approaches and attitudes (towards data as well as ourselves) and have prepared/are preparing an ever-growing arsenal. Truly, there is a proliferation of even more new techniques, some with their roots back to the past and firmly set with even more science ever. Amongst these perhaps the most fashionable are genetics, isotopes, geometric morphometrics and the GIS revolution for every conceivable use.

Involved in all contemporary archaeology concerns, environmental archaeology has closely followed or pioneered on various directions of theoretical and practical concerns of archaeological practice. Not satisfied with the results of studying just a site, we are now looking at the "big picture" at a regional or almost continental studies, and "big questions" are sought to be answered by "big data" (Colledge 2016; Colledge et al. 2013). What we do with our data and the metadata pool of information is another important move and has led to advocating the "open access need" (Kansa et al. 2007; Kansa and Kansa 2013; Kansa et al. 2014; Conolly et al. 2011; Orton et al. 2016; Prinzl et al. 2014). Looking at any problem from multiple viewpoints is strongly desirable, and integration of various environmental data sets and/or with other archaeological data is in the fore front (Etten and Hijmans 2010; Van Derwarker and Peres 2010).

All these put on the archaeological inquiry side of the discipline; there also seems to be an increasing soul searching in environmental archaeology circles considering the usefulness of it for both the society and the scientific community. Many voices have risen up the issue of why and for whom we carry out our research and how the discipline could contribute meaningfully to important problems of this epoch we live, the "Anthropocene" (Braje 2015; Murphy and Fuller 2017; Riede et al. 2016). Just the very name of it, "Anthropocene", makes it clear how useful will be to retrieve and make use of knowledge of past human decisions that shaped the planet. Conservation biology, sustainability, vulnerability and resilience, landscape ecology and conservation and climatic change are dominant fields to which many environmental archaeologists believe there is a call for them (Lyman 2006; Lyman and Cannon 2004). At the same time, problems such as coping with natural disasters including learning from past experience what to expect and how to respond to it together with how to prepare the public for such possibilities are issues on which many of us think they can bring an important input to benefit public, scientists and policymakers by providing the depth of time experience that contemporary observation lacks. Relatively recently this "move" was expressed in a collection of articles in the edited volume with the most eloquent title "The Future from the Past" (Lauwerier and Plug 2003). These trends have often urged or became examples for a collaboration and – once more – integrated approach across various archaeological subdisciplines as well as other than archaeological disciplines (Erickson and Candler 1989; Hartman 2017). As new as this approach looks, it is indeed not that young if one remembers the Negev desert experiment (Evenari et al. 1961).

2 What's Montague?

Contemporary narratives concerning the environmental archaeology often oscillate between very popular recent terms such as archaeological science, archaeometry, bioarchaeology, biomolecular archaeology or geoarchaeology. Both terms – archaeometry and bioarchaeology – have a long tradition. Whilst the first one was coined in the 1950s by Christopher Hawkes to name a new journal dedicated to presenting the results of scientific method's application on the ground of archaeology and associated with newly founded Research laboratory for Archaeology and the History of Art, the bioarchaeology was introduced by Grahame Clark during his study on Starr Carr and highlighted the cooperation between various discipline of science and archaeology (Hawkes 1968; Clark 1972). Contemporary, environmental archaeology is perceived as a part of archaeological science (or scientific archaeology) together with dating methods and artefacts studies, e.g. by Tite (Tite 1991, 140, 147), Denham (2012, 305–6), Chambers (2013, 342) and many others (Pollard & Heron 2008, 2; Wilkinson and Stevens 2003, 16–17). It is also often subdivided into two parts – bioarchaeology and geoarchaeology (e.g. Chambers 2013, 342) – or more, e.g. four (earth science, bioarchaeology, zooarchaeology and archaeobotany) (Reitz et al. 2008, 5). Moreover, it is also understood in a broader way – as including "archaeological use of ancient biomarkers […]; chemical and mineral analysis of artefacts and the wide range of dating applications in archaeology" (Chambers 2013, 342). From this point of view, the environment seems to be rather a general thematic label bonding together these studies rather than an independent discipline (see also Albarella 2001; Chambers 2013; Wilkinson and Stevens 2003).

Surprisingly, the environmental archaeology is still seen by many mostly through prism of used methods without taking into account its theoretical background. It is perceived as highly specialized, expert discipline using very sophisticated and up-to-date methods (e.g. Brown and Brown 2011). What seems to be a hazard is its instrumental treatment again. Incorporation of environmental studies into field of archaeological science (see also more general discussion about archaeology and science, e.g. Johnson 2010, 34–47) and labelled as highly specialized domain, again, makes it very distant from the "mainstream" archaeology. Albarella called this process exceptionally accurate as "alienation" (2001, 7).

Is this statement still valid? In fact, we think there are various degrees and types of "alienation":

1. Geographical alienation: Even though environmental archaeology has grown up to a very complex and mature research area, this condition is not uniform across the globe. It is rather prevalent at the academic circles of a handful of leading countries. The rest of the world has to cope with a less than satisfactory situation. For the very fact, many countries have a handful of practitioners or even not that much. Whilst in countries with long tradition in the discipline researchers have the luxury of musing over all details of applications and interpretations, we have an extreme poverty plaguing colleagues and projects in areas where only the

minimum requirements of the profession are met, if at all. "Mainstream archaeology" colleagues in such locations are far from considering environmental archaeology an essential part of their project planning and executing (Chase et al. 2004; Fairbairn 2005).

