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MARÍA JOSÉ ARMENTEROS-LOJO AND VÍCTOR JIMÉNEZ-JÁIMEZ

MASSIVE PREHISTORIC PIT SITES IN SOUTHERN IBERIA: CHALLENGES, OPPORTUNITIES AND LESSONS LEARNED

Summary. *Archaeological sites characterized by significant concentrations of pits ('pit sites') were widespread in prehistoric Europe. In southern Iberia, many pit sites date back to the Late Neolithic and Chalcolithic periods (fourth-third millennia BCE), and often display massive numbers of pits. Deciphering the social, economic, and symbolic significance of such sites, composed of hundreds or even thousands of pits, holds deep historical implications. What do these pits mean, and how were they used? If they functioned as grain storage pits, as many believe, did they represent a substantial economic surplus? Unfortunately, many of these sites have been inadequately published and remain poorly known north of the Pyrenees. This paper aims to contribute to the broader understanding of prehistoric pit sites in Europe by providing an overview of southern Iberian pit sites, and of the debates that have developed around their interpretation.*

INTRODUCTION

So-called prehistoric 'pit sites' are archaeological sites where pits form significant concentrations. Sometimes, pits are the sole remnants of human activity. Traditionally marginalized in research relative to other types of evidence, interest in prehistoric pits and associated depositional practices has seen a resurgence in the last decade-plus (e.g. Anderson-Whymark and Thomas 2011; Garrow 2015). In southern Iberia, pit sites dated to the Late Neolithic and Chalcolithic (fourth-third millennia BCE) are widespread (Jiménez-Jáimez and Suárez-Padilla 2020).

Southern Iberian pit sites have almost invariably been discovered and investigated in the context of development-led archaeological activities covering extensive areas. Thanks to this, we now know that some southern Iberian pit sites are massive in terms of their size, the number of pits and the sheer volume of artefacts (e.g. ceramic sherds). Because of this, inferring one particular function or meaning for such pits, as opposed to another, has considerable historical implications, much deeper than the mere attribution of functions to isolated archaeological features.

Some questions immediately arise. How can we decipher the social, economic and symbolic significance of huge sites comprising hundreds or even thousands of pits? What were these pits used for, what do they mean? If they functioned as grain storage pits, as many maintain, do they represent an outstanding economic surplus, capable of supporting a ruling class?

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Unfortunately, these immensely important questions remain very difficult to answer. In most cases, southern Iberian pits have seen very little specific systematic research, particularly in the post-excavation stages. Many remain inadequately published, relegated to preliminary excavation reports and grey literature. Not surprisingly, they are poorly known north of the Pyrenees.

This paper presents an overview of southern Iberian pit sites, including how research questions and answers have evolved through time, and will discuss some of the most pressing problems today. The article will draw from a range of archaeological evidence, including unpublished data from La Orden-Seminario, a prehistoric pit site in Huelva (Spain).

Ultimately, this paper aims to contribute to the broader understanding of prehistoric pit sites throughout Europe. Our hope is that, by highlighting the complexity of the phenomenon, describing the current debates, and emphasizing the need for interdisciplinary research, archaeologists will gain a deeper understanding of prehistoric pit sites wherever they encounter them.

NEOLITHIC AND COPPER AGE PITS SITES IN SOUTHERN IBERIA: AN OVERVIEW

The practice of pit-digging seems to have blossomed in Iberia from the Late Neolithic (*c*.3500–3000 BCE) to the end of the Copper Age (*c*.3000–2200 BCE). While they have been documented in many Iberian regions, the most spectacular and paradigmatic examples are in the south. They tend to concentrate in the valleys of the major rivers in the area, i.e. Guadiana and Guadalquivir. In terms of topography, there seems to be a preference for areas of easy access, namely valleys, plains and open slopes. The underlying geology is often of Tertiary sedimentary origin, such as sandy marlstones and silt. Generally, the subsoil is relatively easy to dig with rudimentary tools.

Southern Iberian pit sites typically come in two different forms, enclosed or unenclosed. The difference between them is that only the former are circumscribed by linear features dug in the ground, namely ditches. These ditches form roughly circular enclosures, often comprising multiple concentric lines or ‘circuits’ and countless scattered pits (Márquez-Romero and Jiménez-Jáimez 2010).

In terms of surface area, most enclosed and unenclosed pit sites offer only rough size-estimates, but it appears that there is considerable diversity in size. A few of them are very extensive, reaching up to 4 km^2, and comprising thousands, perhaps tens of thousands, of pits. An example of this is Valencina-Castilleja (Seville, Spain) (García Sanjuán *et al*. 2017).

The pits display very variable widths and depths. Their diameter at the bottom usually ranges between less than 1 up to 2–3 m. The depth of the best preserved pits normally ranges between 0.50 m and 2 m. As for their shape, most are circular or subcircular in plan, with flat or slightly concave bottoms. Profiles are quite diverse, but two major types stand out: roughly cylindrical with vertical sides; and, especially, shapes featuring overhanging sides and constricted openings, such as bell-shaped, semi-globular, or inverted truncated cones.

These pits always appear filled up to the ground level with one or more archaeological deposits including sediment, artefacts and ecofacts. Artefact typologies are typically homogenous from the bottom up. This might be an indicator of relatively rapid processes of backfilling. Pits usually contain large amounts of whole or, more commonly, fragmented artefacts and ecofacts.

The spatial distribution of pits within any single site has seen little research. However, we do know that pits and other sunken features often overlap and cut into one another, creating

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extraordinarily complex palimpsests. For instance, at sector urbanístico RP-4 parcela G-3 at Marroquíes Bajos (Jaén, Spain), 30 out of the 40 pits recorded in a 1500 m^2 survey area (75%) are intercutting pits (Fig. 1) (Pérez Bareas and Cámara Serrano 1999). Likewise, at Calle Trabajadores 14-18 at Valencina-Castilleja (Seville, Spain), 11 out of the 15 known pits (73%) cut into one another (López Aldana and Pajuelo Pando 2013). Although we seldom have the necessary data to quantify this, such high frequencies of intercutting are not rare at the largest sites, where countless pits are known.

