

# OPHIUSSA

REVISTA DO CENTRO DE ARQUEOLOGIA DA UNIVERSIDADE DE LISBOA

ISSN 1645-653X  
E-ISSN 2184-173X



CENTRO DE ARQUEOLOGIA  
DA UNIVERSIDADE  
DE LISBOA

uniarq

9 - 2025



# OPHIUSSA

REVISTA DO CENTRO DE ARQUEOLOGIA DA UNIVERSIDADE DE LISBOA



**OPHIUSSA** REVISTA DO CENTRO DE ARQUEOLOGIA DA UNIVERSIDADE DE LISBOA

PUBLICAÇÃO ANUAL · ISSN 1645-653X · E-ISSN 2184-173X

## Volume 9 - 2025

**DIRECÇÃO E COORDENAÇÃO EDITORIAL**

Elisa Sousa

Cristina Gameiro

Francisco B. Gomes

**CONSELHO CIENTÍFICO**

André Teixeira

UNIVERSIDADE NOVA DE LISBOA

Carlos Fabião

UNIVERSIDADE DE LISBOA

Catarina Viegas

UNIVERSIDADE DE LISBOA

Gloria Mora

UNIVERSIDAD AUTÓNOMA DE MADRID

João Pedro Bernardes

UNIVERSIDADE DO ALGARVE

José Remesal

UNIVERSIDADE DE BARCELONA

Leonor Rocha

UNIVERSIDADE DE ÉVORA

Manuela Martins

UNIVERSIDADE DO MINHO

Maria Barroso Gonçalves

INSTITUTO SUPERIOR DE CIÊNCIAS DO TRABALHO E DA EMPRESA

Mariana Diniz

UNIVERSIDADE DE LISBOA

Raquel Vilaça

UNIVERSIDADE DE COIMBRA

Xavier Terradas Battle

CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

**SECRETARIADO**

André Pereira

**PAGINAÇÃO**

TVM Designers

**CAPA**

Estela de Villafranca de los Barros.

Desenho de Pablo Paniego Díaz

<https://ophiussa.letras.ulisboa.pt>

Dezembro de 2025

ISSN 1645-653X / E-ISSN 2184-173X

DEPÓSITO LEGAL 190404/03

A edição segue as directrizes Creative Commons  
(licença CC/BY/NC/ND 4.0).

Copyright ©Revista Ophiussa 2025

**EDIÇÃO**

UNIARQ – Centro de Arqueologia

da Universidade de Lisboa,

Faculdade de Letras de Lisboa

1600-214 Lisboa.

[www.uniaraq.net](http://www.uniaraq.net)<https://ophiussa.letras.ulisboa.pt>[uniaraq@letras.ulisboa.pt](mailto:uniaraq@letras.ulisboa.pt)

Revista fundada por Victor S. Gonçalves (1996).

O cumprimento do acordo ortográfico de 1990  
foi opção de cada autor.Esta publicação é financiada por fundos nacionais  
através da FCT – Fundação para a Ciência e a Tecnologia,  
I.P., no âmbito do projecto UID/00698/2025  
(<https://doi.org/10.54499/UID/00698/2025>) - Centro  
de Arqueologia da Universidade de Lisboa

## ÍNDICE

|   |     |
|---|-----|
| Origins of raw milk consumption in the Iberian Peninsula and Portuguese territory: archaeogenetics and zooarchaeology<br>GONÇALO GARCEZ FERNANDES, MARIA JOÃO VALENTE, HUGO RAFAEL OLIVEIRA, MARIA JOÃO FERNANDES MARTINS   | 5   |
| A estátua-menir 3 da Serra da Nave (Moimenta da Beira, Viseu)<br>ANDRÉ TOMÁS SANTOS, SÍLVIA LOUREIRO MENDES, DIOGO OLIVEIRA, DOMINGOS J. CRUZ   | 25  |
| La estela de Villafranca de los Barros y su contexto en la arqueología de Tierra de Barros<br>PABLO PANIEGO DÍAZ, LUIS-GETHSEMANÍ PÉREZ-AGUILAR, MARIO PIÑERO FERNÁNDEZ   | 43  |
| Mértola en la Edad del Hierro: investigaciones arqueológicas entre Estácio da Veiga y la actualidad (1877-2024)<br>PEDRO ALBUQUERQUE, FRANCISCO JOSÉ GARCÍA FERNÁNDEZ, JOÃO FONTE   | 67  |
| O sítio arqueológico de Alto do Castelo (Alpiarça). Revisão arqueológica e novas leituras não intrusivas<br>JOÃO PIMENTA, TIAGO DO PEREIRO, JOÃO FONTE  | 89  |
| El proceso de extracción de cobre en el Cerro de los Almadenes. Nuevas hipótesis y replanteamientos a través de un estudio comparativo<br>JUAN ÁLVAREZ GARCÍA, GONZALO LOZANO OTERO, MARIANO AYARZAGÜENA SANZ   | 121 |
| A cidade romana de <i>Ossonoba</i> nos inícios da nossa Era: novos dados a partir da intervenção na rua Ivens, n.º 16<br>FRANCISCO ROSA CORREIA, ANA MARTIN, JOÃO PEDRO BERNARDES   | 145 |
| Regressar ao túmulo: a primeira campanha do Projecto de Documentação da Mastaba de Akhmerutnisut (G 2184, Guiza, Egipto)<br>INÊS TORRES, LUIZA OSORIO G. SILVA, GUILHERME BORGES PIRES, MAARTEN PRAET, MOHAMED YOUSSEF SEDEK, MOHAMED KHALIFA, YASSER KAMAL HEFNI | 165 |
| The Writing of Archaeological Theory<br>ARTUR RIBEIRO   | 187 |
| <i>Res Naturae</i> . Archaeology in a posthuman Anthropocene and the archaeology of nature: a preliminary attempt<br>MARA BEATRIZ AGOSTO  | 201 |
| Recensões bibliográficas<br>(TEXTOS: JOÃO PIMENTA, ANTÓNIO CARVALHO, YUNA LE QUÉRÉ, AMÍLCAR GUERRA, CARMEN RAMÍREZ CAÑAS, CRISTINA GAMEIRO)   | 221 |
| Política editorial  | 239 |
| Editorial policy  | 240 |



# ***Res Naturae. Archaeology in a posthuman Anthropocene and the archaeology of nature: a preliminary attempt***

## ***Res Naturae. Arqueologia num Antropoceno pós-humano e uma arqueologia do natural: um tentame preliminar***

MARA BEATRIZ AGOSTO<sup>1</sup>

UNIARQ – Centre of Archaeology of the University of Lisbon;

CFUL – Centre of Philosophy of the University of Lisbon;

FCT – Foundation for Science and Technology

[mara.s.agosto@gmail.com](mailto:mara.s.agosto@gmail.com)

ORCID: 0000-0001-6269-3277

**ABSTRACT:** With the advent of the Anthropocene, and post-humanism as a consequence, it is no longer possible to draw a rigid line between the human and the natural. As archaeology is traditionally a study of humans and their past, the aim of this article is to discuss the new position of archaeology in the Anthropocene. We believe that the true paradigm that post-humanism has established, de-territorialising the *human* as the ruler of the Earth and inserting it into the web of dependencies of all historical agents, regardless of being human, non-human or objects, profoundly transforms archaeological practice, which can no longer deal *exclusively* with the human past. So, using two examples that show that an archaeology of the natural is possible – the uncultivated natural (archaeology of ants) and the cultivated natural (archaeology of forests) – we will take a tour on this posthuman archaeology, duly framed in the multiple works already done on posthumanism, both in philosophy and in archaeology.

**KEYWORDS:** Posthumanism; Nature; Theoretical Archaeology; Anthropocene.

**RESUMO:** Com o advento do Antropoceno, e do pós-humanismo como consequência, não é mais possível traçar uma linha rígida entre o humano e o natural. Deste modo, e sendo a arqueologia tradicionalmente um estudo do humano e do seu passado, pretende-se neste artigo discutir a nova posição da arqueologia no Antropoceno. Cremos que o verdadeiro paradigma que o pós-humanismo instaurou, desterritorializando o *humano* enquanto o regente da Terra para o inserir na teia de dependências de todos os agentes históricos, sejam eles humanos, não-humanos, ou objectos, transforma profundamente a prática arqueológica, que

<sup>1</sup> This work was financed by Portuguese funds through FCT – Fundação para a Ciência e Tecnologia in the framework of the doctoral project referenced by 2022.13053.BD, and the project UID/00698: Centre for Archaeology. University of Lisbon.

não mais se pode ocupar *exclusivamente* do passado humano. Assim, e utilizando dois exemplos que mostram que é possível uma arqueologia do natural – do natural não-cultivado (arqueologia das formigas) e do natural cultivado (arqueologia das florestas) –, far-se-á um excursão sobre esta nova arqueologia, devidamente enquadrada nos múltiplos trabalhos já feitos sobre o pós-humanismo, tanto filosoficamente como em arqueologia.

**PALAVRAS-CHAVE:** Pós-humanismo; Natureza; Arqueologia Teórica; Antropoceno.

---

“Das Fundament steht an der falschen Stelle  
Man hätte dieses Haus in den Himmel setzen sollen  
Damit die Götter sterben  
Regelmässig und in zeitlich klassischen Proportionen”  
Einstürzende Neubauten – *Redukt*

## 1. PREAMBLE: ON POSTHUMANISM

Posthumanism is anything but easy to define, with an extensive bibliography both in archaeology (Cipolla – Crellin – Harris 2021; Cipolla 2021; Cobb – Crellin 2022; Crellin *et al.* 2021; Crellin – Harris 2021; Díaz-Guardamino – Morgan 2019; Sørensen 2013) and in philosophy (Badmington 2001; Bignall – Rigney 2019; Birnbacher 2008; Bostrom 2008; Braidotti 2013, 2015, 2018; 2019; Braidotti – Hlavajova 2018; Cimatti 2017; Crowell 2017; Ferrando 2012, 2013, 2016, 2019; Hassan 1977; Hayles 1999; Lindgren – Öhman 2018; Miah 2008; Roden 2015; Wolfe 2010). Complex and multiple – e.g., the *Critical Posthumanism* of literary criticism (Hayles 1999) or the *Cultural Posthumanism* (Haraway 1991: 149-182) of literary theory – it is the result of the culmination of a dying postmodernism (and its relativism) and a world (natural and global) in crisis. Posthumanism is, in a way, the philosophical by-product of the Anthropocene (Ferrando 2019): the age “[...] of the absolute realisation of the (post-) human becoming on Earth” (Agosto – Teuchmann 2023: 308). Posthumanism is thus a reflection of the political and environmental developments of this century, even though it was first coined in 1977 (Hassan 1977). However, posthumanism recognised that the multivocality advocated by postmodernism was limited to *Homo sapiens sapiens*, thereby maintaining a prevailing anthropocentrism. This anthropocentrism is still a purely Western one, universalising the values, beliefs and epistemologies of the West, to the detriment of those of the *Global South* (e.g., Santos 2018).

Indeed, the study of the *Universal Man* (see Braidotti 2022; Toffoletti 2007) is nothing more than the study of the heterosexual, white and cisgender man. Therefore, a post-human vision is always a proposal to decolonise thought, where the epistemologies of the *Global South* come in as new ways of looking at reality and the world.

In this sense, posthumanism represents a definitive break with the anthropocentric paradigm – and because it is truly a paradigm:

“[...] the entire constellation of beliefs, values, techniques, and so on shared by the members of a given community” (Kuhn 1996: 175),

and

“[...] one sort of element in that constellation, the concrete puzzle-solution which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles of normal science” (Kuhn 1996: 175).

This is an essential element of posthumanism: the critical stance towards *Homo sapiens sapiens* as the reigning species (Miah 2008: 77).

Posthumanism is thus also a stance towards non-human animals and animality, which advocates a multi-species policy and their inclusion as political agents, as opposed to a policy that sees humans as the only species worthy of politics (Lindgren – Öhman 2018).

Posthumanism represents a concrete vision of the human in all its aspects: from just another species among a very diverse set of species (*Zoe*; life, in Greek), to a species whose relationship with the question of technology is insurmountable; it speaks, thus, of a more-than-human sociality (Tsing 2013). The human of post-humanism is thus a *Homo faber* taken to its ultimate consequences, where technology supersedes biological constraints to form a *bio-technological aggregate*, or a cyborg:

“By the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs. The cyborg is our ontology; it gives us our politics. The cyborg is a condensed image of both imagination and material reality, the two joined centers structuring any possibility of historical transformation.” (Haraway 1991: 150).

In fact, *transhumanism* – which advocates the improvement of the human through technology and technique (posthumanism and transhumanism are distinct but strongly related currents) (Ferrando 2013: 27) – does not propose a worldview different from today’s, but merely *reflects* it. A central notion in the concept of technology in posthumanism is the Heideggerian one (Miah 2008: 85), where technology is not viewed as strictly technological, but rather as a process *that reveals* (Heidegger 1977: 13). Understanding the position of technology in posthumanism and transhumanism is important for a more complete understanding of posthumanism. Here, technology and technique are simply means of unveiling a *posthuman* human: one that overcomes the constraints imposed by biology, be it on a *cognitive, physical, or emotional* level (Bostrom 2008: 108). This Nietzschean *Übermensch* (“superman”) aspect of transhumanism is both a goal and, only in part, an awareness of humanity’s condition today: where, for example, medication can extend life or improve a person’s quality of life. However, transhumanism seeks to do more than this: it seeks to go considerably beyond biological constraints (see Bostrom 2008). It should be noted that the *Übermensch* metaphor for transhumanism is not new and has already been worked on in this field (Ansell-Pearson 1997).

But in this new conception, human beings are not only made of technique: humans are becoming *decentered* not only as an epistemically hegemonic species, but also as actors and historical-political agents, in order to lose their physicality: socially, humans have become multidimensional, where the virtual issue stands out with digital bodies and virtual identities (Ferrando 2013, 2014).

Posthumanism’s hallmark is not only to decentralise the human but also to decentralise its object (Ferrando 2019: 39), but also to be a concrete *practice* that seeks knowledge in the non-human, be it animal or from the realms of information technology (Ferrando

2012: 10). It resists the notion of method and methodology, because it is configured as a *rhizome* that escapes the notions – in a postmodern heritage – of truth and absolute knowledge. Establishing a methodology has consequences on multiple levels – whether practical or epistemic – so methodology in a post-human logic must always be fluid (Ferrando 2012: 11).

