

Reconnecting the Late Neolithic Social Landscape: A Micro-Regional Study of Objects, Settlements and Tombs from Iberia

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The contrast between monumentalized burials and almost invisible settlements has dominated Neolithic studies in western Europe, reinforcing an artificial divide between ceremonial and economically productive landscapes. By combining a material culture approach with a landscape scale, comparative artefact studies can trace connections between people, places, and social contexts. This paper investigates social networks in Late Neolithic Portugal by examining artefact provenance, biographies, and deposition on the Mondego Plateau. It focuses on three sites and four object categories characteristic of this period. The study reveals great diversity of raw materials, circulation of everyday objects, and regional availability of resources previously thought to be imports. It suggests that people used dispersed resource areas in an integrated way, and that exchange was an integral part of routine life. Evidence for links across the region is not restricted to tombs. Burial assemblages resulted from a complex web of social relations that preceded, accompanied, and followed the actions surrounding death. Understanding these places and fundamental questions about Neolithic social production and reproduction requires reconnecting tombs and settlements into wider lived landscapes.

Keywords: Late Neolithic, social landscape, megalithic tombs, settlement, object biographies, social networks, provenance, Iberia

INTRODUCTION

A remarkable characteristic of the western European Neolithic is the contrast between its monumentalized burials and almost invisible settlements. Unsurprisingly, megalithic tombs have featured prominently in interpretations of this period, having been viewed as windows into social organization, inequality and territorial control or, alternatively, through the lens of identity politics, cosmology, and memory. It would be disingenuous to set these perspectives in opposition.

Neither the cosmological underpinnings of megalithism nor the importance of funerary rituals in Neolithic social reproduction are contentious. Indeed, participation in rituals at megalithic tombs is recognized as a means through which people's places in society were confirmed and senses of community were experienced.

Settlement practices feature much less prominently in accounts of the Neolithic; a situation that owes much to the small scale and elusiveness of dwelling sites during this period in many regions. These have been studied primarily, if not exclusively, for

what they can reveal about subsistence, domestic economy, and mobility. In contrast, monumental tombs appear to lend themselves more readily to discussions about social relations: as spaces of social inclusion and exclusion, large-scale projects concentrating resources, or containers of status markers. While such a dichotomy has long been seen as unsatisfactory (e.g. Brück, 2005), it still permeates many narratives of the period, in practice, if not in theory. In fact, these two kinds of places are often studied independently, reinforcing a conceptual divide between ceremonial landscapes and agricultural ones, and between political and domestic arenas of social life. The focus on architecture and (funerary) ritual has often come at the expense of a more integrated approach to the social landscape.

One alternative is to concentrate on portable material culture. If we accept that things are the means through which social relations are created, we can investigate social interaction by querying how site assemblages were formed. This requires acknowledging that various forms of social obligation and movement contributed to the circulation and deposition of objects. A comparative study of settlement and tombs, which integrates a landscape scale with a material culture approach, focusing on provenance and object biographies, is better suited to investigate object production, circulation, and use outside the confines of individual site assemblages, without neglecting depositional specificities. Provenance studies provide insights into how people might have connected with each other across broader areas, insofar as they move beyond source identification, inventories of local and non-local resources, and classifications of direct procurement/exchange mechanisms. The tracing of object biographies (Kopytoff, 1986; Gosden & Marshall, 1999) allows for connections between contexts to be

explored; it breaks away from the idea that objects have a single, linear and predefined life, recognizing instead that they have the ability to move between social arenas and to have their meanings changed in the process (Stahl, 2008). Therefore, it becomes possible to consider the creation of artefact assemblages as the product of webs of relations beyond the site; as the outcome of networks of practice, which intersect each other at different times and places, carrying resources (people, labour, objects, knowledge, etc.) between different social spaces. Such resources are drawn upon according to the norms and power relations governing social institutions in specific historical contexts.

Our understanding of the late fourth millennium BC is based on assumptions about what those resources were and how they were mobilized in the course of specific events and activities. Expectations are for funerary rituals to have commanded not just more but also different resources from those involved in everyday life (e.g. rare or exotic materials, specialist technologies, etc.), and activities at settlements to have drawn on much more limited resources and geographically immediate relations. This opposition underlies prevalent archaeological discourse about the Neolithic in Iberia, particularly in regions where burials were the only monumentalized places until enclosures emerge at the onset of the Chalcolithic. However, as far as the artefacts are concerned, such a dichotomy tends to be assumed rather than tested.