Pit sites were first identified in Iberia over a century ago, in the very late nineteenth century (e.g. Bonsor 1899). However, discoveries were few and far-between for many decades.

During the 1970s, pit sites were interpreted within a Culture-History-like framework, and assigned to the 'Cultura de los Silos del Guadalquivir' or 'Cultura de Los Alcores' cultural group (Collantes de Terán 1969, 6; Bübner 1981, 141, fig. 3). The Cultura de los Silos was thought to

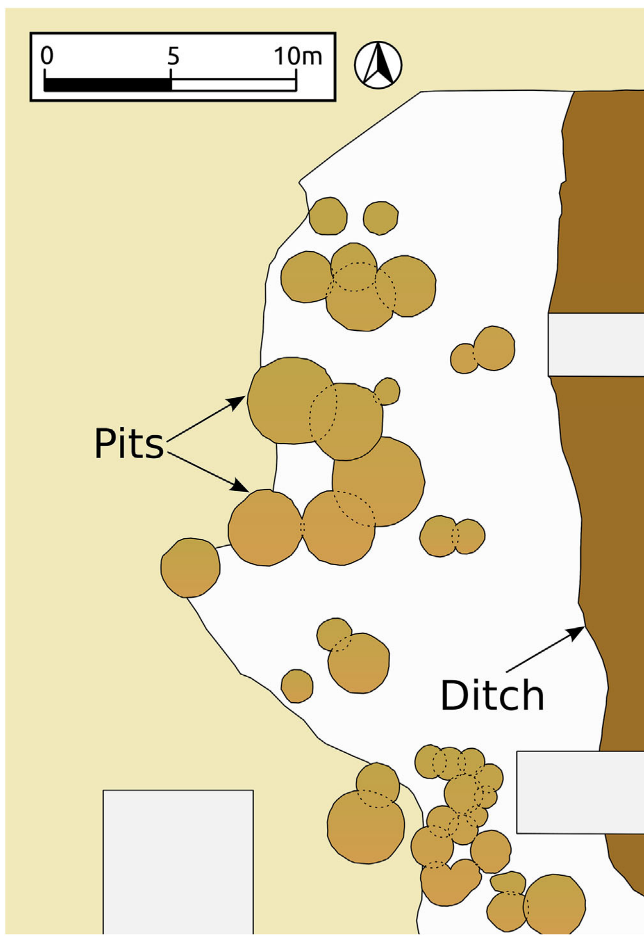

FIGURE 1
Floor plan of excavations at sector urbanístico RP-4 parcela G-3 at Marroquíes Bajos (Jaén, Spain). Numerous pits cut each other, indicating a diachronic development and the existence of a very complex occupation sequence at the site (redrawn by the authors from Pérez Bareas and Cámara Serrano 1999, fig. 2).

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comprise farming communities living in settlements composed of huts and pits, of which only the pits survived in the archaeological record. Said pits, for the most part, were interpreted as features for storing grain. Very much unlike other cultural groups at the time, people of the Cultura de los Silos did not appear to bury their dead in megalithic structures. Instead, they deposited the remains of their dead in the pits themselves, supposedly after these had ceased to be functional for whatever reason (Carrilero Millán *et al*. 1982).

The cultural model was still favoured until the mid-late 1980s, when these sites started to be considered the main settlements of the builders of Iberian megaliths (Arribas Palau and Molina González 1984, 90-1).

At the turn of the century, large pit sites began to be recognized as an important indicator of a massive-scale process of population aggregation and concentration in vast and enduring central places, sustained by highly developed farming practices. Such a process allegedly started in southern Iberia in the fourth millennium cal. BCE, and culminated with the emergence in the third millennium of the earliest state-level societies in western Europe (Arteaga Matute and Cruz-Auñón 1999; Cruz-Auñón and Arteaga Matute 1999; Nocete Calvo 2001; Morán Hernández and Parreira 2003; López Aldana and Pajuelo Pando 2011).

In this view, the grain supposedly stored in large pit sites represents an outstanding economic surplus, capable of supporting a ruling class. In the most clearly articulated version of this narrative, agrarian surpluses were accumulated and redistributed on a macro-territorial scale from a central place – the pit site at Valencina-Castilleja, near Seville – to the whole of lower Andalusia (Carriazo 1980, 162; Cruz-Auñón and Arteaga Matute 1999, 604-5).

In the last few years, alternative views on the historical trajectory of third millennium BCE societies in southern Iberia in general, and the role of pit sites in particular, have emerged (Díaz-Del-Río and García Sanjuán 2006; Cruz Berrocal *et al*. 2013).

CASE STUDY: THE UNENCLOSED PIT SITE AT LA ORDEN-SEMINARIO

The archaeological site of La Orden-Seminario (hereafter referred to as LO-S) is located in the city of Huelva, in south-western Iberia, between the Tinto and Odiel rivers (Fig. 2). The confluence of both rivers, shortly before their mouth, forms the Huelva estuary. It was originally an open estuary, allowing for easy navigation (Morales González and Borrego Flores 2008).

In the northern part of the Huelva estuary, between the two rivers, there is a peninsula. LO-S sits on sandy silts at a central point of this peninsula (Fig. 3). Archaeological excavations at the site began in 1998, on the northern side. However, it was not until 2005 that research intensified and expanded (González Batanero 2008). The portion of LO-S investigated to date comprises a roughly rectangular plot. Its dimensions are 700 m approximately in the east-west axis and 500 m in the north-south axis, covering an area of about 23 hectares (Fig. 4).