In this sense, the discipline of archaeology – traditionally framed as a human science – be it historical or anthropological – finds an obstacle in the Anthropocene, which has blurred the lines between the natural and the cultural (see Jorge 2023: 2106 for the conception of the human as something different from nature). In fact, archaeology can no longer have as its goal – which, as will be seen, has been the hallmark throughout its history – merely the study of humans and their past, which brings us to an essential relation: that of archaeology with nature – the other part of the dichotomy (nature/culture) that archaeology does not study, or at least subordinates to human history.

This aspect is crucial: since archaeology is traditionally a “science” of the human, rather than of nature *per se*, the Anthropocene renders this division fragile, necessitating a theoretical renewal for archaeology to embrace the nature-culture *continuum* as an object of study.

In archaeology, posthumanism has had multiple effects on the discipline and has been adopted in various forms. For instance, there are four primary levels in which posthumanism has affected archaeology, all of them intertwined (and to summarise): 1) agency became more than just a human prerogative, where non-human animals and objects also have their own agendas in the historical process (e.g., Brittain – Overton 2013; Overton – Hamilakis 2013); 2) archaeology became a multispecies discipline, where the *entanglements* – to use an archaeological term – plants, microbes or *fungi* become part of the inquiry (e.g., Thomas 2022), such as will be seen in this paper; 3) all of this leads to the fall of human exceptionalism, being an integral part of the posthuman agenda: humans are not the only species on Earth that create meaning and that create *webs of dependency*; 4) posthumanism is also a critique of the Western worldview and cosmology, thus helping to decolonise thought. All of this has come together to create new viewpoints and new perspectives, which will be helpful in creating a discussion on nature and archaeology.

## 2. ARCHAEOLOGY AND NATURE

Archaeology, originally a nineteenth-century discipline, has already enjoyed a long discussion about what is archaeological (e.g., Nativ 2016, 2018; Nativ – Lucas 2020; Patrik 1985; Shanks – Platt – Rathje 2004) continuing to engage in a debate about whether it is a historical discipline (Frieman 2023) – or a historical and human science (Embree 1987: 75) – or anthropological (Braidwood 1953, 1959; Longacre 1963, 2010), or even whether it is a science (Dunnell 1992; Wheeler 1950) or part of the broad spectrum of the humanities (Wiseman 1964; Yoffee – Fowles 2012).

However, the intention here is not merely to discuss what archaeology is, as it is believed that a discussion of what is *archaeological* would be more fruitful – following Michael Shanks' challenge (Shanks 2001: 11). There have been many definitions of the discipline – from its earliest formulations to today's ones. Rather than a cohesive discipline, archaeology has been fragmented into multiple groups, and therefore made up of a conglomeration of *archaeologies* that are not always mutually compatible (Kristiansen 1996: 118).

More than one archaeology, in fact, we should speak of the realm of archaeologies: of the multiple approaches and multiple areas that have arisen from this. In this sense, the theoretical mosaic of archaeology is comparable to that of a *garden*, or in the words of Artur Ribeiro (2016: 151):

"I would rather believe that archaeology is a garden: it requires maintenance like removing of weeds and trimming of hedges, and sometimes it requires something new to be planted. It is not the individual plants that grant archaeology its identity but the combination of plants and flowers as a whole, and in this garden not all the ambitious plans that are currently in the works are going to survive."

This is the *gardening* condition that 21<sup>st</sup>-century archaeology shares: an amalgamation of different theoretical plans that are not very compatible, an amalgamation of practices and an amalgamation of social and academic contexts of what it means to be part of archaeology and to be an archaeologist.

The discipline itself has undergone a period of necessary reflection on its ontology throughout its history: on what it is, its objectives, and its own identity.

The first challenge when reflecting on these issues is their relationship with antiquarianism – whether archaeology represents a break, or continuity, with its predecessors. In this sense, their boundaries are far from clear, either in their basic principles (Momigliano 1966; 1990; Schnapp 1996) or in the act of collecting (Mora 1998: 118); in fact, there has already been extensive bibliography on the question of antiquarians (e.g., Brigola 2003; 2009; Carvalho 2022; Pomian 1990) and their relationship with archaeology (Carvalho 2022; Mora 1998; Murray 2007; Schnapp 2002, 2013).

Archaeology, as a disciplinary area, has simply not replaced antiquarianism, because, in the words of Tim Murray:

"Antiquarianism did not conveniently die-out with the advent of archaeology as a discipline, and its history and development has always involved multiple strands – in essence the existence of *other* possibilities and practices" (Murray 2007: 21).

The multiplicity of practices of antiquarianism were also responsible for the profuse complexity of the so-called archaeological practices of the time. In the light of the principles of post-humanism, it is not necessary to make a Manichean opposition between antiquarianism and archaeology, because this relationship – and because it is binominal – only gives rise to the superiority of archaeology, and it is therefore necessary to see both disciplines in a *continuum* of blurred boundaries, which continues to this day. In a certain way, archaeology has established itself as a *neo-antiquarianism* (Murray 2007: 14), given the continuity between both practices (see Schnapp 2002).

Turning our attention to the most common definitions of archaeology and, above all, of what is archaeological, we have a plethora of considerations, almost all of which – as we will see below – share the binomial culture/nature and where archaeology – whether it is profiled alongside history or anthropology – always has the human as its ultimate goal (see Nativ 2014).

For example, and to serve as a metonymy, if we look at the broad spectrum of the discipline over more than a century, we find the following definitions:

Gustaf Kossina – a key archaeologist for the Nazi project – would end up seeing in the discipline, which *he* saw as independent from History, a holistic vision for the reconstruction of the human past: bringing together the prehistoric anthropological and

geological sciences, only *local archaeology* (*heimische Archäologie*) could overcome the lack of linguistic data (Kossina 1926: 4). For Kossina (the translations are ours), the archaeological exercise is therefore one of reconstituting ethnic groups, through the central idea of *culture*, bringing together all the sciences mentioned above, and where archaeology would contribute with a *map of sites* (*Siedlungskarte*) – i.e., a map that should show all the sites of that period attested by their antiquities (*eine solche Karte, die sämtliche durch Altertumssunde bezeugten Siedlungsstätten jener Zeit aufweist*) (Kossina 1926: 6), which he considered more effective than history in terms of establishing ethnic boundaries (Kossina 1926: 7). Furthermore, and it is explicitly stated, the supreme goal of archaeology is not the individual, nor the small ethnic group, but only to identify larger ethnic groups (*sondern weist überall nur größere Völkerschaften*) (Kossina 1926: 8).

Mortimer Wheeler, a key figure in European archaeology, would also be peremptory: “As archaeological scientists, our subject is Man, a subject which, being Men ourselves, we can never fully objectify.” (Wheeler 1950: 122). Similarly, at around the same time, another great representative of European archaeology – especially British – Christopher Hawkes – would comment that the aim of archaeology would be to study humans and their activities (Hawkes 1954).

Vere Gordon Childe, in multiple instances, stated that archaeology – and the archaeological – is the study of the material remains of human communities, not understood as man (in his singular sense), but of the human (in his collective sense). Furthermore, the focus on the collective, public and human question is emphasised:

“Archaeological data consist of all the changes in the material world resulting from human action, or rather, they are the material remains of human conduct.” (Childe 1977: 11).

Processualism is also, by definition, an anthropocentric school of thought, where questions of culture and nature are enthroned in its *systemics*.

David Clarke – a key figure in this school of thought – and in his major work *Analytical Archaeology*, was clear: “Archaeology is the discipline concerned with the recovery, systematic description and study of material culture in the past; the archaeologist is the man responsible for these studies.” (Clarke 2015 [1968]:

10), and, on the subject of archaeology, he also clarified his opinion:

“If archaeology is the discipline concerned with the study of past material culture then artefacts are the archaeologist’s main data even though other specialists may supply him with complementary evidence on fauna, flora, dating and the like. The archaeologist’s facts are artefacts and the information observed about their contextual and specific attributes.” (Clarke 2015 [1968]: 13).

On another level, but of a similar theoretical nature, but already in North America, it is said that “American archaeology is anthropology or it is nothing” (Willey – Phillips 1958: 2). This view is closely linked to anthropocentrism, and its defenders, such as Binford, would even go so far as to say that the aim of archaeology would be to “[...] *explicate* and *explain* the total range of physical and cultural similarities and differences characteristic of the entire spatial-temporal span of man’s existence (Binford 1962: 217).

In other theoretical views, it is said that more than the Indian behind the artefact (Braidwood 1953: 79), it is the system that matters, as is also evident in some texts by Kent Flannery (e.g., Flannery 1972).

Outside of theoretical archaeology, the fact that archaeology is a field that essentially studies the human is also quite striking:

“The multiplicity of disciplines which go to make up modern archaeology combine to study every aspect of the lives of early peoples-their environment, their trade, their diet, the rise and fall of individual settlements and groups of settlements, their cultural affinities, the influences which shaped their buildings and their art-to look beyond the objects and the debris of everyday life to the thoughts that lay behind them, and the intentions that produced them.” (Barker 2005 [1977]: 2).

Even in post-processualism, it is often repeated that archaeology either debates the cultural question – “Instead I propose that we accept that archaeology deals in cultural artifacts, and its works have cultural effect.” (Shanks 2001: 9) – or the human question, and even if the environment is included, it is always subordinate to the human:

“Archaeology is the study and preservation of the material remains of past societies and their environment, that nowadays also includes modern material culture.” (Kristiansen 2009: 4).

Similarly, archaeology is often taken to be a *science of the past* – and exclusively of the human past (Carver 2011; Hodder 1991, 1993, 2002; Hodder – Hutson 2003; Hodder – Orton 1976; Shanks – Tilley 1988, 2016 [1992]; Tilley 1990, 1994a, 1994b, 1996). And even if the methods have, in fact, changed, and even if the structuralist and post-structuralist focus has opened up hermeneutic avenues that have not yet been explored, the basis remains the same: the *human* and their *past*.

However, one definition that deserves reflection is the following: “The archaeological refers to the social fabric.” (Shanks 2001: 12). This, in spite of being of anthropocentric genesis and not shifting attention to materialities and non-human agents, and therefore not demonstrating above all a *loyalty to things* (Olsen *et al.* 2012: 1), is nonetheless useful for a more inclusive vision of archaeology – because the social side is not exclusively human, nor does it include exclusively human actors. This will be the moment of transition towards a *different* archaeology: towards an archaeology concerned with the concreteness of the world and firmly entangled with the world’s materiality, whether past or present.

But, first of all, it has become clear, after this brief exposition, that archaeology in the long course of its history has *essentially* been seen as a binominal branch between culture and nature: where archaeology – whether in its affiliation with history or anthropology – is the subproduct of humanity serves its purposes – it should be emphasised that we have not looked into symmetrical or posthumanism because we will discuss them at length later, and because, before that discussion, the question of culture/nature must be debated.

Verily, an archaeology that is concerned with *universal history* (*Universalgeschichte*), *the great courses of human historical development* – perhaps a world history (*Weltgeschichte*) – and *universal man* (*Universalmensch*) favours the reinforcement of the culture/nature dichotomy, where culture, being the term that is superior in its semiotic relationship – for culture is *active* and nature seen as a *receptacle* –, is the focus of the discipline, being present almost ubiquitously in the ontological debates of the discipline (e.g., Nativ 2018; Shanks 2001).

Archaeology, therefore, and in a certain way that links the discipline to History and Anthropology, ends up being reduced in a binary way between a study of

the cultural aspect of humanity – where the impossibility of an archaeology of the natural is emphasized, even if unconsciously - while understood as an archaeology of the *Bereich des Nicht-Gemacht* (area of the unmade) (Seel 1991: 21). However, it is believed that archaeology, in its ability to *deconstruct* elements, is still trapped in an anthropocentric paradigm.

In this vein, the 21<sup>st</sup> century is the birthplace of a new plethora of post-humanist approaches that contemplate a decentring of the view of the human as the primary historical agent – both in philosophy, with the “crisis of man” (e.g., Braidotti 2013; 2015: 2018; 2019: 35-38), and in archaeology (e.g., Hodder 2011, 2012, 2014, 2016; Olsen 2009; Olsen *et al.* 2012; Olsen – Witmore 2015). This new approach includes multispeciality and embraces non-human animal agency, as well as the environment and nature, as a political agent. It is noteworthy – and it isn’t a coincidence – that these approaches are in the wake of a new era under the banner of the climate crisis. In this way, the place of the human in the world is reconceptualised (e.g., Celermajer *et al.* 2021). Similarly, materialities move from a *paternalistic* relationship in archaeology to one dominated by *communalism* (Pálsson 1996).

It is believed that a discussion that seeks to establish what archaeology is cannot ignore the influence of post-humanism. This movement – which not only deconstructs anthropocentrism but also the very hegemony of Western worldviews – allows for the inclusion of non-Western epistemologies (e.g., Bignall – Rigney 2019; Crellin *et al.* 2021; de Castro 1998), and the inclusion of non-human elements in the historical *becoming*, although this inclusion is not exclusive to posthumanism (Argent 2010; Boyd 2017; Gittins 2013) – however, this thesis continues to defend the radical alterity between the two (e.g., Agosto 2022; Cimatti 2015, 2020).

In fact, archaeology – especially prehistoric archaeology – had already made this inclusion, albeit without a theoretical framework, with Sherratt’s famous *Secondary Products Revolution* (Sherratt 1981; 1983; 1987).

In fact, the *Secondary Products Revolution* was premised on a greater interconnection between non-human animals and their human agents, as the former had begun to be exploited for their secondary products (i.e., those that can be extracted multiple times, as opposed to primary products, which can only be

extracted once). This model, however, has undergone natural reformulations and tweaks since it was first theorized (e.g., Agosto 2022; Greenfield 2010; Halstead – Isaakidou 2011; Harrison 1985; Marciniak 2011; Vigne – Helmer 2007), which has only strengthened the importance of Sherratt’s model for understanding the prehistory of peasant societies, being a model that explores the potentialities between the *entanglement* of non-human animals and human animals. However, it is believed that a vision of archaeology taken to its ultimate consequences by the dictates of posthumanism – the Peircian way of making ideas clear (Peirce 1878) – here understood above all as a deconstruction of Western anthropocentrism – must include not only non-human animals, but also plants or *fungi* as historical agents: the relationship of dependence of non-human animals and human animals on these agents is essential, through the production of oxygen, the collection of *fungi* for consumption and agriculture, which, in the Old World, was responsible for one of the most important – perhaps the most important of all – networks of dependence: agriculture.