Focusing on the Late Neolithic on the Mondego Plateau in central-northern Portugal, this paper aims to reassemble a picture of the Neolithic social landscape at a microregional scale through a detailed artefact study. While using three archaeological sites (two settlements and one tomb) as a starting point, it draws on broader comparative evidence from

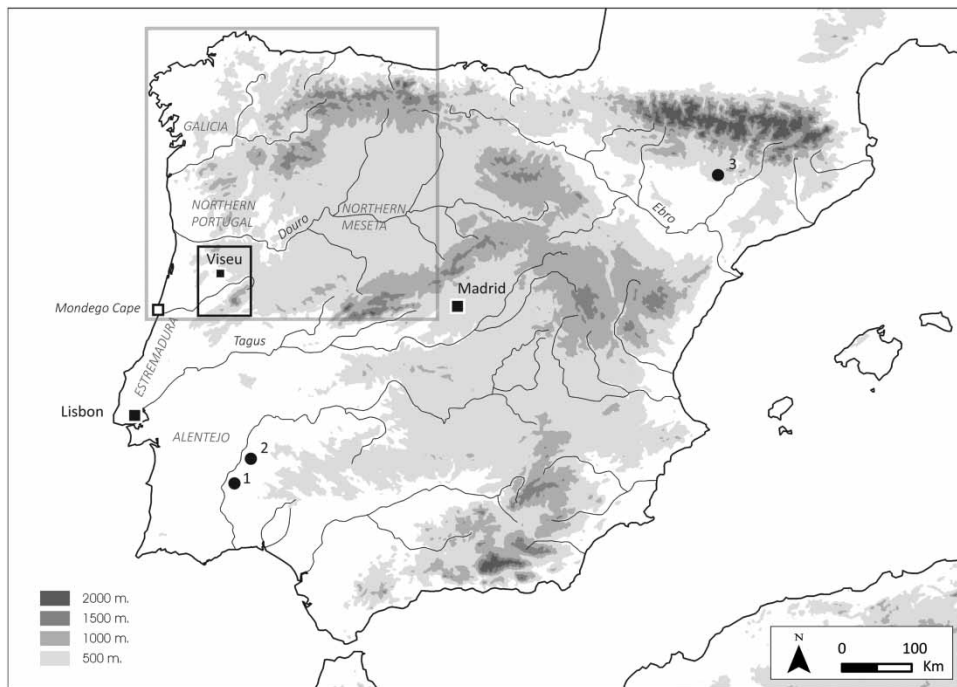


Figure 1. Location of the research area (black line) and other sites mentioned in the text: 1—Outeiro Alto 2; 2—Sobreira de Cima; 3—Montjuic d'Altés. The grey line delimits northwest Iberia as defined for the purposes of this paper.

northwest Iberia (Figure 1). The first part reviews provenance data for selected artefact categories in order to query long-held assumptions about the local or non-local origin of particular materials, and reassess expectations about the differing geographical make-up of burial and settlement assemblages. The second part reintegrates tombs and settlements within the wider lived landscapes, focusing on individual site assemblages and reconsidering the social contexts of material acquisition and circulation within the region.

RESEARCH SETTING

Archaeological background

The Mondego Plateau (Beira Alta region) is known for its concentration of

megalithic tombs (Figure 2). As elsewhere in Iberia, their chronologies remain ill-defined (e.g. Delibes, 2010; Fernández Eraso & Mujika, 2010; Scarre, 2010; García Sanjuán et al., 2011) and, in the absence of bone preservation, AMS dating programmes akin to those underway elsewhere cannot be implemented. Consequently, the tempo of burial use at individual tombs cannot be recognized beyond broad chrono-cultural phases, association between individuals and burial goods cannot be retrieved, and people's life histories cannot be investigated from their skeletal remains. The regional Late Neolithic covers roughly 3500–3000 BC, although chronological boundaries are very imprecise, the earliest dated Chalcolithic site being the stone-walled enclosure of Castro de Santiago (with radiocarbon dates providing date-ranges of