The local topography features two elevations: one on the western boundary of the plot, reaching 45 m above sea level, and another in the southeast, with an elevation of 39 m above sea level. A depression exists between these elevations, through which a seasonal stream flowed.

LO-S is a multi-period archaeological site. In its earliest phase, LO-S consists almost solely of approximately 200 pits of various shapes, sizes, and fillings. Much of it remains unpublished. These pits are distributed in clusters more or less scattered over the excavated area. So far, despite extensive excavations, no enclosing ditches have been found in association with the pits. This would

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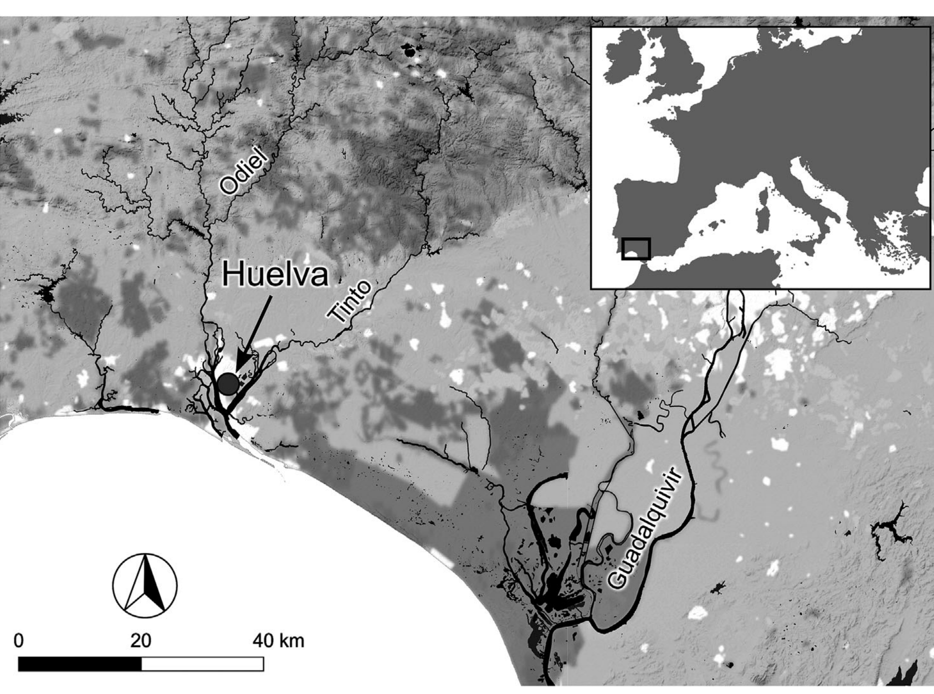

FIGURE 2
Location of Huelva within Iberia and Europe more generally (map tiles by Stamen Design, under CC BY 3.0.; data by OpenStreetMap, under OdbL license).

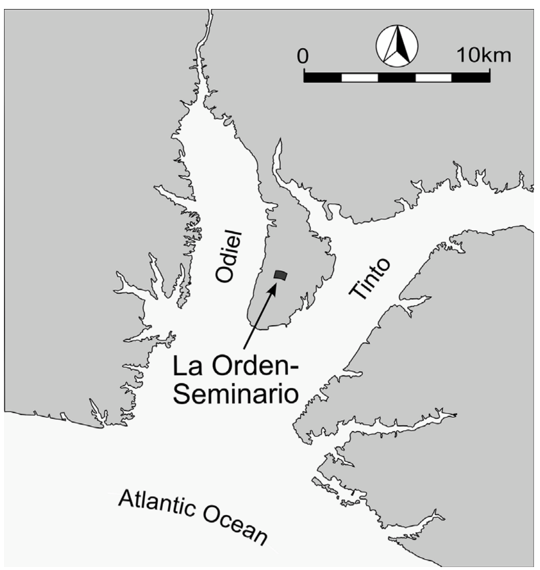

FIGURE 3
Location of the La Orden-Seminario pit site within the Huelva estuary (modified from Vera Rodríguez *et al*. 2010, Lám. II).

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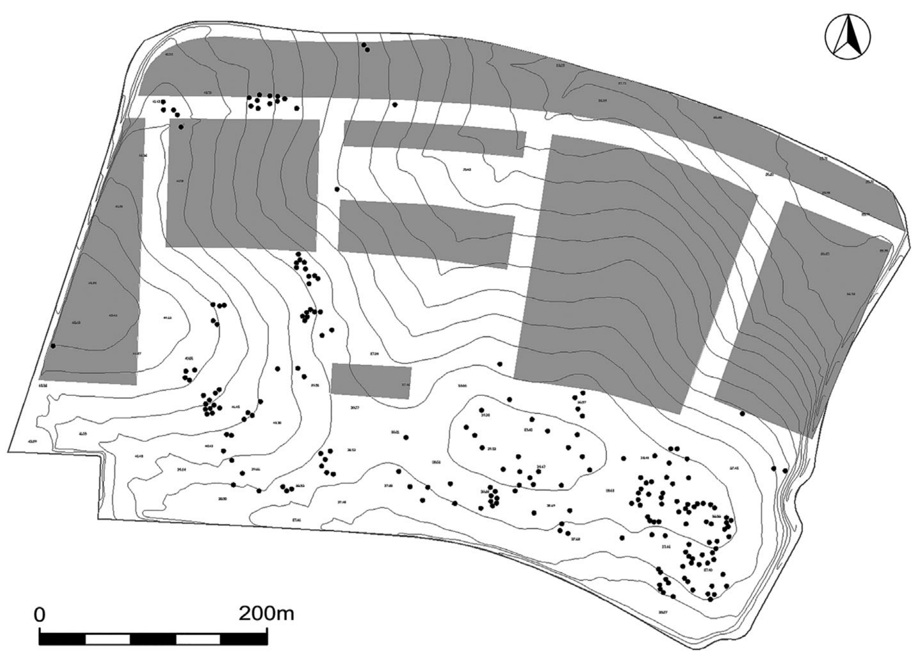

FIGURE 4
Floor plan of the excavated area at the La Orden-Seminario pit site, with the locations of the recorded pits (courtesy of Alejandra Echevarría Sánchez). Non-excavated sectors are greyed.

put LO-S firmly in the 'unenclosed pit site' category (Vera Rodríguez *et al*. 2010; Garrido Fernández and Vera Rodríguez 2015; Armenteros Lojo 2022).