From a philosophical point of view, while nature can be understood as the *domain of the unmade* (*Bereich des Nicht-Gemacht*) (Seel 1991, 21), agriculture introduces an axial category in the historical becoming: *cultivated nature* (Seel 1991, 123). In fact, it’s no accident that the Neolithic era began with the onset of the Anthropocene – a theory also referred to as the Early Anthropocene Hypothesis – which marked the first degree of artefactualisation of *the landscape* (Mateus 2004). The consequences of this cultivated nature could not be more obvious: if the *Land/Landschaft* is a terrain shaped by humanity (Serrão 2013: 13), then the Neolithic is the great dawn of the *Landschaft*.

In this way, it is possible to do an archaeology of the natural and of cultivated nature – different from the approaches of archaeozoology and archaeopalynology – and this, taken to its ultimate consequences, is essential in the discussion between Culture/Nature when it comes to debating what the archaeological is – which is often associated with the first element almost exclusively – thus fulfilling the post-humanist agenda in archaeology.

In fact, the dualism between culture and nature has already been widely and consciously debated

in theoretical archaeology (e.g., Hodder 2011; Jones 2004; Kristiansen 2014; Latour 1993; Thomas 2004). However, contrary to Assaf Nativ (2018), who postulated that the annulment of these dichotomies would lead to the end of a fruitful theoretical discussion, it is believed that the use of colonial systems of eurologocentric and anthropocentric *episteme* (see Babo 2021) does not contribute positively to a definition of archaeology in the light of posthumanism, so that the typical deconstruction of posthumanism is again sought here (Braidotti 2015: 12). And this posthumanist deconstruction is essential.

Such an effort implies defining the role that humans play in shaping the natural – even though a dialectical approach always means knowing the exact thesis and antithesis. Furthermore, categories such as gardens or ruins become “composite aesthetic categories” (Serrão 2013), forming a true *Landschaft* – a land shaped by humans and the autopoietic forces of nature. All of this opens up to archaeology as *deconstructible* – composed of individualizable, singular elements that together form a new aggregate.

This highlights the power of nature’s autopoietic forces, as nature doesn’t simply serve as a receptacle for human practices and non-human animals – on the contrary, their relationship is one of resistance (Seel 1991, 14), but not one of antagonism. In this sense, cultivated nature is nothing more than an artefact composed by multiple hands and with multiple agents of the most varied nature (Seel 1991: 123), and even the basis for humans (Seel 1991, 11). This is essential for the post-human deconstruction of archaeology, as it shows the multiple *layers* and *actors* that nature has, showing its metaphysical capacity to be intervened, mixed and receptive to additions.

This does not mean that this deconstruction can be reduced to a *separation* between what is human (or, rudimentarily, culture) and what is natural (or, simply, nature). In fact, the advent of the Anthropocene has made all of this indestructible: there can be no rigid separation between what is natural (i.e. non-human) and what is human or cultural, as will be discussed below.

We do not intend to have a full discussion on the origin of the Anthropocene here, as that would be beyond the scope of this section, nor do we want to discuss the relevance and technical obstacles to

naming this epoch as a geological stage in itself, as there is extensive bibliography on the subject, both on the origin of an Anthropocene epoch (even if it has other names) – (see Steffen *et al.* 2011: 842-845), such as the *Anthropozoikum* (Markl 1986), the *Anthropocene* (Revkin 1992) or the *Homogenocene* (Samways 1999: 65-66), or the 91 proposals for analogous terms already compiled (Chwałczyk 2020) –, as well as the technical and philosophical obstacles to this concept (Elias 2018, Luciano 2022: 25), and the origins of the (e.g., Crutzen – Stoermer 2000; Edgeworth *et al.* 2019; Luciano 2022; Ruddiman 2003; Ruddiman *et al.* 2020).

Returning to the central topic, the advent of the Anthropocene, understood here not as an epoch that can be summed up as *Homo faber*, but as “[...] the age of the absolute realisation of (post-)human becoming on Earth” (Agosto – Teuchmann 2023: 308; the translation is ours), is the advent of landscape in its broadest sense, since cultivated nature “[...] [it] is both medium for and outcome of action and previous histories of action.” (Tilley 1994a: 23), framing the landscape as “[...] a presence of technique, understood since Aristotle as something that already acts on nature, making appear what it could not make appear” (Pinto 2021: 54; translation is ours). This notion of technique is therefore a Heideggerian notion Heidegger (2000 [1953]), since it is understood as *Hervorbringen* (*unveiling*), in the sense of a *poiêsis*, producing an image of the world, an *impression* (see Pinto 2021: 68).

It is important to emphasise that it is the advent of landscape *lato sensu*, understood here as a *pensée paysagère* (see Berque 2018 [2008]): it is in this *immanent turn* that landscape is unveiled as a transcultural concept, understood as “[...] the landscape is the space of humanisation, the moment of the unfolding of the hominid body into technique and language [...]” (Henrich 2020: 137; translation is ours).

All this makes evident the conceptual and practical entanglement that a *deconstruction* – an archaeology – of the natural entails. On the side of culture, it has been the privileged one in the anthropocentric archaeological approaches of the last century (e.g., Binford 1962; Childe 1956; Clarke 2015 [1968]; White 2007 [1959]). This archaeology envisaged only the study of humans and the history of humanity, whether from the point of view of history, more typical of European approaches, or anthropology, more famous for its North American

counterparts. All this means that archaeology is nothing more than a study of *Homo faber's* capacity to add – or, in Seelian terms, to add, or *zutun* (Seel 1991). In fact, there have also been attempts to transform the idea of culture into something fluid and not exclusively anthropocentric (e.g., Agosto 2021; Hodder – Orton 1976; Schiffer 1976), because a monolithic view of archaeology as something exclusively human is no longer possible. Its aims have to be expanded: plants, *fungi*, bacteria, artefacts or the climate are historical people with their weight of becoming, they are truly “[...] hybridized networks of bodies, things and nature that metabolize energy to sustain life” (Barrett 2014: 72): they are part of the societal metabolism of communities, thus creating a new way of living, a “[...] ‘naturecultures’ continuum (Haraway 1997; 2003), which also brings to an end the categorical distinction between life as bios, the prerogative of Anthropos, as distinct from the life of animals and non-humans, or zoe (Braidotti 2006)” (Braidotti 2018: 34-35).

What archaeology is therefore possible for this “*naturecultures continuum*”? It is believed that, by continuing with the post-human deconstruction advocated here, it is possible to offer two examples of archaeology – one of uncultivated nature and the other of cultivated nature – to demonstrate the feasibility of what is being proposed, as will be seen in section 3. This aims to show the potentialities of the archaeological gaze and the new materialities/contexts that can be analysed by archaeology in a posthuman perspective.

### 3. BEYOND NATURE AND CULTURE: A NOTION OF POST-HUMAN ARCHAEOLOGY IN THE AGE OF THE ANTHROPOCENE

The Anthropocene is a reality that is relevant to the history of the planet at all levels. Conceptually, it transforms the notion of *natural history* and blurs the boundaries between nature, history and culture. Furthermore, as Adorno has already warned, history and nature cannot become ontological essences without their consequent idealisation and, therefore, “[...] into mythical self-parodies” (Pensky 2004: 230). Nature and history are therefore left with fluid boundaries, where the question of technique reaches its apex:

its *planeterisation*, entangling human and non-human animals. It is therefore necessary, in order to respond to the challenges of a new era, to have a *more-than-human historicity* (Simon – Tamm – Domańska 2021: 409) that encompasses all historical agents, regardless of their nature. And archaeology is ready to respond to this challenge.

In this sense, archaeology does not fall into the study of human becoming, nor in its behaviour: it is beyond the *Anthropos* and cannot be reduced to it. In fact, archaeology goes beyond the study of the species or a question of biological exceptionalism. Nor is archaeology a *hard science*, or a science concerned with cataloging *tekmeria* – although it is concerned with the study of traces, but that is not its central point. Art? Neither, because it is not between the designs of Apollo and Dionysus (Nietzsche 2000 [1872]). Thus, archaeology here is essentially a way of *being in the world* – a *discipline of things* (Olsen *et al.* 2012) – and an *ecology of practices* – (Olsen *et al.* 2012; Rathje – Shanks – Witmore 2013; Stengers 2005: 398) – that *form the world*.

This point is essential: archaeology, from its origins to the dawn of the new materialisms, is a field that studies *concreteness*, whether human or non-human. To this end, it uses *tools* – whether *conceptual* (Graham 2005) or *physical* (Carvalho – Agosto 2023) – to achieve its goals. Archaeology is also a lexical field: e.g., stratigraphic units, artefacts, ceramic typologies or archaeological sites – archaeology is therefore a form of writing that sets out to answer, even if it is mediated by the art. The archaeologist is therefore a complete form of being – a distinct *category of being* – different from that of the historian or the anthropologist. Whether because of its own tradition as an academic field or because of the objectives it pursues, archaeology can be individualised within the academy.

History, as a discipline, tends to be *global (lato sensu)*: it includes all subjects, as they always lend themselves to historiographical or diachronic analysis (Chakrabarty 2000: 112), and its epistemological frontier is always mobile (Trüper 2019: 26). But even history can no longer be seen in its culture/nature binomial since the advent of the Anthropocene (Chakrabarty 2009: 201), which has complicated monolithic visions of the discipline.

Going back to the 18<sup>th</sup> century, at the beginning of (Universal) History, which is actually of recent

conceptual progeny (Foucault 2005 [1966]: 239-240), we find the key elements for a historiography of *Universal Man* and *Universal History*: a Western, normative, *masculine* (Braidotti 2022; Toffoletti 2007) and anthropocentric historiography. It is, moreover, a history that takes little account of geographical constraints and the environment in the historical becoming: it is a history where the human and its technique are sovereign, or as Hegel would elegantly put it: “Nature should not be rated too high nor too low: the mild Ionic sky certainly contributed much to the charm of the Homeric poems, yet this alone can produce no Homers. Nor in fact does it continue to produce them; under Turkish government no bards have arisen” (Hegel 2001: 97).

The advent of history is therefore the advent of reason and of human rationality over its fate. *Global History (Weltgeschichte)* is nothing more than the *image and act of Reason*; it is nothing more than the proof that Reason dominates the world and, therefore, the world can only be rational (Hegel 2001: 22). This rationality – the offspring of the industrial revolution – silenced the first cries for greater ecological and natural awareness (see Varandas 2014): the awareness of a dying nature. It was only with the Anthropocene – when *Technique* became planetary – and humans merged with their tools on a scale never before achieved by *Homo faber* that this awareness – this true feeling of crisis and the need for change – reached transhuman proportions (i.e., it went beyond the scale of the human and was diluted into a history of the Earth as a globe and planet). The History that emerged from the 18<sup>th</sup> century is, due to Hegelian influence, essentially a History of the human that proves its hegemony over other species (see Hennrich 2023: 86-87). However, an analysis of more recent history theory reveals the same absolute focus on the human question – the birth of new strands of history “[...] are based on the integral correlation of all aspects of human life.” (Godinho 2013: 23). Even the *Annales*, an unavoidable reference in History, expressed the same anthropocentric vision: whether in Emmanuel Le Roy Ladurie’s seminal work on *Les paysans de Languedoc* (1966), where even a vision that sees climate as an essential element in the study of History, his *histoire totale* is nothing more than a History of the Human, or in Marc Bloch, in his *Apologie pour l’Histoire, ou Métier Historien*, where he says that a history of the non-human – here metonymized

in volcanoes and the solar system – is not the historian's concern (Bloch 1953: 23), and then states that the object of history is the human (Bloch 1953: 25).

Anthropology, in its origins, has the human at its core (Eriksen 2017: 3), and is therefore overtaken by posthumanism and its archaeology. The question of archaeology as an anthropology, although not frequent in the Old World, has been quite common in the New World for over a century (e.g., Braidwood 1959; Dixon 1913; Jennings – Norbeck 1964; Longacre 1963; 2010; Parsons 1940; Phillips 1955; Smith 1911; Willey – Phillips 1958), where even before Binford (1962) there were very clear slogans about the discipline's affiliation, such as “American archaeology is anthropology or it is nothing” (Willey – Phillips 1958: 2); however, all these visions are informed by an idea of archaeology that serves the human as an exceptional species – rather anthropocentric – where, for example, we find the purpose of, for archaeology, “[...] *explicate* and *explain* the total range of physical and cultural similarities and differences characteristic of the entire spatial-temporal span of man's existence (Binford 1962: 217).

The purpose of this vision of archaeology is therefore only to *refine* and *polish* the theories of anthropology (Lyman 2007: 136). In fact, it was the aim of this archaeology to affiliate itself as an anthropology, as Lewis Binford defended several times (Binford 1962, 1963, 1964, 1965, 1968). And even though archaeology draws from anthropology as a theoretical *corpus*, and whose contributions should not be dismissed, advocating a vision of archaeology that is still entangled with the Human is an exercise in anachronism. In fact, to compare archaeologists to behavioural scientists and anthropologists (Reid – Whittlesey 1982: 701-702) is to reduce a leafy tree of complexity to a handful of axioms that are insufficient to cover the vastness of the field.

Archaeology is therefore a point of synthesis, a meeting point between various areas that, at their core, form a distinct reality and a point of view of their own: a *category of being and a way of being and being in the world*. This question is merely more than an appendix: from the moment the Anthropocene granted *Homo sapiens sapiens* custody of the Earth, even though it simultaneously *detrterritorialised* the planet for a *multi-species* logic, what is human – and, consequently, what belongs to it – can only be seen in a post-human logic (Braidotti 2019: 1).

Nor can archaeology have categories such as space or time as defining elements, even though archaeology is, at first glance – as a historical science and even etymologically as a *study of the ancient* – linked to a science of the past, or of past time (Bailey 2007; Nativ – Lucas 2020). However, in archaeology – as in History – time is nothing more than an artefact: a presentist construction for organising the passage of time and grouping time into *operational categories* (Godinho 2013; Lowenthal 2015; Lucas 2021: 45-51). Furthermore, Time in archaeology is often organised according to literary criteria – with a beginning, middle and end: e.g., early, middle and late Chalcolithic (Lucas 2005: 51) – which stems from an evolutionist logic.

In fact, categorizing archaeology by temporal and/or spatial criteria is the result of an *aporia* and a conceptual confusion between Kant's aprioristic transcendental conditions of knowledge – space and time (see Kant 1956: A157-B197) – and the supposed defining criteria of the discipline. To elevate space or time to the defining criteria of the discipline would be to make archaeology an aprioristic Kantian category of knowledge: in short, nothing would be *knowable* without archaeology.