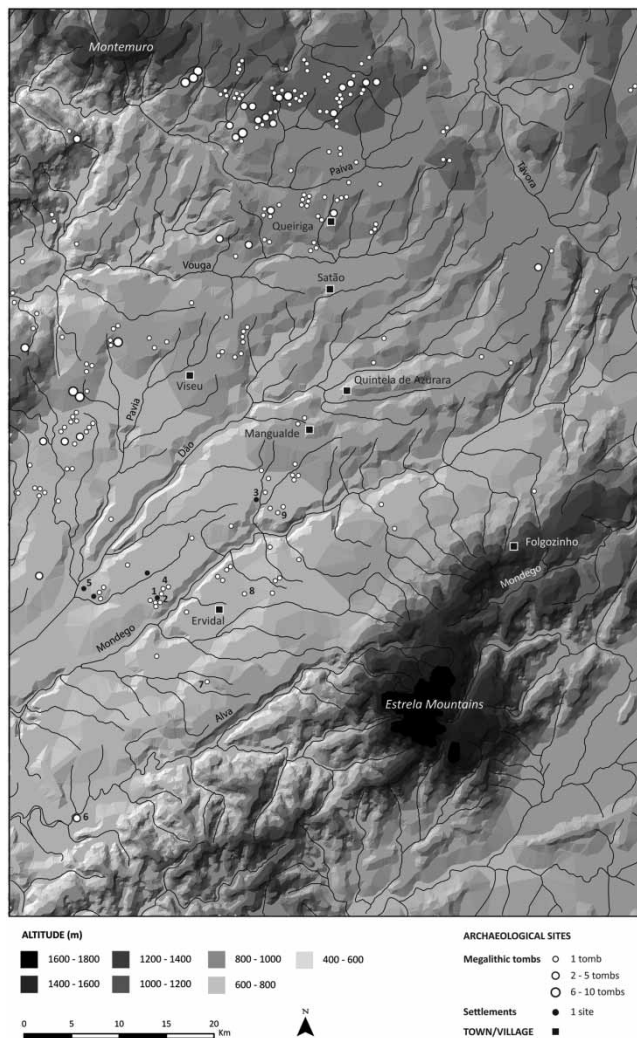


Figure 2. Distribution of settlements and megalithic tombs in the Mondego Plateau and surrounding highlands. Archaeological sites studied: 1—Ameal; 2—Fiais da Telha; 3—Murganho 2. Other sites mentioned in the text: 4—Quinta Nova; 5—Outeiro do Rato; 6—Dolmen 1 of Moinhos de Vento; 7—Seixo da Beira; 8—Sobreda; 9—Carvalhinha. Sources: Geographic information from *Atlas do Ambiente*, Agência Portuguesa do Ambiente. Site locations: Valera (2007: 486, fig. 10–4).

3091–2893 and 2906–2636 cal BC) (Valera, 2007).¹

One of the largest regional tombs is Fiais da Telha, a classic dolmen with a polygonal chamber and long passage

¹All radiocarbon dates, calibrated using OxCal 4.1.3 (Bronk Ramsey, 2009) and following Reimer et al. (2009), are given at 2σ (95.4 per cent confidence).

(Senna-Martinez, 1989). Lacking in radiocarbon dates, its architecture and grave goods (abundant pottery, arrowheads, and beads) point to the later Neolithic, placing the bulk of the material within the late fourth and transition to the following millennium BC (Figure 3; Senna-Martinez & Ventura, 2000;



Figure 3. Settlements and megalithic tomb studied: (A) hearth of Ameal's Hut 3; (B) selected lithics from the settlement (note unfinished greenstone adornments: bottom left); (C) Fiais da Telba after excavation and conservation; (D) selected lithics and beads from the tomb. Photos A, B, and D: J.C. Senna-Martinez. Photo C: author's photo.

Delibes, 2010: 36). A copper dagger and rare decorated vessels indicate reuse during the Late Chalcolithic. The pottery assemblage from the tomb is otherwise comparable with those from nearby dwelling sites, which comprise a similar range of shapes and exclusively plain vessels (Senna-Martinez, 1989, 1995/96), a chronological indicator for the regional Late Neolithic (Figure 4; Valera, 2007: 605; Senna-Martinez & Luís, n.d.: 144).

Excavations at Ameal (seven huts), Murganho 2 (one hut), and Quinta Nova (two huts) recovered pottery, chipped stone tools, debitage, amphibolite adzes, querns, grinders, and hammerstones from the single living floors and central pit-hearths of semi-circular, wattle-and-daub structures (Figure 3; Senna-

Martinez, 1989, 1995/96, 2000a, 2000b, 2000c; Senna-Martinez & Luís, n.d.). Radiocarbon dating at Ameal and Murganho 2 confirms occupation during the second half of the fourth and early third millennia BC, although individual dates are problematic, as well as too few and imprecise to distinguish internal phasing. Nonetheless, these sites provide a rare opportunity for broad comparisons between burial and domestic assemblages during this period, especially given the limited settlement evidence in northwest Iberia (e.g. Delibes et al., 1997; Sanches, 1997; Cruz, 2001; Carvalho, 2003; Criado & Cabrejas, 2005).

The subsistence strategies of these groups remain poorly understood, although long-standing models of seasonal

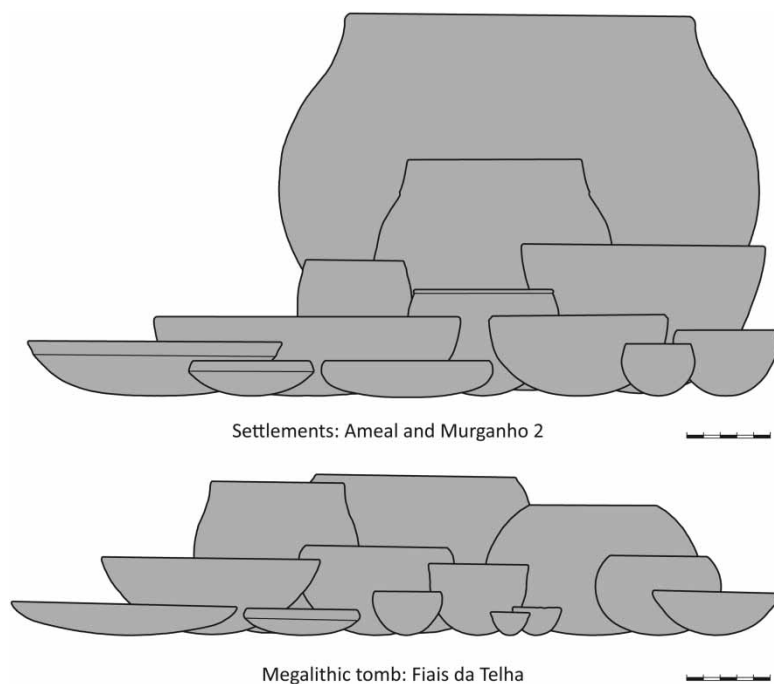


Figure 4. Range of Late Neolithic domestic and burial ceramic vessels on the Mondego Plateau. Reconstructions based on original drawings from Senna-Martinez (1989, 1995/96). Scale = 10 cm.