Radiocarbon dates from samples coming from the pit fills are not yet available. However, the typology of the various materials unearthed clearly indicates that the pits were filled in at different times during the Late Neolithic (*c*.3500–3000 BCE) and the Copper Age (*c*.3000–2200 BCE).

Pits at LO-S are of variable size and morphology. Almost all of these features are predominantly circular in plan, and small; few surpass 2 m in diameter. Semi-globular or inverted truncated conical shapes with convergent walls are the most common profiles, comprising around 50% of the overall sample. This percentage must have been higher in the past, as the upper parts of the subsoil and, hence, of the walls themselves, have been destroyed by post-abandonment processes (see below). Their preserved depth ranges generally from 0.50 m to 1.30 m.

In addition to the pits, there are two sets of funerary structures of similar chronology, located on the highest points of the two low hills that form the site. They include simple pits containing human remains, hypogea, and *tholoi* (corbelled dome tombs), some of which were reused in the Bronze Age (Linares-Catela and Vera-Rodríguez 2021).

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Did these pits store grain?

As outlined above, the grain storage hypothesis has a long-standing tradition in Iberian archaeology as a framework for interpreting prehistoric pit sites, dating back to the nineteenth century (Siret 1893, 22-3; Bonsor 1899, 156; Collantes De Terán 1969, 61; Carriazo 1980, 162). Ethnographic and historical data, as well as archaeological and agronomic experiments, suggest that grain can indeed be stored in pits successfully, under certain conditions (Reynolds 1998; Miret and Mestre 2009). Moreover, the sizes and morphologies of many southern Iberian Neolithic and Copper Age pits make them well-suited for this purpose.

Nevertheless, this perspective has faced some opposition, with critics finding support in the almost absolute absence of macrobotanical remains within the pits (e.g. Lizcano Prestel 1999, 268; Márquez-Romero and Jiménez-Jáimez 2010, 360). There is also the problem that prehistoric pits are simple and versatile structures that appear in various forms and sizes, thus potentially serving a wide range of activities depending on the context.

Contrary to this, the scarcity of macrobotanical remains cannot be considered conclusive evidence either way, since grain is unlikely to survive in the archaeological record in the absence of burning, water saturation, or extremely arid or cold conditions. Such extreme environmental conditions are uncommon in southern European climates. Soil acidity is also a factor in certain regions (Buxó and Capdevila 1997, 23-4).

It is true that *in situ* burning is one of the ways in which previously used storage pits can be cleaned and sterilized prior to further storage (Reynolds 1998, 135; Miret and Mestre 2009, 67). In that sense, perhaps we should expect to find more burnt macrobotanical material, in particular carbonized grain that has lost the germ element of the seed. Nonetheless, pits could be prepared for reuse via other means which would not leave behind any charred remains, namely by hand (Reynolds 1998, 134). Moreover, here we are facing a more fundamental difficulty: the inability to ensure that the archaeological deposits filling these features are representative of the activities they were involved in during their use, and not merely a product of their more or less controlled abandonment.

Lastly, research has been dominated by development-led and rescue archaeology, often constrained by tight budgets and schedules, and thus not overly concerned with the systematic application of screening methods such as wet sieving. For all these reasons, the absence of large amounts of macrobotanical remains neither prove nor disprove the storage hypothesis.

There may be a way out of this research standstill. Certain interdisciplinary techniques can shed light on these issues: microscopic sediment characterization, phytolith analysis, and use-wear analysis. They have occasionally been applied to pit research (Madella 2001; Cammas *et al*. 2005; Beeching *et al*. 2010; Aranda Jiménez *et al*. 2011; Balbo *et al*. 2015). The results of such microarchaeological approaches have not always aligned with initial expectations, and sometimes seem to contradict deductions drawn from other lines of evidence (Beeching *et al*. 2010). Unfortunately, no such studies have been carried out for southern Iberian Copper Age pits as of yet. Therefore, we must consider the 'storage hypothesis' untested for the time being.

At LO-S, the majority of features display overhanging sides, resembling shapes like bells, inverted truncated cones and so on. In some cases, the original shape may have been altered in the post-abandonment stage (see below), but the existence of small and easy-to-seal mouths can still be inferred from the geometry of the deposits within their fill. That is the case of the 'hourglass-type' deposits, named as such because they are much deeper at the centre than at the periphery of the

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structure. This suggests the deposition of material from above, through a small opening at the top (e. g. structures 7007 and 7053) (Fig. 5). Other deposits, located along the margins of the bottom, comprise chunks of the natural bedrock, indicating the collapse of the top portion of the converging walls (e.g. structure 7028) (Fig. 5). All this aligns well with the expected morphology of grain storage pits.

Additionally, certain pits show accumulations of clayish soil near the base, next to the walls (e.g. structure 2169). This could be interpreted as fallen clay linings, commonly found in grain storage pits worldwide and documented in ethnographic reports (Miret and Mestre 2009). Moreover, certain pits yielded abundant fragments of adobe artefacts, which may indicate the presence of large storage containers (e.g. structures 505, 519, 2141, 2169 and 7008) (Fig. 6).