Furthermore, the contradictions (i.e. dialectics) – which are the engine of so many philosophical systems – find a *sublimation* in posthumanism: rather than a dialectic that privileges the human, it is the *egalitarianism of the Zoe* (Braidotti 2013: 60) of Spinozian monadism. Globalization itself and the global market have transformed the planet into a repository of *commodities*, unifying “[...] all species under the imperative of the market [...]” (Braidotti 2013: 63). Archaeology is not isolated in the world and does not stand on the sidelines of a global historical trend: whether through theory, philosophy or the global market: archaeology will either become post-human, or it will remain a discipline bound by the dictates of Western humanism and anthropocentrism.

The archaeology of posthumanism is therefore an archaeology with an idea of the human that bows to a new conception of itself: one that goes beyond biology and culture and moves into the conceptual fluidity of a dynamic and indeterminate category (Tamm – Simon 2020: 297). For an archaeology that doesn't have to do with the *Universal Man* – understood as the normative, straight, white, Western cis man – or a

human on the margins of universalisms: the answer is posthumanism. And if we want a sharper questioning of the epistemological consequences of anthropocentrism and eurologocentrism, we find in this question – the question of the normative straight and cis *Universal Man* and in the dichotomy of man/woman, male/female – a robust point of analysis. In fact, unveiling this issue allows us to broaden our horizons and understand other dichotomies, such as that of nature and culture – sex would be the natural given, and gender, with consequence, the acquired by culture (Babo 2021: 177). Once again, these dichotomies must be contrasted with post-humanism, which has established the era of the *continuum* – a position that is now widely accepted for issues of gender identity, sexuality and even psychiatric conditions such as Autism Spectrum Disorder (see APA 2013). This question is essential, because just as in the question of Man (white, cis, straight) as in Human (man, healthy, tall), the binary opposition it seeks to establish with its opposites “[...] is the starting point on which the opposition is born, which is why, even if the relative positions are exchanged, this term prevails over the other because it becomes the structure that made the binary system possible.” (Babo 2021: 181). To work on nature is to work on culture, because it is the term that is superior, in the same way that *Woman is the Other of Man* (Babo 2021: 182): only by undermining this binary system is it possible to institute the posthuman and deconstruct eurologocentrism, anthropocentrism, and misogyny.

Returning to the central topic: what is archaeology? Archaeology is the study of the concrete, of materialities and things, informed by all historical agents, whether human or not, which is based on the deconstruction of a given reality. This translates into a stance towards the world and the concrete, towards the Earth and the planet, towards the Human and the Non-Human, towards historiography and its grammar: in short, being an archaeologist – i.e. someone who inquires into the archaeological – is configured as a different *category of being*, who feels differently and processes differently.

In this sense, archaeology is not bound by time constraints: it is not because it is past that it is archaeological, for it is possible to analyse contemporaneity using archaeological methods (e.g., Carvalho 2022,

2024; Casella 2007; González-Ruibal 2019, 2020, 2022; Hamilakis 2015 [2012], 2017, 2018, 2019; Lehmann 2015; McAtackney – Penrose 2016; Moshenska – Shelly 2020; Rathje – Murphy 2011; Santos 2024; Soto 2016).

Through post-humanism, whether philosophical or archaeological, archaeology is breaking down the barriers of Western anthropocentrism that have long dominated the discipline. Thus, breaking with anthropocentric logic, post-humanism will inform a *new archaeology*, one that is intimately linked to things, and not necessarily to things that serve a human history, which forces it to be reconceptualised in the Anthropocene era, where culture and nature are one and the same. In this way, archaeology opens up to the natural, overcoming the ontological obstacles that have been placed in the discipline for decades.

Once again, archaeology is updating itself and revealing itself to be a science that is reconfiguring itself in the light of the times, intentionalities and agentialities, in a permanent, eternal becoming.

In terms of the archaeologists themselves, there are also some crucial points to highlight: posthuman archaeology is primarily an archaeology that acknowledges the deterritorialisation of the human as the sole ruler of the Earth, opening up historical agency to many other elements. It is therefore more a theoretical disposition and an opening up of the archaeologist's potential than a set of specific ancillary knowledge. However, if archaeology were to start investigating the so-called natural world (let's simplify), some knowledge of biology and ecosystemics would benefit the approach, in the same fashion as knowledge of prehistory is ancillary to the study of prehistoric pottery.

Moreover, it must be noticed that such an engagement – a posthuman one – is also a political stance towards the world, where archaeology is but a tool to understand the last of times – our current global crisis at the forefront of the current sixth mass extinction.

Nevertheless, before delving into the archaeology of uncultivated and cultivated nature, a question worth pondering remains: is it possible to create non-human knowledge? From a posthuman perspective, one must not confuse the idea of attributing agency to non-human elements (such as non-human animals, objects, or hyperobjects) with the pretension to create something beyond human knowledge. Verily, knowledge is always human, for we cannot access a

logic that is beyond the scope of our species; we are, in a sense, caged by our own (bio)logical systems. It is therefore impossible to create non-human knowledge; nevertheless, this does not equate to a failure of the posthuman agenda, as the two are not incompatible. Henceforth, when we (for instance) study ants and their social systems it is inevitable that we already have some human preconceptions on the topic, but it does not lose any integrity as a conclusion, for if we refuse to acknowledge a set of premises because of the sole fact that is a human saying them, we fall into the so called genetic fallacy or the fallacy of origins.

We have, thus, set forth the basis for an archaeology of nature from a posthuman perspective, and without further ado.

#### 4. TOWARDS AN ARCHAEOLOGY OF NATURE

##### 4.1. An archaeology of ants, or uncultivated nature

The unity formed by ants is remarkable at every level: there are architectures, multiple players and even randomness (Richardson *et al.* 2021).

Ants, widely known as a gregarious species, have a solid social structure that is divisible into categories – the first category being deconstructible. These *strata* – or castes, as is typical of *Hymenoptera* (e.g. ants, bees or wasps) – obey developmental rules that guide the social functioning of each member of the colony (Hölldobler – Wilson 2009: 6). These can be summarised in three different categories: the queen – an insect with considerable development; the soldiers – an ant that is not completely reduced; and the workers – who are at the base of the social structure. This aspect is essential in any colony, as “The algorithms of caste development and behavior are the first level in the construction of a superorganism.” (Hölldobler – Wilson 2009: 7), which in this case is the colony. In the first instance, the ant society is called a superorganism – i.e. an organism made up of smaller organisms.

In addition, ants are adept at recognizing an *us* and a *them* – which is nothing more than the sensation of otherness – in what is known as *nestmate recognition* (Lenoir *et al.* 1999) – essentially through cuticular signals, which can be further deconstructed into production, perception and action (Bos – d’Ettorre 2012).

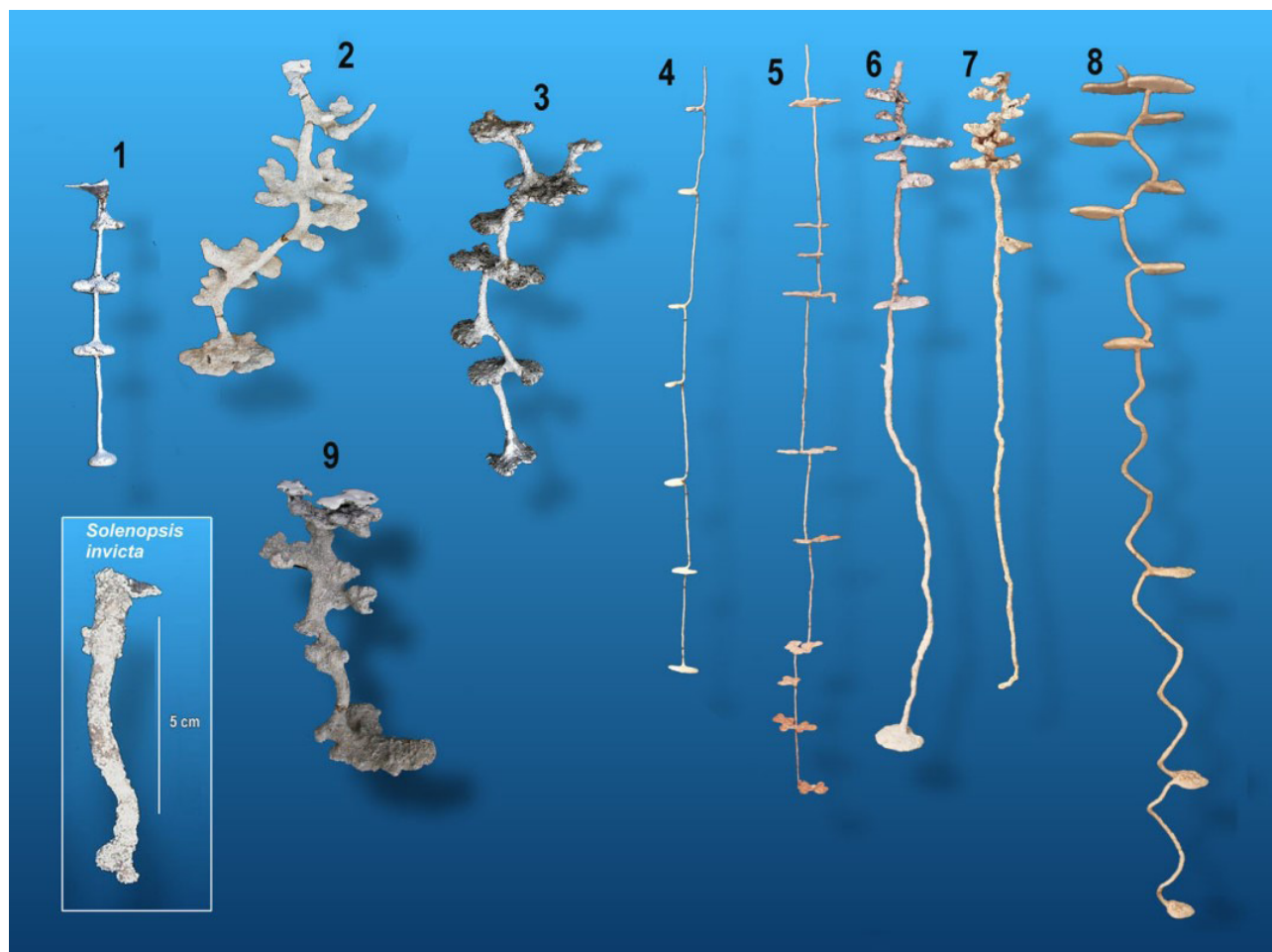
These social characteristics form the basis of ant colonies: a superorganism shaped by the union of each individual element. The resulting architecture – where social structure meets natural and environmental constraints (Sankovitz – Purcell 2021) – is one of continuous, cumulative addition – although its density, whether top-heavy or bottom-heavy, varies between species (Tschinkel 2015).

In addition, the nests and their architecture (Tschinkel 2015) can be deconstructed into several floors, elevators and multiple rooms that vary in form and function - there are even garbage dumps in the lower areas of the colony – with a structuring room (hall) “[...] where there are several tunnels giving access to chambers located both on the same shaft as in different ones” (Guimarães *et al.* 2018: 10) and floors related to temperature and humidity control (Guimarães *et al.* 2018: 10) (Fig. 1).

An analysis of the complex architecture that ants provide allows for an analysis of their traces – their *tekmeria* (Veyne 1984 [1971]: 4) – or an archaeology of ants. Furthermore, colonies can be further divided into typologies, stratigraphic units – since they are constructions – and can therefore be treated like any other more classically archaeological materiality; and even excavated stratigraphically, as has already been done (Tschinkel 2004: 2). And if in the earth and soil lies historicity and information worthy of archaeology and its task (Barker 2005 [1977]: 1), the ants’ lack of history is undermined by archaeological excavation and indignation: a telluric engagement with non-human animals.

##### 4.2. Towards an archaeology of forests or cultivated nature

The entire ecosystem - as a system - can be deconstructed into subsystems, into different biological communities “[...] feeding relationships between organisms – the trophic structure of the community” (Wilbur 2011: 1205), or the physical laws that govern it, such as the law of conservation of mass and energy. In this sense, all the interactions that these biological communities have with each other – including symbiosis, mutualism, parasitism, commensalism, predation, and herbivory (Wilbur 2011: 1200-1203) – are deconstructable parts, as are the relationships in food chains, such as those of primary or secondary consumers.



**FIG. 1** Examples of ant colony architecture, in this case of the species *Solenopsis invicta* (after Tschinkel 2015).

In all of this, historical agents – be they human animals, non-human animals or plants – play a role in the development of forests. An archaeology of the forest implies understanding all these elements and their agents in order to understand the space. Even in an anthropocentric logic, this deconstruction is necessary for an understanding of the human becoming. Thus, the forest is inaugurated as the space par excellence of the so-called *natureculture continuum*.

This aspect is essential to demonstrate the nature of forests, because human intervention in them is evident at all levels: they have palimpsests, different diachronies and evolution and where the forces of nature – as an autopoietic force – meet the artefactualisation of space.

Forest management itself has been essential in the development of History: whether in the Neolithic period, where deforestation for planting crops was a reality, making humans a new driving force in the ecology of ecosystems, or at the dawn of the

Asturian-Leonese kingdom for the settlement of newly conquered territories, where deforestation was essential. In fact, throughout medieval times, the history of forests is associated with a first phase of hostility (9<sup>th</sup> – 10<sup>th</sup> century), to a *dominated* and fragmented entity (11<sup>th</sup> – 13<sup>th</sup> centuries), to finally become something to be defended and promoted (Almeida 1978).

Subsequently, the lack of fertile land on the Mediterranean side of Western Iberia led to an increase in pastoralism in the Cordillera Central, which was decisive for the deforestation of the region (Aguar – Pinto 2007: 43-44). Another proof of the strength of the human and non-human animal elements is the *montado (Dehesa)* ecosystem – which essentially covers the regions of the Alentejo (Portugal) and neighbouring Extremadura (Spain), which is nothing more than the result of the interaction between centuries of human presence with an ecosystem that depends exclusively on human management (Joffre – Rambal – Ratte 1999: 58).

Forests also played a crucial role in societal metabolism at the dawn of modernity in Portugal, where wood was essential for Portuguese maritime expansion, whether for commercial and industrial activities, trade, or war (Devy-Vareta 1986: 16).

In fact, complaints about access to firewood, the lack of animals for hunting activities or the lack of certain products (such as cork) exclusively found in forests often appeared in the “Cortes”, which justified the need to regulate forests (Devy-Vareta 1986: 20).