movement based on transhumance and foraging (Senna-Martinez, 1995/96) have been recently challenged in the light of growing evidence for cereal production in neighbouring areas (Valera, 2007: 388). It is known that they participated in broader exchange networks through which materials such as flint and jet circulated; and, judging by regional grave goods, they also had access to other resources (e.g. ochre).

Provenance and exchange in Late Neolithic Iberia

Despite recent developments, Neolithic provenance studies are still relatively limited in Iberia—more effort having been invested in the Chalcolithic, a period of long-distance exchange intensification, social transformation, and material culture change (e.g. metals, Bell-Beakers). With

few exceptions, the focus of research tends to be on individual types of material, notably those with assumed non-local origins or limited availability and wide geographical distribution. For example, some lithic resources have been highlighted for their potential to shed light on social hierarchies and prestige economies (Harrison & Orozco, 2001; Guerra-Doce et al., 2009). Those known to have circulated more widely, such as flint blades (Nocete et al., 2005), amphibolites (Lillios, 1997, 1999), variscite (Odriozola et al., 2010), and amber (Murillo-Barroso & Martín-Torres, 2012) have received special attention. Many of these materials are found at Mondego sites and some occur naturally in the region (see below). In contrast, pottery has received little attention beyond typology, despite being one of the most abundant artefact categories in Late Neolithic tombs. Given

its lack of decoration and stylistic uniformity in many regions, pottery is generally expected to have been produced locally and expediently to fulfil subsistence and practical needs. These characteristics have rendered it unattractive to perspectives focusing on the development of social complexity—a central concern in Iberian archaeology.

This state of affairs has important implications:

1. The bias towards materials perceived to be special reproduces unhelpful dichotomies, which conflate non-local with prestige and local with mundane, without actually testing them. Seldom have site assemblages as a whole been taken into account.
2. Local and non-local are used as abstract labels or 'objective' distances, with little consideration for the ways in which people used the broader landscape and interacted with one another beyond individual sites. The acquisition of non-local materials is regarded in isolation from other activities, particularly those involving different groups.
3. The focus on longer distance circulation and concomitant larger scale of analysis has come at the expense of more detailed regional studies. Knowledge of local resources is often superficial, limiting the potential to investigate resource exploitation and exchange at an intraregional level. Perhaps more importantly, it helps to perpetuate preconceptions about value and desirability based on (perceived) distance and investment in acquisition.

TRACING ARTEFACT PROVENANCE ON THE MONDEGO PLATEAU

My artefact study concentrated on four categories—pottery, amphibolite tools,

flint blades, and stone beads—selected for their abundance, ubiquity across settlement and burial sites alike (except beads), and differing importance in traditional models of the Iberian Neolithic. This section summarizes the provenance data available for the Mondego Plateau, bringing together the results of recent ceramic analysis (Jorge, 2011; Jorge et al., 2013), published lithics reports, and detailed geological information in order to reappraise the evidence base upon which regional interpretations have been built. It focuses on the assemblages from Ameal, Murganho and Fiáis, contextualizing them within the broader Mondego and north-west Iberia, and comparative analytical data from other parts of Iberia. Unless stated otherwise, lithic raw material identification results from macroscopic examination alone.

Pottery

Pottery was abundant in Portuguese megalithic tombs dating from the mid-fourth millennium BC. On the Mondego Plateau, while vessels tend to be smaller in funerary contexts, burial and settlement assemblages comprise the same range of shapes, from miniature bowls to dishes and spherical vessels (Figure 4; Senna-Martinez, 1989); ceramic analysis has shown that similarities extend beyond morphology (Jorge, 2011; Jorge et al., 2013). Analytical data are patchy in Iberia, being particularly limited in Portugal and the northwest, especially for the Late Neolithic. Where undertaken, provenance studies have often either concentrated on single sites, which hinders contextual evaluation of the results, or taken a macro-regional perspective, at the cost of intra-site and typological variability (cf. Cordero et al., 2006). The Mondego region was recently the focus of a multi-period