From storage to state

Let us suppose for a moment that most southern Iberian pits were indeed grain storage pits. We know that pits appear in massive numbers at certain sites. Does that necessarily mean that a large surplus was being redistributed? In no small part, the answer to this question depends on whether most pits were in use simultaneously or not. We will respectively refer to these two possibilities as ‘synchronic accumulation’ and ‘diachronic juxtaposition’.

According to the diachronic juxtaposition model, pits suffered from physical wear and tear due to continued use. At some point in time, individual pits would no longer be able to fulfil their initial function, whatever that was, and consequently were filled up and abandoned. Then, new subsurface features were dug nearby to replace them. Pit clusters were thus formed through the successive repetition of this cycle for years or centuries, pit after pit.

The diachronic juxtaposition model was put forward for the first time in the late nineteenth century (Bonsor 1899, 156-8) and progressively developed throughout the twentieth century in a

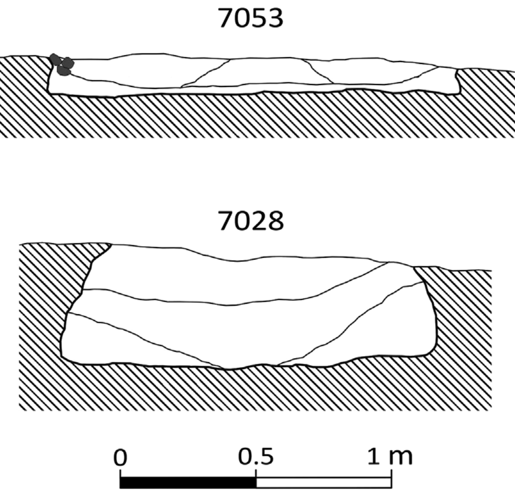

FIGURE 5
Stratigraphic profiles of structures 7053 (above) and 7028 (below) at the La Orden-Seminario pit site (drawings courtesy of José Manuel Beltrán Pinzón, ÁNFORA GRUPO).

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FIGURE 6
Fragments of large storage containers made of adobe found within structures 2169 (left) and 2141 (right) at the La Orden-Seminario pit site (photo by CésarGilFoto, ÁNFORA GRUPO).

multitude of publications and unpublished reports. It is consistent with ethnographic accounts which mention that storage pits are filled with stones and refuse when they are abandoned or not intended to be used for a long time (e.g. Peña-Chocarro *et al*. 2013, 215). It is also supported by the high frequency of intercutting pits, that is, newer pits cutting older ones, recorded at certain sites (see above).

Although it is not the best example, at LO-S excavations have revealed a distinct diachronic sequence, suggesting that the current overall surface area was never fully utilized. This is demonstrated by material typologies, but also by the existence of intercutting pits. For instance, in the southwestern part of the site, the late Neolithic pit 1171 was cut through the middle by a Chalcolithic pit. Similarly, pit 665 was cut by another Copper Age feature in the western part of the site (Fig. 7).

The alternative to the diachronic juxtaposition model, which we have termed synchronic accumulation, is more recent. It also has much deeper social, economic and political implications, as it postulates, somewhat vaguely, that a majority of pits were in use at the same time. It is within this framework that southern Iberian Chalcolithic pit sites have figured prominently in narratives that maintain the emergence of highly complex societies in third millennium BCE Iberia (see above).

It must be said that, as of today, there is no archaeological evidence in support of the synchronic accumulation model; it remains highly speculative. Despite the claims regarding the alleged accumulation of a large surplus, no attempt to quantify the amount of grain stored at any given time has been made. We lack knowledge about the rate of pit reuse as silos, that is, the average number of times the pits were used and reused for grain storage (if they indeed were utilized as such). This is important, as any fluctuation in this variable can have significant effects on the calculation of annual agricultural production or the surplus supposedly stored in these pits (Cunliffe 1992, 79-80).

Temporality is not the only matter to be addressed here. The various shapes and capacities of pits, and the changes that occurred through time in such parameters, have to be taken into account

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FIGURE 7
Structure 665 being cut by another pit at the La Orden-Seminario pit site (photo by ÁNFORA GRUPO).

(for a pioneer study, see, for instance, Prats *et al*. 2020). It is not enough to just claim that pits were used for the storage of grain. Where is the grain coming from, and for what purposes is it stored?

Indeed, prehistoric pits could have served as containers for long-term grain storage, particularly in regions with long, dry summers, such as southern Iberia. In this capacity, they represent an excellent option for small-scale farmers as they preserve grain in a cost-effective way, and are easy to construct and replace. They are also well-suited for mobile populations, as they provide a means to conceal grain and protect it from theft, fires, and pests.

However, pits are not well-suited for large-scale bureaucratic redistribution, which was characteristic of ancient state societies. This is due to the need for airtight closures to preserve the grain, which hinders frequent inspections of its condition and the comprehensive accounting of all grain entering and withdrawn from state storehouses. On the contrary, it would be expected that states relied more on systems based on open, non-airtight granaries, or otherwise more accessible containers, as they are more durable and facilitate easier daily inspection, accounting, loading, and unloading processes (Jiménez-Jáimez and Suárez-Padilla 2020, 815).

As a future line of inquiry, we propose exploring whether ancient civilizations, known for their large-scale grain redistribution, utilized pits for this purpose, thereby generating vast pit sites, or if they employed more sophisticated storage systems instead, that did not produce pit sites. An excellent candidate for this would be Ancient Egypt, where pit sites are ubiquitous in the Neolithic but tend to become progressively less and less frequent as social inequalities arise and the state is established (see e.g. Dachy 2014).

Were there any houses at Copper Age Iberian pit sites?

Apart from the pits themselves and the enclosing ditches (if any), other types of features are only infrequently found at Copper Age Iberian pit sites. Particularly striking is the scarcity of

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buildings of any kind (huts, communal houses, granaries and so on). Three possible explanations have been proposed:

1 There were houses at Copper Age Iberian pit sites at some point in time, but they were lost to destructive post-abandonment processes.
2 Many pits are the remnants of subterranean or semi-subterranean houses.
3 Pit sites were only temporarily inhabited, and no substantial architecture should be expected. Houses were flimsy structures made of perishable materials (Márquez-Romero and Jiménez-Jáimez 2010, 475-7).