All these elements clearly demonstrate the role that human and non-human agents play in this true *hyperobject* that is the forest – i.e., in its post-human sense: “[...] things that are massively distributed in time and space relative to humans.” (Morton 2013: 1; also see Bennett 2010; Morton 2017). All of this can be deconstructed in various branches, zones and sections – in a true horizontal stratigraphy – in the *diachronic scars* that forests bear, in these *tekmeria* (Veyne 1984 [1971]: 4) that make up what the forest is, shaped by hundreds of plants, animals, fungi and animals.

Forests are also the crystallisation of various temporalities – if taken *as surface assemblages* – as an *unconstituted Present* (Harrison 2011: 154): a junction of all the past, present and putative futures.

## 5. SYNTHESIS

Posthumanism is a way of seeing the world that emphasises the break with modernism, which is mainly based on anthropocentrism. It therefore rejects the vision of the *Universal Man* – who is nothing more than the white, healthy, cis, straight man. Configuring itself as a true paradigm, in the Kuhnian sense of the term, posthumanism is therefore more than just a trend of thought. In the same way, posthumanism includes the various historical agents in its project, whether human or non-human, as well as advocating a symbiotic relationship between humans and technology – a true network of dependencies between the two, which could lead to a kind of Nietzschean *Übermensch*. All of this will have an impact on archaeology, which, in the midst of the Anthropocene, will be faced with a failing natural world where humans are no longer the absolute rulers of the planet.

However, the entire history of the discipline has been dominated by a modern – anthropocentric – paradigm that makes humans the ultimate cause of the whole discipline. Archaeology thus becomes an archaeology of the human. Similarly, this implies that archaeology can only study culture – as opposed to nature. However, the Anthropocene and post-humanism blur the lines between culture and nature, rendering each into fuzzy categories where the two are intertwined.

By illustrating two case studies – both of an uncultivated nature (ants) and a cultivated nature (forests), it was shown how archaeology – defined here according to post-human and post-anthropocentric parameters such as a *loyalty to things* and a *post-human* capacity for *deconstruction* – can inquire into these non-human realities.

Finally, archaeology positions itself in the path of the Anthropocene and post-human archaeologies as a powerful tool of the past and present, both natural and cultural – showing that these categories exist in a *continuum* and not as separate categories. This makes the discipline break down its traditional defining criteria – the category of time – and embrace the multiplicity and epistemological openness that the discipline has the potential to be a *loyalty to things*. Thus, archaeology is more than a science of the human past; it is a heuristic tool for historical agents, whether human or non-human, without being framed in a non-stopping eternal becoming.

## Acknowledgements

I would like to thank Leandro Borges, Juno Alice Calado, Yuna Le Quéré and Cláudia Martins for the thorough revision of this paper’s English and the fruitful discussion of ideas, as well as the two anonymous reviewers for their useful comments.

## Bibliography

- AGOSTO, F. – TEUCHMANN, P. (2023) – (Re)vendo a construção da Paisagem na Arqueologia: Antropoceno e Visualidade Maquinica. *digitAR - Revista Digital de Arqueologia Arquitectura e Artes*, 9: 296-311.
- AGOSTO, F. (2021) – *O Cerro dos Castelos de São Brás (Serpa) no 3º milénio a.n.e.: materialidades e problemáticas de uma especificidade cultural no extremo Sul do Sudoeste ibérico*. MA Thesis presented to the School of Arts and Humanities of the University of Lisbon. Unpublished.
- AGOSTO, F. (2022) – O conjunto faunístico do Cerro dos Castelos de São Brás (Serpa, Portugal) no 3.º milénio a.n.e.: entre a antroposfera e a zoesfera. *Ophiussa*, 6: 43-67. DOI: <https://doi.org/10.51679/ophiussa.2022.117>
- AGUIAR, C. – PINTO, B. (2007) – Paleohistória e história antiga das florestas de Portugal Continental - até à Idade Média. In SILVA, J. S. (ed.) – *Árvores e florestas de Portugal: floresta e sociedade, uma história comum*. Lisboa: 15-53.
- ALMEIDA, C. A. (1978) – *Arquitectura Românica de Entre Douro e Minho*. PhD Thesis presented to the University of Porto. Unpublished.
- ANSELL-PEARSON, K. (1997) – *Viroid Life: Perspectives on Nietzsche and the Transhuman Condition*. London and New York.
- APA (2013) – *DSM-5 - Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition. Arlington.
- ARGENT, G. (2010) – Do the clothes make the horse? Relationality, roles and statuses in Iron Age Inner Asia. *World Archaeology*, 42(2): 157-174. DOI: <https://doi.org/10.1080/00438241003672633>
- BABO, M. A. (2021) – A crítica à dicotomia de género como forma de descolonização epistémica. *RCL - Revista de Comunicação e Linguagens*, 54: 176-192.
- BADMINGTON, N. (2001) – Pod almighty!; or, humanism, posthumanism, and the strange case of Invasion of the Body Snatchers. *Textual Practice*, 15(1): 5-22. DOI: <https://doi.org/10.1080/09502360010013848>
- BAILEY, G. (2007) – Time perspectives, palimpsests and the archaeology of time. *Journal of Anthropological Archaeology*, 26: 198-223. DOI: <https://doi.org/10.1016/j.jaa.2006.08.002>
- BARKER, P. (2005 [1977]) – *Techniques of Archaeological Excavation*. Chipping Norton.
- BARRETT, J. C. (2014) – The material constitution of humanness. *Archaeological Dialogues*, 21(1): 65-74. DOI: <https://doi.org/10.1017/S1380203814000105>
- BENNETT, J. (2010) – *Vibrant Matter: A Political Ecology of Things*. Durham and London.
- BERQUE, A. (2018 [2008]) – *La Pensée Paysagère*. Bastia.
- BIGNALL, S. – RIGNEY, D. (2019) – Indigeneity, posthumanism, and nomadic thought: transforming colonial ecologies. In BRAIDOTTI, R. – BIGNALL, S. (eds.) – *Posthuman ecologies: Complexity and process after Deleuze*. London: 159-182.
- BINFORD, L. R. (1962) – Archaeology as Anthropology. *American Antiquity*, 28(2): 217-225.
- BINFORD, L. R. (1963) – “Red ocher” caches from the Michigan area: a possible case of cultural drift. *Southwestern Journal of Anthropology*, 19: 89-108.
- BINFORD, L. R. (1964) – A consideration of archaeological research design. *American Antiquity*, 29: 425-441.
- BINFORD, L. R. (1965) – Archaeological systematics and the study of culture process. *American Antiquity*, 21(2): 203-210.
- BINFORD, L. R. (1968) – Archaeological perspectives. In BINFORD, S. R. - BINFORD, L. R. (eds.) – *New Perspectives in Archaeology*. Chicago: 5-32.
- BIRNBACHER, D. (2008) – Posthumanity, Transhumanism and Human Nature. In GORDIJN, B. – CHADWICK, R. (eds.) – *Medical Enhancement and Posthumanity*. Berlin: 95-106.
- BLOCH, M. (1953) – *Historian's Craft*. New York.
- BOS, N. – D'ETTORRE, P. (2012) – Recognition of social identity in ants. *Frontiers in Psychology*, 3: 83. DOI: <https://doi.org/10.3389/fpsyg.2012.00083>
- BOSTROM, N. (2008) – Why I Want to be a Posthuman when I Grow Up. In GORDIJN, B. – CHADWICK, R. (eds.) – *Medical Enhancement and Posthumanity*. Berlin: 107-136.
- BOYD, B. (2017) – Archaeology and Human-Animal Relations: Thinking Through Anthropocentrism. *Annual Review of Anthropology*, 46: 299-316. DOI: <https://doi.org/10.1146/annurev-anthro-102116-041346>
- BRAIDOTTI, R. – HLAVAJOVA, M. (2018) – *Posthuman Glossary*. London and New York.
- BRAIDOTTI, R. (2006) – *Transpositions: On Nomadic Ethics*. Cambridge.
- BRAIDOTTI, R. (2013) – *The Posthuman*. Cambridge.
- BRAIDOTTI, R. (2015) – Yes, There Is No Crisis. Working Towards the Posthumanities. *Journal of Diversity and Gender Studies*, 2(1-2): 9-20.
- BRAIDOTTI, R. (2018) – A Theoretical Framework for the Critical Posthumanities. *Theory, Culture & Society*, 36(6): 31-61. DOI: <https://doi.org/10.1177/0263276418771486>
- BRAIDOTTI, R. (2019) – *Posthuman Knowledge*. Cambridge.
- BRAIDOTTI, R. (2022) – *Posthuman Feminism*. Cambridge.
- BRAIDWOOD, L. (1953) – *Digging Beyond The Tigris: An American Woman Archeologist's Story in the Kurdish Hills of Iraq*. London and New York.
- BRAIDWOOD, R. J. (1959) – Archeology and the evolutionary theory. In MEGGERS, B. J. (eds.) – *Evolution and Anthropology: A Centennial Appraisal*. Washington, DC: 76-89.
- BRIGOLA, J. (2003) – *Coleções, Gabinetes e museus em Portugal no século XVIII*. Lisboa.
- BRIGOLA, J. (2009) – *Coleccionismo no século XVIII, Textos e documentos*. Porto.
- BRITAIN, M. – OVERTON, N. (2013) – The Significance of Others: A Prehistory of Rhythm and Interspecies Participation. *Society & Animals*, 21(2): 134-149. DOI: <https://doi.org/10.1163/15685306-12341298>
- CARVALHO, D. – AGOSTO, F. (2023) – Tools of Archaeology: Toward an Integrated History of Archaeology. *Bulletin of the History of Archaeology*, 33(1): 1-20. DOI: <https://doi.org/10.5334/bha-703>
- CARVALHO, D. (2022) – Gabinetes setecentistas na História da Arqueologia Portuguesa: espaços, proprietários e artefactos. *Conimbriga*, LXI: 295-325.
- CARVALHO, D. (2024) – Theorizing Backdirt: Between Contemporary Archaeology and a Meta-Critique. *Journal of Field Archaeology*, 49(2): 115-121.
- CARVER, G. (2011) – Reflections on the archaeology of archaeological excavation. *Archaeological Dialogues*, 18(1): 18-26. DOI: <https://doi.org/10.1017/S1380203811000067>
- CASELLA, E. (2007) – *The Archaeology of Institutional Confinement*. Gainesville.

- CELERMAJER, D. – SCHLOSBERG, D. – RICKARDS, L. – STEWART-HARAWIRA, M. – THALER, M. – TSCHAKERT, P. – VERLIE, B. – WINTER, C. (2021) – Multispecies justice : theories, challenges, and a research agenda for environmental politics. *Developpement Durable & Territoires*, 12(3): 119-140. DOI: <https://doi.org/ARTN e19793>
- CHAKRABARTY, D. (2000) – *Provincializing Europe: Postcolonial Thought and Historical Difference*. Princeton and Oxford.
- CHAKRABARTY, D. (2009) - The Climate of History: Four Theses. *Critical Inquiry*, 35 (2): 197-222. <https://doi.org/10.1086/596640>
- CHILDE, V. G. (1956) – *Piecing Together the Past. The Interpretation of Archeological Data*. London.
- CHILDE, V. G. (1977) – *Introdução à Arqueologia*. Lisboa.
- CHWAŁCZYK, F. (2020) – Around the Anthropocene in Eighty Names - Considering the Urbanocene Proposition. *Sustainability*, 12(11): 4458. DOI: <https://doi.org/10.3390/su12114458>
- CIMATTI, F. (2015) – Ten Theses on Animality. *Rivista Di Filosofia*, II(18): 41-59.
- CIMATTI, F. (2017) – Posthumanism and Animality. *Lo Sguardo - rivista di filosofia*, 24(II): 111-123.
- CIMATTI, F. (2020) – *Unbecoming Human: Philosophy of Animality after Deleuze*. Edinburgh.
- CIPOLLA, C. – CRELLIN, R. J. – HARRIS, O. J. T. (2021) – Posthuman Archaeologies, Archaeological Posthumanisms. *Journal of Posthumanism*, 1(1): 5-21. DOI: <https://doi.org/10.33182/jp.v1i1.1357>
- CIPOLLA, C. N. (2021) – Posthuman Potentials: Considering Collaborative Indigenous Archaeology. *Cambridge Archaeological Journal*, 31(3): 509-514.
- CLARKE, D. L. (2015 [1968]) – *Analytical Archaeology*. London and New York.
- COBB, H. – CRELLIN, R. J. (2022) – Affirmation and Action: A Posthumanist Feminist Agenda for Archaeology. *Cambridge Archaeological Journal*, 32(2): 265-279. DOI: <https://doi.org/10.1017/s0959774321000573>
- CRELLIN, R. J. – CIPOLLA, C. N. – MONTGOMERY, L. M. – HARRIS, O. J. – MOORE, S. V. (2021) – *Archaeological Theory in Dialogue: Situating Relationality, Ontology, Posthumanism and Indigenous paradigms*. London.
- CRELLIN, R. J. – HARRIS, O. J. T. (2021) – What Difference Does Posthumanism Make? *Cambridge Archaeological Journal*, 31(3): 469-475. DOI: <https://doi.org/10.1017/s0959774321000159>
- CROWELL, S. (2017) – We Have Never Been Animals. Heidegger's Posthumanism. *Études phénoménologiques – Phenomenological Studies*, 1: 217-240. DOI: <https://doi.org/10.2143/EPH.1.0.3188849>
- CRUTZEN, P. J. – STOERMER, E. F. (2000) – The “Anthropocene”. *Global Change Newsletter*, 41: 17.
- DE CASTRO, E. V. (1998) – Cosmological Deixis and Amerindian Perspectivism. *The Journal of the Royal Anthropological Institute*, 4(3): 469. DOI: <https://doi.org/10.2307/3034157>
- DEVY-VARETA, N. (1986) – Para uma geografia histórica da floresta portuguesa: do declínio das matas medievais à política florestal do Renascimento (séc. XV e XVI). *Revista da Faculdade de Letras – Geografia*, I(1): 5-37.
- DÍAZ-GUARDAMINO, M. – MORGAN, C. (2019) – Human, Transhuman, Posthuman Digital Archaeologies: An Introduction. *European Journal of Archaeology*, 22(3): 320-323. DOI: <https://doi.org/10.1017/eea.2019.26>
- DIXON, R. B. (1913) – Some aspects of North American archeology. *American Anthropologist*, 15: 549–577.
- DUNNELL, R. C. (1992) – Is a scientific archaeology possible? In EMBREE, L. (ed.) - *Metaarchaeology*. The Hague: 75–97.
- EDGEWORTH, M. – ELLIS, E. C. – GIBBARD, P. – NEAL, C. – ELLIS, M. (2019) – The chronostratigraphic method is unsuitable for determining the start of the Anthropocene. *Progress in Physical Geography-Earth and Environment*, 43(3): 334-344. DOI: <https://doi.org/10.1177/0309133319831673>
- ELIAS, S. (2018) – Basis for Establishment of Geologic: Eras, Periods, and Epochs. In DELLASALA, D. – GOLDSTEIN, M. (eds.) – *Encyclopedia of the Anthropocene*. Oxford: 9-17.
- EMBREE, L. (1987) – Archaeology: the most basic science of all. *Antiquity*, 61: 75-78.
- ERIKSEN, T. H. (2017) – Why Anthropology? In ERIKSEN, T. H. (eds.) – *What is Anthropology?* London: 3-18.
- FERRANDO, F. (2012) – Towards A Posthumanist Methodology. A Statement. *Frame, Journal For Literary Studies*, 25(1): 9-18.
- FERRANDO, F. (2013) – Posthumanism, Transhumanism, Antihumanism, Metahumanism, and New Materialisms: Differences and Relations. *Existenz*, 8(2): 26-32.
- FERRANDO, F. (2014) – The Body. In RANISCH, R. – SORGNER, S. L. (eds.) – *Post- and transhumanism: an introduction*. Frankfurt am Main: 213-226.
- FERRANDO, F. (2016) – Humans Have Always Been Posthuman: A Spiritual Genealogy of Posthumanism. In BANERJI, D. – PARANJAPE, M. R. (eds.) – *Critical Posthumanism and Planetary Futures*. Berlin: 243-256.
- FERRANDO, F. (2019) – *Philosophical Posthumanism*. London and New York.
- FLANNERY, K. V. (1972) – The cultural evolution of civilizations. *Annual Review of Ecology and Systematics*, 3: 399-426.
- FOUCAULT, M. (2005 [1966]) – *The Order of Things: An archaeology of the human sciences*. London and New York.
- FRIEMAN, C. J. (2023) – *Archaeology As History. Telling Stories from a Fragmented Past*. Cambridge.
- GITTINS, E. (2013) – The Archaeology of Becoming the Human Animal. *Society and Animals*, 21(2): 120-133.
- GODINHO, V. M. (2013) – *A crise da História e as suas novas directrizes*. Lisboa.
- GONZÁLEZ-RUIBAL, A. (2019) – *An Archaeology of the Contemporary Era*. London and New York.
- GONZÁLEZ-RUIBAL, A. (2020) – *The Archaeology of the Spanish Civil War*. London and New York.
- GONZÁLEZ-RUIBAL, A. (2022) – Subaltern assemblages. The archaeology of marginal places and identities. *World Archaeology*, 53(3): 369-383. DOI: <https://doi.org/10.1080/00438243.2021.2040127>
- GRAHAM, G. (2005) – *Philosophy of the Arts: An Introduction to Aesthetics*. London and New York.
- GREENFIELD, H. J. (2010) – The Secondary Products Revolution: the past, the present and the future. *World Archaeology*, 42(1): 29-54. DOI: <https://doi.org/10.1080/00438240903429722>
- GUIMARÃES, I. C. – PEREIRA, M. C. – BATISTA, N. R. – RODRIGUES, C. A. P. – ANTONIALLI, W. F. J. (2018) – The complex nest architecture of the Ponerinae ant *Odontomachus chelifer*. *PLoS One*, 13(1): 1-16. DOI: <https://doi.org/10.1371/journal.pone.0189896>
- HALSTEAD, P. – ISAAKIDOU, V. (2011) – Revolutionary Secondary Products: the Development and Significance of Milking, Animal-Traction and WoolGathering in Later Prehistoric Europe and the Near East. In WILKINSON, T. – SHERRATT, S. – BENNET, J. (eds.) – *Interweaving Worlds: Systemic Interactions in Eurasia, 7<sup>th</sup> to the 1<sup>st</sup> Millennia BC*. Oxford: 61-76.