Table 1. Clay sources used on the Mondego Plateau during the Late Neolithic

Lithological origin	Possible provenance	Minimum distance from known outcrops*			Fabric group (FG)	N samples**
		Fiais	Ameal	Murganho		
Tertiary sediments	Small deposits scattered across the Middle Plateau	<1 km	<1 km	<2 km	FG 1–4 and 4 samples	79
Muscovite-garnet granitic rocks	Quintela and Bom Sucesso Granites	>35 km NE			FG 5	2
	Aplitic veins in Fôlgosinho-Linhares migmatitic belt	>35 km E				
	Aplites of the Ervidal da Beira area	c. 5 km SE				
Biotite-hornblende igneous rock	Minor bodies within the Viseu-Coja granite (including the Trancoselos Formation)	>30 km N	>30 km N	>20 km N	FG 6 and sample A5/32	4
Retrograde greenschist facies metamorphic rock	Metamorphic formations (possibly within the Real-Vila Mendo Complex?)		Unknown (at least >15 km NW; possibly >25 km NE)		Sample A5/28	1
Phyllites	Outcrops of the Schist-Greywacke Complex	>14 km E >10 km SW			Samples A5/67 and A5/75	2

*Distances to known outcrops were estimated from geological maps and literature, and should be taken only as indicative.

**Five Chalcolithic decorated vessels from Fiais also analysed were not included (cf. Jorge et al. 2013 for complete dataset).

research programme combining thin-section petrography and neutron activation analysis: approximately 50 per cent of the vessels from Ameal (Sector A), Murganho, and Fiais were sampled. Only the main findings are summarized here (Table 1); for details see Jorge et al. (2013).

Comparative analyses of Late Neolithic plain pottery (eighty-eight samples) and geological materials (thirty samples) have shown that the majority of the vessels was made in the same way—without tempering—and with the same kind of clays, regardless of typology and depositional context. Petrographic and chemical variation suggests that people extracted clays from various locations within the patchy tertiary deposits found across the Middle

Plateau (Figure 5). Moreover, chemical differences between Ameal and Murganho indicate that people exploited separate source areas when occupying different settlements, despite targeting similar clays. While their geographical location cannot be pinned down, such areas are likely to have been restricted to the plateau and not to have extended to the foothills of the Estrela Mountains. Nonetheless, they may have been scattered across a wider territory.

In addition, a few vessels were made with residual clays derived from rock types occurring much further away from the sites: at least 10 km west and southeast in the case of the metamorphic terrains; and 30 km north and northeast for the more

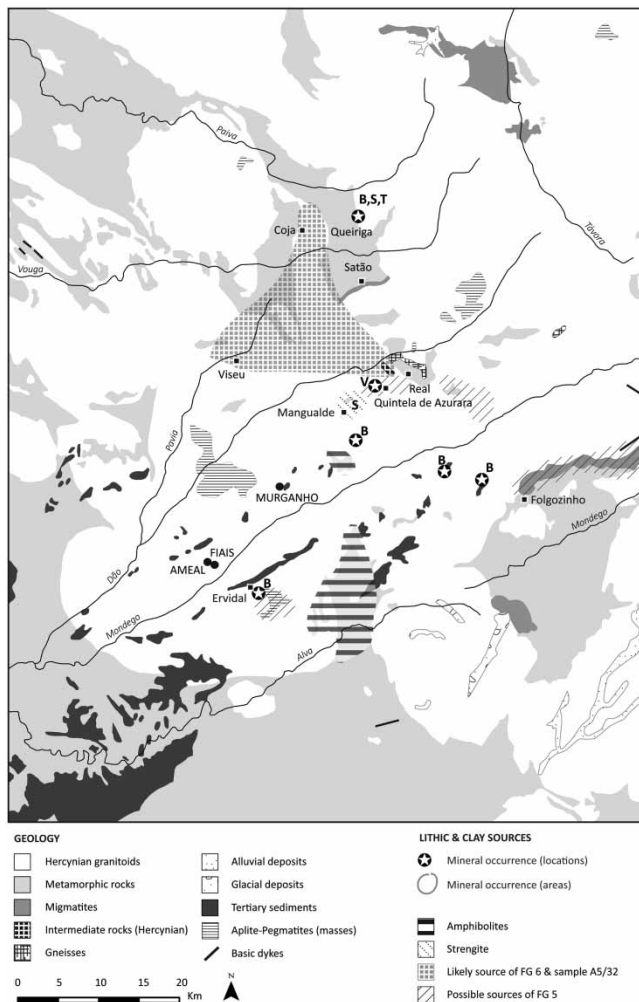


Figure 5. Simplified geological map of the Mondego Plateau showing regional availability of raw materials used in Late Neolithic pottery, beads and edged polished tools. Source: geological information compiled from Pilar and Rocha (1960), Teixeira et al. (1961), Gonçalves (1979), Carvalho (1992), Ralph and Ralph (1993–2009), Azevedo and Nolan (1998), and Azevedo et al. (2005).

basic igneous outcrops (Figure 5, Table 1). Therefore, a small proportion of the pottery was brought in from various areas of the plateau and surrounding highlands. Significantly, the non-local pots were found at all the sites, rather than being associated exclusively with funerary deposition. In fact, activities at the dolmen do not seem to have included pottery from further away than Ameal or Murganho. The Mondego is not an isolated case.