Points 1 and 2 above require some discussion. Regarding the former, it has been pointed out that modern deep ploughing often removes the topsoil and the upper parts of the subsoil. At pit sites, this makes it difficult to ascertain, not just the original depth of pits, but their shape as well (Villes 1981). Are Iberian Copper Age pit sites affected by this kind of post-abandonment processes? The issue must be approached on a case by case basis.

As far as LO-S is concerned, it is known that the area where the site sits has been intensively cultivated since at least the first millennium BCE. In addition, modern ploughing has disturbed the soil up to 50 cm deep. However, the degree to which this has occurred is very variable. For instance, the subsoil is much better preserved under the protection of an old early modern threshing floor located in the southeastern corner of the site. Pits there are deeper, and more clearly exhibit converging walls and small openings than elsewhere (e.g. structure 7087; Fig. 8). Even so, there are no prehistoric houses in this sector either.

As for the second point above, in parts of Europe such as Iron Age Britain, the interpretation of large pits as subterranean dwellings was dismissed a long time ago (Bersu 1940). The controversy persists in Iberian archaeology, nonetheless. Some researchers view pit fills as the accumulated remains of domestic activities conducted within the pits themselves, following a sequence of occupation floors (e.g. Lizcano Prestel 1999). Others emphasize alleged similarities between large pits – interpreted as pithouses – and regular surface houses dating from the Iberian Copper Age (Rodrigues 2017). On the other hand, critics argue that pit fills represent deliberate deposits and not a succession of occupation floors. In addition, they contend that the morphology and size of the pits in southern Iberia are incompatible with sustained habitation within them (Jiménez-Jáimez and Márquez-Romero 2006). At LO-S, most pits are either too small or have unsuitable shapes to be functional as houses.

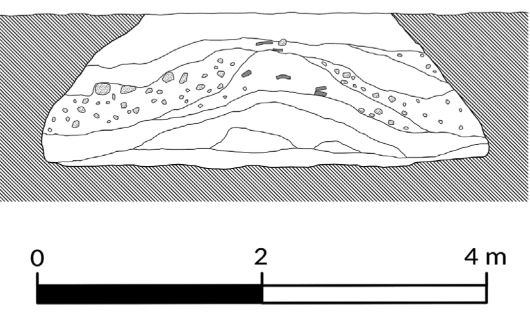

FIGURE 8
Stratigraphic profile of structure 7087 at the La Orden-Seminario pit site, better preserved than others by virtue of being protected by an early modern threshing floor (courtesy of José Manuel Beltrán Pinzón, ÁNFORA GRUPO).

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Are the pits filled with rubbish?

Southern Iberian pits often contain large amounts of fragmented artefacts and ecofacts. Assemblages are dominated by potsherds (plates and other large open vessel forms), quern stones, prismatic blades and other flint tools, flint knapping waste, pebbles, seashell remains, ash and other burnt material, and animal bones.

In traditional narratives, pits experienced physical deterioration over time due to continuous usage. When this occurred, such pits were repurposed for waste disposal, or were simply left unused, receiving random residues from nearby living areas. As such, these deposits were supposed to lack structure and meaning, and were seldom studied in detail. However, in the last two decades, there is a growing trend to take them more seriously (Díaz-Del-Río 2001; Aranda Jiménez *et al.* 2011), including paying attention to fragmentation issues (Blanco González 2014; Baptista and Gomes 2019; Valera 2019).

Additionally, numerous examples of complete and articulated animal burials have been identified (Lizcano Prestel 1999, 112-18; Márquez-Romero 2006; Daza Perea 2017), and the discovery of human remains has turned into a common occurrence (Márquez-Romero 2004; Evangelista and Valera 2019). Human remains may appear in isolation, but also forming assemblages of disarticulated bones and/or skulls, or complete and articulated in a foetal or crouched position. These burials sometimes include more than one individual. Grave goods are commonly absent. All this suggests that there was some degree of intentionality in those deposits. In other words, at least some of the acts of deposition were meaningful in their own right.

Hence, there has been a shift in the interpretation of the filling of pits. Drawing upon the research of Thomas (1999), Pollard (1999) and other scholars, it has been proposed that these pits had no clear function other than deposition. Instead, they should be understood within the context of complex processes of site occupation, abandonment, and re-occupation. These pits served as a means to commemorate specific events, such as feasts, gatherings, or periods of occupation, by placing representative artefacts or remains associated with them in the ground. In doing so, a lasting trace of their memory was deliberately created at the time of site abandonment (Márquez-Romero and Jiménez Jáimez 2010, ch. 10). Note that this perspective is perfectly compatible with the diachronic juxtaposition temporality model referenced earlier, the difference being that in this view pits did not function as storage structures.

Rather than conflating these highly diverse acts of deposition, and others, into an all-encompassing category such as 'rubbish dumps', 'ritual deposition' or 'structured deposition', it may be more productive to categorize them as 'odd deposits', 'non-discursive symbolic deposition' or 'material culture patterning'. Such categories are not separate entities, but part of a continuous spectrum of depositional practices with lots of explicit symbolic meaning on one end (i.e. material statements), and very little symbolic meaning on the other.

The notion of 'odd deposit' evokes the deliberate placement of unconventional, out-of-place or otherwise peculiar objects in archaeological contexts. It can also refer to the deposition of common artefacts or ecofacts in specific arrangements or orientations which denotes intentionality and conscious purpose in some way. 'Odd deposits' may arguably have been created to convey an explicit message. As such, they may represent clearly ritualized practices, distinguished and privileged from more mundane activities. In theory at least, by analysing the relationships between artefacts, their spatial distribution, and the broader archaeological context, researchers can uncover the underlying meanings and intentions embedded within them. Of course,

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there is always the chance that what we see today as 'odd deposits' may have been entirely ordinary and unremarkable to people in the past (Brück 1999, 329).