- HAMILAKIS, Y. (2015 [2012]) – *Arqueología y los sentidos: experiencia, memoria y afecto*. Madrid.
- HAMILAKIS, Y. (2017) – Archaeologies of Forced and Undocumented Migration. *Journal of Contemporary Archaeology*, 3(2): 121-139. DOI: <https://doi.org/10.1558/jca.32409>
- HAMILAKIS, Y. (2018) – *The new nomadic age: archaeologies of forced and undocumented migration*. Sheffield.
- HAMILAKIS, Y. (2019) – Planet of camps: border assemblages and their challenges. *Antiquity*, 93(371): 1371-1377. DOI: <https://doi.org/10.15184/aqy.2019.163>
- HARAWAY, D. (1991) – A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s. In *Simians, Cyborgs, and Women The Reinvention of Nature*. New York: 149-182.
- HARAWAY, D. (1997) – *Modest\_Witness@Second\_Millennium. FemaleMan\_Meets\_Oncomouse TM*. London.
- HARAWAY, D. (2003) – *The Companion Species Manifesto: Dogs, People and Significant Otherness*. Chicago.
- HARRISON, R. (2011) – Surface assemblages. Towards an archaeology in and of the present. *Archaeological Dialogues*, 18(2): 141-161. DOI: <https://doi.org/10.1017/S1380203811000195>
- HARRISON, R. J. (1985) – The Policultivo Ganadero, or the Secondary Products Revolution in Spanish Agriculture, 5000–1000 bc. *Proceedings of the Prehistoric Society*, 51: 75-102. DOI: <https://doi.org/10.1017/S0079497X00007040>
- HASSAN, I. (1977) – Prometheus as Performer: Toward a Posthumanist Culture? *The Georgia Review*, 31(4): 830-350.
- HAWKES, C. (1954) – Archeological Theory and Method: Some Suggestions from the Old World. *American Anthropologist*, 56(2): 155-168.
- HAYLES, N. K. (1999) – *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics*. Chicago and London.
- HEGEL, G. W. F. (2001) – *The Philosophy of History*. Kitchener.
- HEIDEGGER, M. (1977) – *The Question Concerning Technology and Other Essays*. New York and London.
- HEIDEGGER, M. (2000 [1953]) – Die Frage nach der Technik. In *Gesamtausgabe. I. Abteilung: Veröffentlichte Schriften 1910-1976: Vorträge und Aufsätze*. Frankfurt am Main: 5-36.
- HENNRICH, D. M. (2020) – Pensar a Paisagem para Além dos Hemisférios. *Revista de Cultura*, 64: 136-145.
- HENNRICH, D. M. (2023) – Sobre a História Natural do Antropoceno. *digitAR*, 9: 85-98. DOI: [https://doi.org/10.14195/2182-844X\\_9\\_7](https://doi.org/10.14195/2182-844X_9_7)
- HODDER, I. – HUTSON, S. (2003) – *Reading the past Current approaches to interpretation in archaeology*. Cambridge.
- HODDER, I. – ORTON, C. (1976) – *Spatial analysis in archaeology*. Cambridge.
- HODDER, I. (1991) – Interpretive Archaeology and Its Role. *American Antiquity*, 56(1): 7-18. DOI: <https://doi.org/10.2307/280968>
- HODDER, I. (1993) – The Narrative and Rhetoric of Material Culture Sequences. *World Archaeology*, 25(2): 268-282. DOI: <https://doi.org/10.1080/00438243.1993.9980243>
- HODDER, I. (2002) – Two approaches to an archaeology of the social. *American Anthropologist*, 104(1): 320-324. DOI: <https://doi.org/10.1525/aa.2002.104.1.320>
- HODDER, I. (2011) – Human-thing entanglement: towards an integrated archaeological perspective. *Journal of the Royal Anthropological Institute*, 17(1): 154-177. DOI: <https://doi.org/10.1111/j.1467-9655.2010.01674.x>
- HODDER, I. (2012) – *Entangled: An Archaeology of the Relationships between Humans and Things*. Chichester.
- HODDER, I. (2014) – The Entanglements of Humans and Things: A Long-Term View. *New Literary History*, 45(1): 19-36.
- HODDER, I. (2016) – *Studies in Human-Thing Entanglement*. Cambridge.
- HÖLDOBLER, B. – WILSON, E. O. (2009) – *The Superorganism: the Beauty, Elegance, and Strangeness of Insect Societies*. New York.
- JENNINGS, J. D. – NORBECK, E. (1964) – Introduction. In JENNINGS, J. D. – JOFFRE, R. – RAMBAL, S. – RATTE, J. P. (1999) – The dehesa system of southern Spain and Portugal as a natural ecosystem mimic. *Agroforestry Systems*, 45(1-3): 57-79. DOI: <https://doi.org/10.1023/A:1006259402496>
- JONES, A. (2004) – Archaeometry and materiality: Materials-based analysis in theory and practice. *Archaeometry*, 46: 327-338. DOI: <https://doi.org/10.1111/j.1475-4754.2004.00161.x>
- JORGE, V. O. (2023) – Pré-história e “antropologia cultural”: repensar esta interface. In ARNAUD, J. M. – NEVES, C. – MARTINS, A. (eds.) – *Arqueologia em Portugal 2023: Estado da Questão*. Lisbon: 2103-2114.
- KANT, I. (1956) – *Kritik der reinen Vernunft*. Hamburg.
- KOSSINA, G. (1926) – *Ursprung und Verbreitung der Germanen in vor- und frühgeschichtlicher Zeit*. Berlin.
- KRISTIANSEN, K. (1996) – Old Boundaries and New Frontiers: Reflections on the Identity of Archaeology. *Current Swedish Archaeology*, 4: 103-122.
- KRISTIANSEN, K. (2009) – The Discipline of Archaeology. In GOSDEN, C. – CUNLIFFE, B. – JOYCE, R. A. (eds.) – *The Oxford Handbook of Archaeology*. Oxford: 3-46.
- KRISTIANSEN, K. (2014) – Toward a new paradigm? The third scientific revolution and its possible consequences in archaeology. *Current Swedish Archaeology*, 22: 11-34.
- KUHN, T. (1996) – *The Structure of Scientific Revolutions*. Chicago.
- LADURIE, E. L. (1966) – *Les paysans de Languedoc*: Tome I. La Haye.
- LATOUR, B. (1993) – *We Have Never Been Modern*. Cambridge.
- LEHMANN, L. V. (2015) – The Garbage Project Revisited: From a 20<sup>th</sup> Century Archaeology of Food Waste to a Contemporary Study of Food Packaging Waste. *Sustainability*, 7: 6994-7010. DOI: <https://doi.org/10.3390/su7066994>
- LENOIR, A. – FRESNEAU, D. – ERRARD, C. – HEFETZ, A. (1999) – Individuality and colonial identity in ants: the emergence of the social representation concept. In DETRAIN, C. – DENEUBOURG, J. L. – PASTEELS, J. M. (eds.) – *Information Processing in Social Insects*. Birkhäuser: 219-237.
- LINDGREN, N. – ÖHMAN, J. (2018) – A posthuman approach to human-animal relationships: advocating critical pluralism. *Environmental Education Research*, 25(8): 1200-1215. DOI: <https://doi.org/10.1080/13504622.2018.1450848>
- LONGACRE, W. A. (1963) – *Archaeology as anthropology: A case study*. PhD Thesis presented to the University of Chicago. Unpublished.
- LONGACRE, W. A. (2010) – Archaeology as Anthropology Revisited. *Journal of Archaeological Method and Theory*, 17: 81-100. DOI: <https://doi.org/10.1007/s10816-010-9080-1>
- LOWENTHAL, D. (2015) – *The Past Is a Foreign Country – Revisited*. Cambridge.
- LUCAS, G. (2005) – *The Archaeology of Time*. London and New York.
- LUCAS, G. (2021) – *Making Time: The Archaeology of Time Revisited*. London and New York.