Whenever comparative provenance data exist for the late fourth millennium BC, regional studies have arrived at similar conclusions: (i) the majority of both domestic and burial pottery was made with raw materials available within the surrounding areas, (ii) the pottery from megalithic tombs does not seem to have been significantly more diverse than that from settlements, and (iii) the production of vessels deposited in burials does not seem

to have followed specific manufacturing prescriptions (e.g. Hulthén, 1977; Sheridan, 1991; Morzadec, 1995; Clop, 2007; Jorge et al., 2013).

Amphibolite tools

In northwest Iberia, Late Neolithic edged tools were usually made with regionally available rocks, which in central-northern Portugal include amphibolites. However, amphibolites dominated Portuguese polished stone assemblages during the fourth and third millennia BC, even in areas where this rock type does not occur (Lillios, 1997, 2000). In the Lisbon Peninsula, with the nearest sources located over 100 km away, amphibolites are seen to be a highly prized material and the object of well-established systems of exchange (Lillios, 1999). In contrast, they do occur on the Mondego Plateau, where they have been seen to represent the local raw material *par excellence* (e.g. Senna-Martinez et al., 1997). Their use was so prevalent that only amphibolite axes/adzes are found at most sites, including Ameal, Murganho, and Fiais. Yet, systematic surveys have not been undertaken, and, as elsewhere in Iberia (Risch & Martínez Fernández, 2008: 48), no quarries are known. More importantly, metamorphic outcrops are not evenly distributed across the region.

A single petrographic study of Chalcolithic axes from Castro de Santiago (in the Upper Plateau) identified metamorphosed basic dykes (greenschists) as the probable source of the regional archaeological amphibolites (Leal, 1997). While these dykes are widespread in the Upper Plateau granites, being also abundant north of Viseu, they are almost absent from the Middle Plateau, where the Late Neolithic sites studied are located. Here, they seem to occur only as thin dykes of amphibolitic

hornfels within the metamorphic formations more than 10 km southeast of Ameal and northeast of Murganho (Figure 5; Pilar & Rocha, 1960; Teixeira et al., 1961: 24–25).² As far as this raw material is concerned, then, ‘local’ has been conflated with the whole region. This is not surprising given that the social relevance of amphibolite objects has hinged on its perceived potential to sustain elite-controlled exchange with other regions, mainly to secure flint imports (e.g. Senna-Martinez, 1995/96; for a critique, see Valera, 2007). As a result, little attention has been paid to the social contexts of raw material exploitation and lithic production at a microregional level.

Stone beads

Stone beads are ubiquitous burial goods in megalithic tombs across Iberia, and individual site assemblages usually comprise beads of different shapes, colours, and raw materials (e.g. Senna-Martinez, 1989: 604–05; Bueno, 2000: 43; Costa Caramé et al., 2011; Rojo-Guerra & Garrido-Pena, 2012: 26). In northwest regions, where large numbers are present—sometimes up to several hundred—they tend to be fashioned from stones compatible with the regional geology (e.g. Delibes & Santonja, 1986; Senna-Martinez, 1989; Díaz-Guardamino, 1997). Yet, attention tends to focus on ‘exotic’ items: those made of jet, amber and, particularly, variscite (e.g. Guerra-Doce et al., 2009). Most provenance analyses have concentrated on the latter (for review see Domínguez-Bella, 2012). The identification of new Iberian variscite sources and the development of analytical programmes over the

²Pilar and Rocha’s (1960) survey identified thin dykes of basic hornfels (amphibolitic) only in the outcrops of the Schist-Greywacke Complex located southeast and northeast of the sites.

last two decades have challenged the existence of a single trans-Iberian elite exchange network (e.g. Blanco et al., 1996; Edo et al., 1997; Domínguez-Bella & Bóveda, 2011), and the usefulness of prevailing down-the-line models of exchange to explain distribution patterns of variscite adornments (Odriozola et al., 2010: 3157). In contrast, physico-chemical characterization of jet objects and other 'black stones' remains to be undertaken (Costa Caramé et al., 2011: 266).

On the Mondego Plateau, schist is by far the most frequently used material: it represents 83 per cent of the 3483 beads from eleven monuments studied by Senna-Martinez (1989: 604–05), including over 97 per cent of 607 beads from Fiais. Although greenstone beads are common, only one of the ten exemplars from Outeiro do Rato, a dolmen 2 km from Fiais, has been analysed: it was identified as variscite by X-ray diffraction (Gonçalves, 1979: 213 and Figure 1). Gonçalves' (1979: 217) suspicion that this mineral could occur in the region has now been confirmed at a quarry near Quintela de Azurara, 15 km from Murganho and 30 km from Ameal (Ralph & Ralph, 1993–2009), and it is likely that other instances of small-scale mineralization remain unrecognized (Figure 5). While greenstone beads from most dolmens (including nine from Fiais) remain unclassified, the possibility of variscite sourcing within the Mondego Basin must be considered. This does not necessarily mean assuming that nearby resources were exploited—analyses of beads from Carnac (Querré et al., 2008) and southwest Spanish dolmens (Odriozola et al., 2010) show that this was not always the case. Nonetheless, the presence of two unfinished greenstone adornments at Ameal further supports the hypothesis of regional sourcing for at least some of the greenstone beads deposited in Mondego tombs.