As the name implies, non-discursive symbolic deposition is symbolic in nature. It exhibits variability, allowing for the expression of beliefs, power dynamics, or social/gender identities. In that sense, it too represents a distinct category of material culture that deviates from the haphazard deposition resulting from abandonment or decay. The difference as regards odd deposits is that the patterning created at the time of deposition is not easily articulated verbally, and may even occur unconsciously. Objects are placed in certain locations with an implicit adherence to key culturally-specific classificatory principles, or to commonly held notions about appropriate actions in relation to particular social contexts. Artefacts and ecofacts are deposited without any accentuated ceremony because 'that is how it is done' (Hill 1995, 99; Fontijn 2012; Garrow 2012, 136; Thomas 2012).

Lastly, the term material culture patterning is associated with the existence of regularities in the distribution, composition and arrangement of artefacts within archaeological contexts and features. A distinctive characteristic of material culture patterning is that it can emerge spontaneously from more or less random processes embedded in the rhythms of life. In these situations, the act of deposition in itself, even if deliberate or ritualized, does not create the patterning we may see. Instead, it is the ebbs and flows of 'everyday' practices that do. Obviously, quotidian activities are influenced by cultural rules and conventions, but these guiding principles are largely unrelated to the acts of deposition that ultimately produce the archaeological record (Garrow 2012, 136-7).

When it comes to deposition in pits, the term material culture patterning as understood here implies that the contents of a pit may have depended solely on the availability of materials in the pre-pit context at the time of filling:

> '*The accumulation of pottery and flint, and the digging and filling of pits, occurred at different 'tempos'* [...]. *Consequently, when one pit was filled, there may have been lots of all materials available in the prepit context. However, when the next pit was filled, it is possible that while lots of flint had been knapped, no further pots had been broken; as a result, that pit would have been sparse in terms of pottery, but rich in terms of flint*' (Garrow 2012, 113).

Because of this, there may be very little symbolic meaning to be found in the spatial prevalence and contextual combinations of artefacts across the site.

It is fair to say that, so far, research emphasizing the importance and diversity of depositional practices in Copper Age Iberian pits has focused predominantly on odd deposits (e. g. Márquez-Romero and Jiménez-Jáimez 2010, 212-32). This is problematic if it entails resorting to them to support the general meaningfulness of what would otherwise be considered just material culture patterning. There is a real danger of falling into the burden of proof fallacy: if no evidence exists to suggest that these deposits were not intentionally placed, the (implicit) assumption becomes that they were. In other words, it is easy to go from a focus on consciously arranged, symbolically significant deposits to the idea that all deposits in every pit were intentionally created and held symbolic relevance (Garrow 2012, 100). We can illustrate this point with examples from LO-S.

There are many assemblages at LO-S that could arguably be classified as odd deposits, as defined above. They are very diverse, but we will start with the most obvious ones.

Within some of the pits, depositions of ideotechnic items (widely known as 'idols') have been documented (Vera Rodríguez *et al*. 2010). The most notable examples are structures 3027 and 3370, where archaeologists have found a striking number of stone and bone anthropomorphic

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idols, mostly cylindrical, both undecorated and incised with 'ocular' motifs. In structure 3027, the deposition of such eyed idols occurred alongside various objects, including a small fragmented marble bowl with three pairs of rivets for repair, a small copper punch, several lithic tools, handmade ceramic objects, and an accumulation of bivalve shells. The second structure, 3370, was almost exclusively devoted to the deposition of decorated (oculated) and undecorated baetyls and idols (Fig. 9). Similarly, in structure 3399, a small cylindrical idol was found. As a variation of this phenomenon, a funnel-shaped idol was recorded alongside a bronze awl at the base of structure 2667, and two notched slate plaques were found in 2121, next to a small shell midden.

Other odd deposits include a whole ceramic bowl containing a polished stone adze, placed close to the walls within structure 7001 (Fig. 10); another whole bowl placed upside down in 7013; a small clay item with a rather unusual shape deposited in 7031; four whole quern stones in structure 7051; 316 small, complete disc-shaped slate beads for necklaces, along with other fragmented beads, interspersed at regular intervals with slightly larger shell beads within structure 1873.

Structure 424 displays a peculiar rectangular shape. It also stands out due to the presence of two large marine mollusks, Triton-type shells, possibly used as musical instruments or as a means of communication at a distance.

At LO-S there are odd deposits involving complete and articulated animal remains, as well, such as a dog within structure 11013. Lastly, the articulated remains of several human individuals have been recorded within structures 1307 and 1327 (Fig. 11), two of which show signs of having undergone trepanation. Disarticulated human remains – skulls, long bones and so on – have been documented in combination with ovicaprid jaws in structure 279.

But this is just the tip of the iceberg. Many other non-random behaviours produced patterns in the fills of LO-S pits. Some deposits are clearly arranged horizontally (e.g. structures 519, 527, 2162, 7001 and 7023); others contained huge amounts of marine shells (e.g. structures 3128 and 7013) or lithic remains (e.g. structures 300, 2070, 2337 and 7051); and others include materials

FIGURE 9
Idols within structure 3370 at the La Orden-Seminario pit site (photo by José Antonio Linares Catela, ÁNFORA GRUPO).

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FIGURE 10
A whole ceramic bowl containing a polished stone adze within structure 7001 at the La Orden-Seminario pit site (photo by José Manuel Beltrán Pinzón, ÁNFORA GRUPO).