- LUCIANO, E. (2022) – Is 'Anthropocene' a Suitable Chronostratigraphic Term? *Anthropocene Science*, 1(1): 29-41. DOI: <https://doi.org/10.1007/s44177-022-00011-7>
- LYMAN, R. L. (2007) – Archaeology's quest for a seat at the high table of anthropology. *Journal of Anthropological Archaeology*, 26: 133-149.
- MARCINIAK, A. (2011) – The Secondary Products Revolution: Empirical Evidence and its Current Zooarchaeological Critique. *Journal of World Prehistory*, 24(2-3): 117-130. DOI: <https://doi.org/10.1007/s10963-011-9045-7>
- MARKL, H. (1986) – *Natur als Kulturaufgabe: über die Beziehung des Menschen zur lebendigen Natur*. Stuttgart.
- MATEUS, J. E. (2004) – Território Antigo. *Estudos/Património*, 7: 36-44.
- MCATACKNEY, L. – PENROSE, S. (2016) – The contemporary in post-medieval archaeology. *Post-Medieval Archaeology*, 50(1): 148-158. DOI: <https://doi.org/10.1080/00794236.2016.1169488>
- MIAH, A. (2008) – A Critical History of Posthumanism. In GORDIJN, B. – CHADWICK, R. (eds.) – *Medical Enhancement and Posthumanity*. Berlin: 71-94.
- MOMIGLIANO, A. (1966) – *Studies in Historiography*. London.
- MOMIGLIANO, A. (1990) – *The Classical Foundations of Modern Historiography*. Berkeley.
- MORA, G. (1998) – Les col·leccions arqueològiques i la figura del col·leccionista. *Cota Zero*, 14: 118-124.
- MORTON, T. (2013) – *Hyperobjects: Philosophy and Ecology after the End of the World*. Minneapolis.
- MORTON, T. (2017) – *Humankind*. London and New York.
- MOSHENSKA, G. – SHELLY, S. (2020) – Notes for an Archaeology of Discarded Drug Paraphernalia. *Archaeology International*, 23(1): 104-121. DOI: <https://doi.org/10.14324/111.444.ai.2020.09>
- MURRAY, T. (2007) – Rethinking Antiquarianism. *Bulletin of the History of Archaeology*, 17(2): 14-22.
- NATIV, A. – LUCAS, G. (2020) – Archaeology without antiquity. *Antiquity*, 94(376): 852-863. DOI: <https://doi.org/10.15184/aqy.2020.90>
- NATIV, A. (2014) – Anthropocentricity and the Archaeological Record: Towards a Sociology of Things. *Norwegian Archaeological Review*, 47(2): 180-195. DOI: <https://doi.org/10.1080/00293652.2014.957235>
- NATIV, A. (2016) – No Compensation Needed: On Archaeology and the Archaeological. *Journal of Archaeological Method and Theory*, 24: 659-675.
- NATIV, A. (2018) – On the object of archaeology. *Archaeological Dialogues*, 25(1): 1-21. DOI: <https://doi.org/10.1017/s1380203818000016>
- NIETZSCHE, F. (2000 [1872]) – *The Birth of Tragedy*. Oxford.
- NORBECK, E. (eds.) – *Prehistoric Man in the New World*. Chicago: 3-10.
- OLSEN, B. – SHANKS, M. – WEBMOOR, T. – WITMORE, C. (2012) – *Archaeology: The Discipline of Things*. Berkeley – Los Angeles.
- OLSEN, B. – WITMORE, C. (2015) – Archaeology, symmetry and the ontology of things. A response to critics. *Archaeological Dialogues*, 22(2): 187-197. DOI: <https://doi.org/10.1017/s1380203815000240>
- OLSEN, J. K. B. (2009) – Becoming through Technology. In OLSEN, J. K. B. – SELINGER, E. – RIIS, S. (eds.) – *New Waves in Philosophy of Technology*. Hampshire – New York: 40-64.
- VERTON, N. J. – HAMILAKIS, Y. (2013) – A manifesto for a social zooarchaeology. Swans and other beings in the Mesolithic. *Archaeological Dialogues*, 20(2): 111-136. DOI: <https://doi.org/10.1017/s1380203813000159>
- PÁLSSON, G. (1996) – Human-environmental Relations: Orientalism, Paternalism and Communalism. In DESCOLA, P. – PÁLSSON, G. (eds.) – *Nature and Society: Anthropological Perspectives*. London: 63-81.
- PARSONS, E. C. (1940) – Relations between ethnology and archaeology in the Southwest. *American Antiquity*, 5: 214-220.
- PATRIK, L. E. (1985) – Is There an Archaeological Record? *Advances in Archaeological Method and Theory*, 8: 27-62.
- PEIRCE, C. S. (1878) – How to Make Our Ideas Clear. *Popular Science Monthly*, 12: 286-302.
- PENSKY, M. (2004) – Natural History: the Life and Afterlife of a Concept in Adorno. *Critical Horizons*, 5(1): 227-258. DOI: <https://doi.org/10.1163/1568516042653620>
- PHILLIPS, P. (1955) – American archaeology and general anthropological theory. *Southwestern Journal of Anthropology*, 11: 246-250.
- PINTO, J. G. (2021) – Fazer imagens da natureza: a paisagem como meio. In BOGALHEIRO, M. (eds.) – *Crítica das Mediações Totais: perspectivas expandidas dos media*. Lisbon: 49-72.
- POMIAN, K. (1990) – *Collectors and Curiosities. Paris and Venice, 1500-1800*. Cambridge.
- RATHJE, W. – MURPHY, C. (2011) – *Rubbish! The Archaeology of Garbage*. Tucson.
- RATHJE, W. – SHANKS, M. – WITMORE, C. (2013) – *Archaeology in the Making: Conversations through a Discipline*. London and New York.
- REID, J. J. – WHITTLESEY, S. M. (1982) – Households at Grasshopper Pueblo. *American Behavioral Scientist*, 25: 687-703.
- REVKIN, A. (1992) – *Global warming: understanding the forecast*. New York.
- RIBEIRO, A. (2016) – Archaeology will be just fine. *Archaeological Dialogues*, 23(2): 146-151.
- RICHARDSON, T. O. – KAY, T. – BRAUNSCHWEIG, R. – JOURNEAU, O. A. – RÜEGG, M. – MCGREGOR, S. – DE LOS RIOS, P. – KELLER, L. (2021) – Ant behavioral maturation is mediated by a stochastic transition between two fundamental states. *Current Biology*, 31(10): 2253-2260. DOI: <https://doi.org/10.1016/j.cub.2020.05.038>
- RODEN, D. (2015) – *Posthuman Life: Philosophy at the Edge of the Human*. Oxford and New York.
- RUDDIMAN, W. (2003) – The Anthropogenic Greenhouse Era Began Thousands of Years Ago. *Climatic Change*, 61: 261-293.
- RUDDIMAN, W. F. – HE, F. – VAVRUS, S. J. – KUTZBACH, J. E. (2020) – The early anthropogenic hypothesis: A review. *Quaternary Science Reviews*, 240. DOI: <https://doi.org/10.1016/j.quascirev.2020.106386>
- SAMWAYS, M. (1999) – Translocating fauna to foreign lands: here comes the Homogenocene. *Journal of Insect Conservation*, 3(2): 65-66.
- SANKOVITZ, M. – PURCELL, J. (2021) – Ant nest architecture is shaped by local adaptation and plastic response to temperature. *Scientific Reports*, 11(1): 23053. DOI: <https://doi.org/10.1038/s41598-021-02491-w>
- SANTOS, B. D. S. (2018) – *The end of the cognitive empire: the coming of age of the epistemologies of the South*. Durham and London.

- SANTOS, J. (2024) – Archaeology of Loneliness. *Journal of Social Archaeology*, 0(0): 1-20.
- SCHIFFER, M. B. (1976) – *Behavioural Archaeology*. New York.
- SCHNAPP, A. (1996) – *The Discovery of the Past. The Origins of Archaeology*. New York.
- SCHNAPP, A. (2002) – Between antiquarians and archaeologists — continuities and ruptures. *Antiquity*, 76(291): 134-140.
- SCHNAPP, A. (2013) – Towards a Universal History of Antiquarians. *Complutum*, 24(2): 13-20.
- SEEL, M. (1991) – *Eine Ästhetik der Natur*. Frankfurt am Main.
- SERRÃO, A. V. (2013) – *Filosofia da Paisagem. Estudos*. Lisbon.
- SHANKS, M. – PLATT, D. – RATHJE, W. L. (2004) – The Perfume of Garbage: Modernity and the Archaeological. *Modernism/modernity*, 11(1): 61-83. DOI: <https://doi.org/10.1353/mod.2004.0027>
- SHANKS, M. – TILLEY, C. (1988) – *Social Theory and Archaeology*. Albuquerque.
- SHANKS, M. – TILLEY, C. (2016 [1992]) – *Re-Constructing Archaeology: Theory and Practice*. London and New York.
- SHANKS, M. (2001) – Culture/Archaeology: the dispersion of a discipline and its objects. In HODDER, I. (eds.) – *Archaeological Theory Today: Breaking the Boundaries*. London: 1-22.
- SHERRATT, A. (1981) – Plough and pastoralism: aspects of the secondary products revolution. In HODDER, I. – ISAAC, G. – HAMMOND, N. (eds.) – *Pattern of the Past. Studies in honour of David Clarke*. Cambridge: 261-306.
- SHERRATT, A. (1983) – The Secondary Exploitation of Animals in the Old-World. *World Archaeology*, 15(1): 90-104. DOI: <https://doi.org/10.1080/00438243.1983.9979887>
- SHERRATT, A. (1987) – Cups that cheered. In WALDREN, W. – KENNARD, R. (eds.) – *Bell beakers of the Western Mediterranean: definition, interpretation, theory and new site data: the Oxford International Conference 1986*. Oxford: 81-106.
- SIMON, Z. B. – TAMM, M. – DOMAŃSKA, E. (2021) – Anthropocenic historical knowledge: promises and pitfalls. *Rethinking History*, 25(4): 406-439. DOI: <https://doi.org/10.1080/13642529.2021.1985224>
- SMITH, H. I. (1911) – Archeological evidence as determined by method and selection. *American Anthropologist*, 13: 445-448.
- SØRENSEN, T. F. (2013) – We Have Never Been Latourian: Archaeological Ethics and the Posthuman Condition. *Norwegian Archaeological Review*, 46(1): 1-18. DOI: <https://doi.org/10.1080/00293652.2013.779317>
- SOTO, G. (2016) – Migrant memento mori and the geography of risk. *Journal of Social Archaeology*, 16: 335-358. DOI: <https://doi.org/10.1177/1469605316673171>
- STEFFEN, W. – GRINEVALD, J. – CRUTZEN, P. – MCNEILL, J. (2011) – The Anthropocene: conceptual and historical perspectives. *Philosophical Transactions of the Royal Society*, 369: 842-867. DOI: <https://doi.org/10.1098/rsta.2010.0327>
- STENGERS, I. (2005) – Introductory Notes on an Ecology of Practices. *Cultural Studies Review*, 11(1): 183-196.
- TAMM, M. – SIMON, Z. B. (2020) – Historical Thinking and the Human: Introduction. *Journal of the Philosophy of History*, 14: 285-309. DOI: <https://doi.org/10.1163/18722636-12341451>
- THOMAS, J. (2004) – *Archaeology and Modernity*. London.
- THOMAS, J. (2022) – Steps Towards an Archaeology of Life. *Trabalhos de Antropologia e Etnologia*, 62: 197-211.
- TILLEY, C. (1990) – *Reading Material Culture: Structuralism, Hermeneutics and Post-Structuralism*. Oxford/Cambridge.
- TILLEY, C. (1994a) – *Interpretative Archaeology*. London and New York.
- TILLEY, C. (1994b) – *A phenomenology of the landscape: place, paths and monuments*. London.
- TILLEY, C. (1996) – The powers of rocks: Topography and monument construction on bodmin moor. *World Archaeology*, 28(2): 161-176. DOI: <https://doi.org/10.1080/00438243.1996.9980338>
- TOFFOLETTI, K. (2007) – *Cyborgs and Barbie Dolls: Feminism, Popular Culture and the Posthuman Body*. London and New York.
- TRÜPER, H. (2019) – The Flatness of Historicity. *History and Theory*, 58(1): 23-49.
- TSCHINKEL, W. R. (2004) – The nest architecture of the Florida harvester ant, *Pogonomyrmex badius*. *Journal of Insect Science*, 4(21): 1-19. DOI: <https://doi.org/ARTN 2110.1093/jis/4.1.21>
- TSCHINKEL, W. R. (2015) – The architecture of subterranean ant nests: beauty and mystery underfoot. *Journal of Bioeconomics*, 17(3): 271-291. DOI: <https://doi.org/10.1007/s10818-015-9203-6>
- TSING, A. (2013) – More-than-Human Sociality: A Call for Critical Description. In HASTRUP K. (eds.) – *Anthropology and Nature*. New York and Oxford: 27-42.
- VARANDAS, M. J. (2014) – *A Natureza: Solo de Conjunção da Ética e da Estética: Fundamentos para a perspetivação do valor estético da natureza na acção ambiental*. PhD Thesis presented to the University of Lisbon.
- VEYNE, P. (1984 [1971]) – *Writing History: Essay on Epistemology*. Scranton.
- VIGNE, J. D. – HELMER, D. (2007) – Was milk a “secondary product” in the Old World Neolithisation process? Its role in the domestication of cattle, sheep and goats. *Anthropozoologica*, 42(2): 9-40.
- WHEELER, M. (1950) – What matters in Archaeology? *Antiquity*, 24(95): 122-130. DOI: [10.1017/s0003598x00023097](https://doi.org/10.1017/s0003598x00023097)
- WHITE, L. A. (2007 [1959]) – *The Evolution of Culture: the Development of Civilization to the Fall of Rome*. Walnut Creek.
- WILBUR, B. (2011) – *Campbell Biology*. San Francisco.
- WILLEY, G. R. – PHILLIPS, P. (1958) – *Method and Theory in Archaeology*. Chicago.
- WISEMAN, J. (1964) – Archaeology and the Humanities. *Arion*, 3(2): 131-142.
- WOLFE, C. (2010) – *What is Posthumanism?* Minneapolis and London.
- YOFFEE, N. – FOWLES, S. (2012) – Archaeology in the Humanities. *Diogenes*, 58(1-2): 35-52.



## POLÍTICA EDITORIAL

### Objectivos

A Ophiussa – Revista do Centro de Arqueologia da Universidade de Lisboa foi iniciada sob a direcção de Victor S. Gonçalves em 1996, tendo sido editado o volume 0. A partir do volume 1 (2017), a Revista Ophiussa converteu-se numa edição impressa e digital da UNIARQ – Centro de Arqueologia da Universidade de Lisboa (ISSN 1645-653X / E-ISSN 2184-173X). Em 2025, a revista deixou de ser publicada em formato impresso, passando a disponibilizar-se exclusivamente em versão digital, em acesso aberto, em <https://ophiussa.letras.ulisboa.pt>

O principal objectivo desta revista é a publicação e divulgação de trabalhos com manifesto interesse, qualidade e rigor científico sobre temas de Pré-História e Arqueologia, sobretudo do território europeu e da bacia do Mediterrâneo.

### Periodicidade

A Ophiussa – Revista do Centro de Arqueologia da Universidade de Lisboa publicará um volume anual. O período de submissão de trabalhos decorrerá sempre no primeiro semestre e a edição ocorrerá no último trimestre de cada ano.

### Secções da revista

A revista divide-se em duas secções: artigos científicos e resenhas bibliográficas. Excepcionalmente poderão ser aceites textos de carácter introdutório, no âmbito de homenagens ou divulgações específicas, que não serão submetidos à avaliação por pares. Isentas desta avaliação estão também as resenhas bibliográficas.

Os autores / editores que pretendam apresentar uma obra para resenha devem enviar dois exemplares para a direcção da Revista Ophiussa: um para o autor/autora da resenha que será convidado para o efeito e outro para a Biblioteca da Faculdade de Letras da Universidade de Lisboa. Aceita-se igualmente a apresentação de propostas de resenhas espontâneas.

Aceitam-se trabalhos redigidos em português, inglês, espanhol, italiano e francês.

### Processo de avaliação por pares

Os artigos submetidos são sujeitos a um processo de avaliação por parte de revisores externos (double blind peer review).

Todas as submissões (artigos e resenhas) serão avaliadas, em primeira instância, pela Coordenação Editorial, no que respeita ao seu conteúdo formal e à sua adequação face à política editorial e às normas de edição da revista. Os artigos que cumprirem estes requisitos serão posteriormente submetidos a um processo de avaliação por pares cega / double blind peer review (mínimo de dois revisores). O Conselho Científico, constituído pela direcção da UNIARQ e por investigadores externos, acompanhará o processo de edição.