Whether or not these are variscite remains to be determined, but the wealth of potential sources within the plateau should not be downplayed. Indeed, most greenstones used in bead production during the Neolithic (turquoise, beryl, variscite, and its isomorphs, such as strengite) occur in regional pegmatites, being sometimes extremely abundant (e.g. beryl) (Teixeira et al., 1961: 25, 1967: 24; Ralph & Ralph, 1993–2009), and they could have been obtained either through open mining or exploitation of weathering exposures. Given the abundance of pegmatitic intrusions, these resources are likely to be more widely available than modern mining suggests (Figure 5, Table 2).

Other rare raw materials such as steatite and jet, found at Fiais, suggest extra-regional connections. Jet occurs at the Mondego Cape mine, amidst the coastal Jurassic formations, over 80 km from Ameal and the dolmen (Ralph & Ralph, 1993–2009). However, until systematic surveys of sources and raw material characterization are undertaken, such a hypothesis cannot be explored. Other lignite deposits occur in Galicia, Northern Meseta, and Northern Portugal (Bragança).

Flint blades

The widespread use of flint in Neolithic and Chalcolithic Iberia would seem self-explanatory: a preference for superior quality raw material. Flint blades are also typical grave goods in megalithic tombs throughout the peninsula (for the northwest, see Bueno et al., 2006: 449; Delibes, 2010; Rodríguez Rellán et al., 2011; Rojo-Guerra & Garrido-Pena, 2012: 26). In regions where this material is scarce or absent, such as central-northern Portugal, the presence of flint blades at settlements is seen in a utilitarian light: mostly, as the

Table 2. *Lithic raw materials and regional sources on the Mondego Plateau*

Artefact classification	Raw material	Geological origin	Possible provenance (recorded historical quarry)	Minimum distance from known outcrops/occurrences*		
				Fiais	Ameal	Murganho
Polished edged tools	Amphibolites	Amphibolitic hornfels within Schist–Greywacke Complex	Metamorphic terrains SE and NE of the sites	10 km SE	10 km SE	10 km NE/ 15 km SE
		Metamorphosed basic veins within granites	North of Viseu & Upper Mondego	>25 km N	>25 km N	>15 km N
Querns and grinding stones	Granites	Finer-grained facies of the regional granitic batholith	Throughout the region			
Beads	Schist	Schist–Greywacke Complex	Schists/Phyllites S, SE, SW, NW of the archaeological sites	>10 km SE	>10 km SE	>10 km NE
	Beryl	Pegmatites	Throughout the region (various quarries around Evidal, Mangualde, Viseu, Satão, Folgozinho, Queiriga)	≥5 km	≥5 km	≥5 km
	Turquoise	Pegmatites	Around Queiriga (Lagares the Estanho Quarry)	45 km N	45 km N	35 km N
	Variscite	Pegmatites	Around Mangualde and Quintela de Azurara (N.S. Esperança Quarry)	30 km NE	30 km NE	15 km NE
	Strengite (variscite isomorph)	Pegmatites	Around Mangualde and Queiriga (Regada and Lagares the Estanho Quarries)	30 km NE	30 km NE	15 km NE
	Jet	Jurassic formations (carboriferous vein deposits)	Coastal Mondego Basin (Cabo Mondego Mine)	80 km WSW	80 km WSW	100 km WSW
	Blades and blade-based tools	Flint	Cretaceous and Jurassic formations (flint nodules within limestones, sandstones, and shales)	Coastal areas around Coimbra	>50 km WSW	>50 km WSW
Other chipped stone***	'Flint' and other siliceous rocks	Small siliceous nodules within granites	Throughout the regions (e.g. near Murganho 1)	(e.g. 15 km)	(e.g. 15 km)	1 km
	Quartz**	Quartz veins crosscutting regional granites	Throughout the region			
		Pegmatites	Throughout the region			
		Pebbles in rivers and streams	Throughout the region			
	Quartzite	Ordovician Quartzites	Upper Plateau (Matela–Matança)	50 km NE	50 km NE	35 km NE

Continued

Table 2. Continued

Artefact classification	Raw material	Geological origin	Possible provenance (recorded historical quarry)	Minimum distance from known outcrops/occurrences*		
				Fiais	Ameal	Murganho
		Inclusions in Tertiary sedimentary deposits (coarser facies)	Deposits in the Mangualde area	30 km NE	30 km NE	15 km NE
		Pebbles in rivers and streams	Throughout the region			
	Greywacke	Schist–Greywacke Complex		>10 km SE	>10 km SE	>10 km NE

*Distances to known outcrops were estimated from geological maps and literature, and should be taken only as indicative.

**Comprises different types of quartz, including smoky, milky, pink, and hyaline or crystal rock varieties, present at both Fiais and Ameal.