FIGURE 11
Articulated human remains in structure 1327 at the La Orden-Seminario pit site (photo by Inmaculada López Flores, ÁNFORA GRUPO).

burnt *in situ* (e.g. structures 1845, 7010 and 12298), metallurgical remains (e.g. structure 3027) or eaten animal bones (e.g. structures 7057 and 279). We just do not know whether or not these depositional practices were as meaningful to prehistoric peoples as the ones we described earlier. Almost no research has been done on that front. It will take time, effort and a dedicated research strategy to discern whether these should be considered odd deposits, non-discursive symbolic deposition or material culture patterning, and the wider implications of it.

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CONCLUSION

This paper has provided an overview of Neolithic and Copper Age pit sites in southern Iberia, with examples from La Orden-Seminario. We have seen two primary ways of looking at this problem. Many believe such pits were used for the storage of grain. This often leads to the conclusion that, in the Copper Age, massive amounts of agrarian surplus were accumulated and redistributed by emerging states. Others reject this idea by postulating that pits did not store grain at all. They both might be wrong.

Ethnographic and historical data indeed suggest that the size and morphology of many pits in Southern Iberia make them suitable for the storage of grain. At the moment, all available evidence in support of this hypothesis is indirect. Only microarchaeological approaches (micromorphology, phytolith analysis) have the potential to provide definitive evidence in one direction or another.

Whether or not pits held grain is perhaps not as important as the question of how many of them did at the same time. A key issue, then, is temporality. The diachronic juxtaposition model suggests that pits were repeatedly used and abandoned, leading to pit clusters formed over years or centuries. In contrast, the synchronic accumulation model posits that a majority of pits were in use at the same time, serving as grain storage areas of considerable size.

Unfortunately, we lack a deep understanding of the chronology and temporal relationships at the vast majority of southern Iberian pit sites. While we generally know that these features mostly date from the Late Neolithic or the Copper Age, little more can be said in that regard. Radiocarbon dated samples from pits are very scarce. Having said that, the absence of spatial planning at southern Iberian pit sites, as well as the high frequency of intercutting pits, strongly suggest that the synchronic accumulation model is incorrect. On top of that, pits suffer from significant limitations for large-scale bureaucratic grain redistribution. Together, these lines of evidence make the possibility that Iberian Copper Age pit sites supported a state-level political hierarchy unlikely.

Regarding the presence of houses, we have discussed three possible answers: (a) that houses were present in the prehistoric past but not visible today due to destructive post-abandonment processes like deep ploughing; (b) that many pits functioned as dwelling-pits; (c) that pit sites were only temporarily inhabited and had flimsy, perishable structures that are difficult to identify archaeologically. Research has shown that, while (a) and (c) are plausible, (b) is flawed.

Lastly, according to traditional accounts, pits underwent physical degradation over time as a result of continuous use. When such degradation occurred, pits were repurposed for waste disposal or were abandoned, accumulating random residues from nearby habitation areas. Consequently, these deposits were believed to lack organization and significance.

Contrary to this, recent work has highlighted the deliberate nature of many deposits filling the pits. In order to better understand their formation, we have proposed categorizing them as ‘odd deposits’, ‘non-discursive symbolic deposition’, or ‘material culture patterning’. At the same time, and following Garrow (2012), we have argued against overemphasizing those deposits that appear odd to as archaeologists at the expense of others.

We hope that the lessons learned after decades of research in southern Iberia will be of interest to archaeologists in other European areas where prehistoric pits sites are also a prominent part of the archaeological record, from the Neolithic to the Iron Age.

Iron Age pit sites are a good example of how analogous questions may arise in a different context. In the Iron Age, pit sites became widespread in the lands encompassed by the rivers Ebro and Rhône in present-day north-east Spain and southern France (e.g. Garcia 1997), as well as northern France (e.g. Gransar 2000), central Europe (e.g. Biel 2015) and Britain (e.g. Collis 2000)

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(see Jiménez-Jáimez and Suárez-Padilla 2020 for a more detailed discussion of pit sites in some of these areas and more references). The average size and shape variability of these Iron Age pits largely mirror the Chalcolithic examples found in southern Iberia. The frequency of intercutting is also relatively high in some cases. Notably, similarities extend to the contents of these pits, including the presence of human remains and other 'odd deposits' in certain instances (Cunliffe 1992; Hill 1995).

Having said all that, while our discussion on southern Iberian pit sites undeniably holds relevance for understanding the pit site phenomenon across Europe, each context is unique and necessitates careful consideration.

For instance, it is important to note that Iron Age pits appear in a broader array of contexts, ranging from fortified enclosures and hillforts to unenclosed pit sites near important proto-urban settlements, as well as small hamlets in rural areas. They can coexist with substantial houses and other constructions. This has to be accounted for in our interpretative models.

Similarly, elsewhere in Iberia pit sites are present in a variety of contexts, quantities, sizes and shapes that changed through time (Prats *et al*. 2020). Furthermore, pit sites of roughly the same chronology as our case study in Iberia are also different in crucial ways (Garcia 1997, 89). In fact, some have argued that the morphology and dimensions of many Neolithic and Bronze Age pits in France and Britain do not generally align with the grain storage pit hypothesis at all (Thomas 1999, 64-8; Beeching *et al*. 2010, 165).

In sum, slight variations in the characteristics of the available evidence for each region (such as pit size, morphology, location in the landscape, coexistence with other features, etc.) may reasonably lead to entirely distinct interpretations. Despite this, the theoretical and methodological challenges highlighted here, as well as the questions raised, apply to pit site research generally.

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(MJA-L, VJ-J) Departamento de Ciencias Históricas, F. de Filosofía y Letras
Universidad de Málaga
Campus de Teatinos, s/n
Málaga 29071
SPAIN
ORCID: https://orcid.org/0000-0002-8702-0260;
(Corresponding author) E-mail: vjjaimez@uma.es
ORCID: https://orcid.org/0000-0003-0534-8543

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