Esta etapa será concretizada por investigadores externos qualificados, sendo os respectivos pareceres entregues num período não superior a três meses. Os revisores procederão à avaliação de forma objectiva, tendo em vista a qualidade do conteúdo da revista; as suas críticas, sugestões e comentários serão, na medida do possível, construtivos, respeitando as capacidades intelectuais do(s) autor(es). Após a recepção

dos pareceres, o(s) autor(es) tem um prazo máximo de um mês para proceder às alterações oportunas e reenviar o trabalho.

A aceitação ou recusa de artigos terá como únicos factores de ponderação a sua originalidade e qualidade científica.

O processo de revisão é confidencial, estando assegurado o anonimato dos avaliadores e dos autores dos trabalhos, neste último caso até à data da sua publicação.

Os trabalhos só serão aceites para publicação a partir do momento em que se conclua o processo da revisão por pares. Os textos que não forem aceites serão devolvidos aos seus autores.

A lista dos avaliadores será publicada em ciclos de 3 anos, indicada no final da Revista Ophiussa (versão impressa e digital).

### Ética na publicação

A Revista Ophiussa segue as orientações estabelecidas pelo Committee on Publication Ethics (COPE, Comité de Ética em Publicações): <https://publicationethics.org/>

Apenas serão publicados artigos originais. Para efeito de detecção de plágio ou duplicidade será utilizada a plataforma URKUNDU (<https://www.orkund.com/pt-br/>). Serão rejeitadas práticas como a deformação ou invenção de dados. Os autores têm a responsabilidade de garantir que os trabalhos são originais e inéditos, fruto do consenso de todos os autores e cumprem com a legalidade vigente, dispondo de todas autorizações necessárias. Os artigos que não cumpram com estas normas éticas serão rejeitados.

As colaborações submetidas para publicação devem ser inéditas. As propostas de artigo não podem incluir qualquer problema de falsificação ou de plágio. As ilustrações que não sejam do(s) autor(es) devem indicar a sua procedência. O Conselho Científico e a Coordenação Editorial assumem que os autores solicitaram e receberam autorização para a reprodução dessas ilustrações, e, como tal, rejeitam a responsabilidade do uso não autorizado das ilustrações e das consequências legais por infracção de direitos de propriedade intelectual.

É assumido que todos os Autores fizeram uma contribuição relevante para a pesquisa reportada e concordam com o manuscrito submetido. Os Autores devem declarar de forma clara eventuais conflitos de interesse. As colaborações submetidas que, direta ou indiretamente, tiveram o apoio económico de terceiros, devem claramente declarar essas fontes de financiamento.

Os textos propostos para publicação devem ser inéditos e não deverão ter sido submetidos a qualquer outra revista ou edição electrónica.

O conteúdo dos trabalhos é da inteira responsabilidade do(s) autor(es) e não expressa a posição ou opinião do Conselho Científico ou da Coordenação Editorial.

O processo editorial decorrerá de forma objectiva, imparcial e anónima. Erros ou problemas detetados após a publicação serão investigados e, se comprovados, haverá lugar à publicação de correções, retratações e/ou respostas.

Serão considerados os seguintes princípios éticos:

1) RESPONSABILIDADE

A Revista Ophiussa através dos editores e autores tem a responsabilidade absoluta de aprovação, condenando todas as más práticas da publicação científica.

2) FRAUDE CIENTÍFICA:

A Revista Ophiussa procurará detectar manipulação e falsificação de dados, plágio ou duplicidade, com os mecanismos de detecção adequados.

3) POLÍTICA EDITORIAL E PROCEDIMENTOS

a) Os autores devem ter participado no processo de investigação e do processo de revisão, devendo garantir que os dados incluídos são reais e autênticos e estando obrigados a emitir retracções e correcções de erros de artigos publicados;

b) Os revisores devem efectuar uma revisão objectiva e confidencial e não ter conflitos de interesse (investigação, autores ou financiadores), devendo indicar obras publicadas relevantes que não foram citadas;

c) Na detecção de fraude ou má prática em fase de avaliação deve ser indicada pelos revisores e na fase de pós publicação por qualquer leitor.

d) Em caso de detecção de más práticas em fase de avaliação ou de detecção de artigos publicados previamente, o Conselho Editorial remeterá a ocorrência ao autor estabelecendo um prazo de 7 dias para esclarecimento, sendo posteriormente avaliada pelo Conselho de Redacção. Em fase de pós publicação, o Conselho Editorial poderá arquivar ou determinar a retratação num número seguinte, indicando-se os trâmites prévios.

### *Política de preservação de arquivos digitais*

A revista garante a acessibilidade permanente dos objectos digitais através de cópias de segurança, utilização de DOI, integrando a rede Public Knowledge Project's Private LOCKSS Network (PKP-PLN), que gera um sistema de arquivo descentralizado.

Relativamente ao auto-arquivo, a revista integra também o Sherpa/Romeu

(<https://v2.sherpa.ac.uk/id/publication/41841>).

### *Política de acesso aberto*

Esta edição disponibiliza de imediato e gratuitamente a totalidade dos seus conteúdos, em acesso aberto, de forma a promover, globalmente, a circulação e intercâmbio dos resultados da investigação científica e do conhecimento. A edição segue as directrizes Creative Commons (licença CC/BY/NC/ND 4.0).

A publicação de textos na Ophiussa – Revista do Centro de Arqueologia da Universidade de Lisboa não implica o pagamento de qualquer taxa nem dá direito a qualquer remuneração económica.

Para mais informações contactar:

[ophiussa@letras.ulisboa.pt](mailto:ophiussa@letras.ulisboa.pt)

## **EDITORIAL POLICY**

### *Objectives*

*Ophiussa* – Revista do Centro de Arqueologia da Universidade de Lisboa started under the direction of Victor S. Gonçalves in 1996, with the edition of volume 0. After Volume 1 (2017) it became a printed and digital edition of UNIARQ – Centro de Arqueologia da Universidade de Lisboa (ISSN 1645-653X / E-ISSN 2184-173X). In 2025, the journal ceased to be published in print format and became available exclusively in digital, open-access form at <https://ophiussa.letras.ulisboa.pt>

The main objective of this journal is the publication and dissemination of papers of interest, quality and scientific rigor concerning Prehistory and Archeology, mostly from Europe and the Mediterranean basin.

### *Periodicity*

*Ophiussa* – Revista do Centro de Arqueologia da Universidade de Lisboa will publish an annual volume. The submission period will always occur in the first quarter of each year and the edition will occur in the last quarter.

### *Journal sections*

The journal is divided into two sections: scientific articles and bibliographic reviews. Exceptionally, texts of an introductory nature may be accepted, in the context of specific tributes or divulgations, which will not be submitted to peer-review evaluation. Exemptions from this evaluation are also the bibliographic reviews.

Authors / editors wishing to submit a book for review should send two copies to the direction of Revista Ophiussa: one to the author of the review who will be invited for the purpose and another to the Library of the School of Arts and Humanities of the University of Lisbon. Spontaneous proposals are also accepted.

Papers written in Portuguese, English, Spanish, Italian and French are accepted.

### *Peer review process*

Submitted articles are subject to a double blind peer-review evaluation process.

All submissions (articles and reviews) will be considered, in the first instance, by the Editorial Board, regarding its formal content and adequacy in face of the editorial policy and the journal editing standards. Articles that meet these requirements will subsequently be submitted to a blind peer-review process (minimum of two reviewers). The Scientific Council, constituted by UNIARQ direction and external researchers, will follow the editing process.

This stage will be carried out by qualified researchers, and their feedback will be delivered within a period of no more than two months. The reviewers will carry out the evaluation in an objective manner, in view of the quality and content of the journal; their criticisms, suggestions and comments will be, as far as possible, constructive, respecting the intellectual abilities of the author(s). After receiving the feedback, the author(s) has a maximum period of one month to make the necessary changes and resubmit the work.

Acceptance or refusal of articles will have as sole factors of consideration their originality and scientific quality.

The review process is confidential, with the anonymity of the evaluators and authors of the works being ensured, in the latter case, up to the date of its publication.

Papers will only be accepted for publication as soon as the peer review process is completed. Texts that are not accepted will be returned to their authors.

The list of reviewers will be published in 3-year cycles, indicated at the end of *Ophiussa* (printed and digital version).

### **Publication ethics**

The Journal *Ophiussa* follows the guidelines established by the Committee on Publication Ethics (COPE, the Ethics Committee Publications): <https://publicationethics.org/>

Only original papers will be published. For the purpose of detecting plagiarism or duplicity, the URKUNDU platform (<https://www.orkund.com/pt-br/>) will be used. Practices such as the deformation or invention of data will be rejected. Authors are responsible for ensuring that the works are original and unpublished, the result of the consensus of all authors, and comply with current legality, having all necessary authorizations. Articles that do not comply with these ethical standards will be rejected.

Contributions submitted for publication must be unpublished. Article submissions can not include any problem of forgery or plagiarism. Illustrations that are not from the author(s) must indicate their origin. The Scientific Council and Editorial Board assume that the authors have requested and received permission to reproduce these illustrations and, as such, reject the responsibility for the unauthorized use of the illustrations and legal consequences for infringement of intellectual property rights.

It is assumed that all Authors have made a relevant contribution to the reported research and agree with the manuscript submitted. Authors must clearly state any conflicts of interest. Collaborations submitted that directly or indirectly had the financial support of third parties must clearly state these sources of funding.

Texts proposed for publication must be unpublished and should not have been submitted to any other journal or electronic edition.

The content of the works is entirely the responsibility of the author(s) and does not express the position or opinion of the Scientific Council or Editorial Board.

The editorial process will be conducted objectively, impartially and anonymously. Errors or problems detected after publication will be investigated and, if proven, corrections, retractions and / or responses will be published.

The following ethical principles will be considered:

#### 1) RESPONSIBILITY:

*Ophiussa* through its editors and authors has the absolute responsibility for approval, condemning all bad practices of scientific publication.

#### 2) SCIENTIFIC FRAUD

*Ophiussa* will seek to detect manipulation and falsification of data, plagiarism or duplicity, with the appropriate detection mechanisms.

#### 3) Editorial policy and procedures:

a) Authors must have participated in the research process and in the review process, and must ensure that the data included is real and authentic and are obliged to issue retractions and corrections of errors of published articles;

b) Reviewers must carry out an objective and confidential review and have no conflicts of interest (research, authors or funders), and must indicate relevant published works that were not cited;

c) In the detection of fraud or malpractice in the evaluation phase, it must be indicated by the reviewers and in the post-publication phase by any reader.

d) In case of detection of bad practices in the evaluation phase or of detection of previously published articles, the Editorial Board will send the occurrence to the author, establishing a period of 7 days for clarification, which will be subsequently evaluated by the Editorial Board. In the post-publication phase, the Editorial Board may file or determine the retraction in a subsequent issue, indicating the previous procedures.

### **Digital file preservation policy**

The journal guarantees the permanent accessibility of digital objects through backup copies and use of DOI, integrating the Public Knowledge Project's Private LOCKSS Network (PKP-PLN), which generates a decentralized file system.

Regarding the self-archiving, the magazine also includes Sherpa/Romeu

(<https://v2.sherpa.ac.uk/id/publication/41841>).

### **Open access policy**

This edition immediately and freely provides all of its content, in open access, in order to promote global circulation and exchange of scientific research and knowledge. It follows Creative Commons guidelines (license CC/BY/NC/ND 4.0).

The publication of texts in *Ophiussa* – Revista do Centro de Arqueologia da Universidade de Lisboa does not imply the payment of any fee nor does it entitle to any economic remuneration.

For more information contact:

**[ophiussa@letras.ulisboa.pt](mailto:ophiussa@letras.ulisboa.pt)**

## ÍNDICE

|   |     |
|---|-----|
| Origins of raw milk consumption in the Iberian Peninsula and Portuguese territory: archaeogenetics and zooarchaeology<br>GONÇALO GARCEZ FERNANDES, MARIA JOÃO VALENTE, HUGO RAFAEL OLIVEIRA, MARIA JOÃO FERNANDES MARTINS   | 5   |
| A estátua-menir 3 da Serra da Nave (Moimenta da Beira, Viseu)<br>ANDRÉ TOMÁS SANTOS, SÍLVIA LOUREIRO MENDES, DIOGO OLIVEIRA, DOMINGOS J. CRUZ   | 25  |
| La estela de Villafranca de los Barros y su contexto en la arqueología de Tierra de Barros<br>PABLO PANIEGO DÍAZ, LUIS-GETHSEMANÍ PÉREZ-AGUILAR, MARIO PIÑERO FERNÁNDEZ   | 43  |
| Mértola en la Edad del Hierro: investigaciones arqueológicas entre Estácio da Veiga y la actualidad (1877-2024)<br>PEDRO ALBUQUERQUE, FRANCISCO JOSÉ GARCÍA FERNÁNDEZ, JOÃO FONTE   | 67  |
| O sítio arqueológico de Alto do Castelo (Alpiarça). Revisão arqueológica e novas leituras não intrusivas<br>JOÃO PIMENTA, TIAGO DO PEREIRO, JOÃO FONTE  | 89  |
| El proceso de extracción de cobre en el Cerro de los Almadenes. Nuevas hipótesis y replanteamientos a través de un estudio comparativo<br>JUAN ÁLVAREZ GARCÍA, GONZALO LOZANO OTERO, MARIANO AYARZAGÜENA SANZ   | 121 |
| A cidade romana de <i>Ossonoba</i> nos inícios da nossa Era: novos dados a partir da intervenção na rua Ivens, n.º 16<br>FRANCISCO ROSA CORREIA, ANA MARTIN, JOÃO PEDRO BERNARDES   | 145 |
| Regressar ao túmulo: a primeira campanha do Projecto de Documentação da Mastaba de Akhmerutnisut (G 2184, Guiza, Egipto)<br>INÉS TORRES, LUIZA OSORIO G. SILVA, GUILHERME BORGES PIRES, MAARTEN PRAET, MOHAMED YOUSSEF SEDEK, MOHAMED KHALIFA, YASSER KAMAL HEFNI | 165 |
| The Writing of Archaeological Theory<br>ARTUR RIBEIRO   | 187 |
| <i>Res Naturae</i> . Archaeology in a posthuman Anthropocene and the archaeology of nature: a preliminary attempt<br>MARA BEATRIZ AGOSTO  | 201 |
| Recensões bibliográficas<br>(TEXTOS: JOÃO PIMENTA, ANTÓNIO CARVALHO, YUNA LE QUÉRÉ, AMÍLCAR GUERRA CARMEN RAMÍREZ CAÑAS, CRISTINA GAMEIRO)  | 221 |
| Política editorial  | 239 |
| Editorial policy  | 240 |