2. Period alienation: There is an alienation as we move from the older time periods to the younger. Archaeologist studying the very distant past are much better versed on the information environmental archaeology can provide and more inclined to work with environmental archaeologists than their colleagues studying more recent eras. Often in the countries where the discipline is well rooted the "period" studied has relatively little effect but it gets really serious in regions where environmental archaeology is already lagging behind. Both, the geographic and period cases demonstrate sufficiently that alienation with mainstream archaeology still stands.
3. At a time when integration of various lines of evidence for better archaeological interpretations is recognized as most important, there is alienation amongst environmental archaeologists.

   (a) What we would call "a second science revolution" in archaeology has given the opportunity to environmental archaeology to grow to a huge tree with so many branches that makes communication and comprehension of results difficult amongst environmental archaeologists themselves. Even in cases where the materials under study are the same there is such a big range of methods and techniques to deal with the data that it seems we have departed on a path separating us further to "sub-specialist schools", each engaged in heated discussions on very specific topics hardly been able to follow up another "school" of another closely related over-specialization.
   (b) The biggest division within environmental archaeology is perhaps to be found amongst those of us who deal with "geoarchaeology" and "bioarchaeology". Even though all parts of the environment are surely interconnected, the researchers on these fields seem very far from being able to exchange information, follow up the results or sometimes understand each other. Not because it is not necessary – quite the opposite – but simply because it is difficult. This volume is an example of this situation.

4. There is a research driven versus all – other –type of work alienation. As "research driven" we define here projects started with specific research questions – usually planned by Universities. The second type of work is not designed beforehand but responds to "developer" needs and it is by large salvage work. In several countries, this is carried out by commercial archaeology, in others by museums or other state bodies. There is no doubt that the policymakers of the second type of projects have quite different views on the importance of environmental archaeology compared to the designers of research-driven projects.
5. We are still in alienation with the society despite the cry for an ethical responsibility not to stay indifferent and a-political.

3 It Is nor Hand nor Foot, nor Arm nor Face

Having denied to discuss the "name" at the beginning of our paper we come now to contradict ourselves tellıng that this worth some consideration.

For one thing why are we called environmental archaeologists and not simply archaeologists? We feel that this actually has its roots to the very distant past of archaeology whose ghost is still to be seen on the names of many archaeology departments around the word: "Department of Archaeology and History of Art". This is what archaeology was at its birth, and this is what environmental archaeologists are not: Simply, we do not study art(efacts)! Therefore a name should be found to describe these new categories of research materials (ecofacts) and studies (environmental archaeology) within archaeology. Is there a reason to keep carrying on this name?

Having a name might be as much a plague as a blessing. For one thing, it gives an identity and a banner under which one can promote its own case. In the practical side of archaeological methods, perhaps one of the biggest achievements of the label "environmental archaeology" within archaeology is that overall the "discipline" is acknowledged as important, "ecofacts" are considered materials worth of studying and excavators more often than not take care to collect at least some "environmental archaeology samples" even when a specialist is not part of their team instead of dumping them on the spoil heap. On the other hand, a "name" requires to state what it is and what it is not. The preceding parts of this article showed how difficult is to define "what is it" comprehensively enough to cover the ever-renewed and very wide aims of it. Defining what is not is another thorny subject and one of the negative outcomes is the perceived (but false) division of archaeology to environmental archaeology and "mainstream" archaeology.

There is no doubt that environmental archaeology is archaeology, for it is called exactly that. But the remaining qualifying word "environmental" is less clear. Attempts to conceptualize the word "environmental" have sometimes put the emphasis on reconstructing the environment, sometimes the economic exploitation of it and other times the social aspects of past cultures. All of them included and excluded parts of what we do. This is actually an expected struggle for a field that has been grown enormously. Minimalistic approaches have been proposed such as adopting a very simple definition that "environmental archaeology is the study of ecofacts". One may say though that ecofacts are artefacts, considering that ecofacts found at an archaeological site are (mostly) collected intentionally by people to be used (even if totally unmodified). Another such definition is that "environmental archaeology studies the interaction of humans with nature". This is a very attractive option because its simplicity allows it to be much wide and accommodating without putting any restriction on direction or form of research. Nevertheles such a loose description is in danger of becoming elusive and confusing? Because what is any human action which does not involve interaction with nature?

Environmental Archaeology has been also described as "human ecology" (Butzer 1971), "economic prehistory" (O'Connor 2001) or "Quaternary paleoecology" (Coles 1995; Delcourt and Delcourt 1999). These reflected a variety of research perspectives, traditions, experiences and approaches of practitioners of

environmental archaeology. Thus, it appears almost impossible to group them all together and create one, commonly accepted definition. Is it really necessary? Is environmental archaeology a matter of definition as Terry O'Connor wrote (O'Connor 1998)? The discipline, serving a multitude of inquiries and being served by an ever-growing body of techniques, whatever definition given, there will always be an appropriate argument to debunk it. This can surely be an endless, maybe fruitless, discussion which we may choose to give up taking heart on that nobody knows why a rose is called a rose but everybody knows what a rose is: for we know its components and its usefulness.

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