***Not including a number of small pebbles, some of which were possibly used for polishing, in quartz, quartzite, and schist.

initial stage of *chaîne opératoires* aimed at tool production; so much so that depositions in Galician tombs have been interpreted as offerings of raw material for the afterlife (Rodríguez Rellán et al., 2011). Nonetheless, their interpretation as prestige items is predicated in the effort involved in acquisition, as much as their involvement in funerary rites.

While there is no doubt that flint blades circulated, little is actually known about the provenance of flint employed in different regions (Terradas et al., 2005; Rodríguez Rellán et al., 2011) as provenance analysis of archaeological artefacts is still quite exceptional (e.g. Nocete et al., 2005; Bustillo et al., 2009; Gibaja et al., 2010). The Mondego Plateau is no exception. Complete or almost complete blades have been recovered from several tombs and the settlement of Ameal (Senna-Martinez, 1989, 1995/96). Their origin remains speculative, although the Portuguese Estremadura limestones have been considered the most likely origin, mainly due to geographical proximity and the presence of Estremadura tool types in the

hinterland (Senna-Martinez, 1989; Forenbaher, 1999). The nearest known flint sources are located in the coastal Mondego Basin, roughly 50 km west of Ameal (Forenbaher, 1999: 29–31 and Figure 5).

Discussion: geographical distribution of resources in the Mondego

Despite obvious lacunae in the information available, the artefact provenance study revealed regional availability of resources previously believed to be imports and highlighted some interesting patterns regarding the geographical distribution of resources.

The various lithic and clay sources used at both the settlements and dolmen are scattered across a relatively wide area, suggesting a complex geographical picture that cannot be easily divided into local and non-local. Distances to regionally available resources ranged from the immediate surroundings of the sites to at least 30 km, some being somewhat more localized

(amphibolites) than others (sedimentary clays, pegmatites). Their acquisition is better understood in an integrated way, rather than in isolation (Figure 5). For groups living at Ameal and Murganho, direct procurement of amphibolites would have required a day's journey to the nearest exposures. Metamorphic outcrops, where these rocks intrude, were also the source of other raw materials: the clays used to make some of the vessels, and the schist used in the majority of beads deposited at Fiais. The acquisition of stone beads would have required different strategies: regional sources are varied and geographically dispersed, and some may have been located at considerable distance from the archaeological settlements (Table 2). Significantly, the same is true of clays used to make some of the pottery (Table 1). Indeed, some vessels may have come from rock outcrops not far from Quintela de Azurara, where variscite and other semi-precious stones have been identified (Figure 5). Their occurrence at settlements as well as at the dolmen suggests recurring connections with those northern areas that went beyond the funerary arena; connections which shed new light on the circulation of objects in the region.

Special items (beads) and everyday objects (pottery) alike were sometimes made with materials from more distant sources, defying the assumed correlation between distance and value, which informs many archaeological discussions of provenance and exchange. The movement of apparently mundane objects forces us to reconsider the presence of so-called non-local items and the social contexts of exchange. This is not to deny that Mondego groups obtained some materials from distant sources: flint blades did circulate well beyond the plateau, and individual beads may have come from afar. It does not follow, however, that their

distribution should be reduced to directional exchange systems, or that people were aware of the geographical extent of such chains of transactions. Furthermore, the data from the Mondego Plateau challenge monolithic explanations for the circulation of valuable stones. Others have recently emphasized the need to see exchange patterns of greenstone beads as related to the political landscape of this period (Odriozola et al., 2010: 3157). However, they are still seen in isolation: raw material procurement remains detached from other activities, and circulation remains largely a matter of elite interaction.

These findings highlight the need to consider social relations operating at a microregional scale in ways that acknowledge the broader landscape dimension of social life. Arbitrary boundaries between local and non-local lose efficacy as soon as we recognize Neolithic communities beyond individual sites and the contribution of various forms of mobility (Jorge et al., 2013). Such boundaries depend not only on the settlement strategies and subsistence practices of the communities involved (of which we know very little), but also on the networks through which they were connected. In the following sections, artefact provenance, biographies, and depositional practices are used to investigate links between places and social contexts. The focus is on tomb and settlement assemblages, respectively, rather than individual categories of objects.

REVISITING MONUMENTS: THE DOLMEN OF FIAIS DA TELHA

Burial depositions

At Fiais, artefacts were recovered from the chamber, the passage, and the cobbled atrium at the entrance to the monument.

Although separate moments of deposition could not be isolated (*contra* Senna-Martinez, 1989: 50–70; see Jorge, 2011: 215–16), conjoining pottery sherds concentrate in the passage/entrance and chamber areas, respectively (Figure 6). Interestingly, all samples belonging to the same fabric (Fabric Group 2A) cluster in the same area: they correspond to different vessels with similarly thin walls and well-polished surfaces—unusual characteristics within the assemblage. Given their

great compositional similarity, it is possible that they were made together and deposited at the same time (Jorge et al., 2013). They may even have been made specifically for the occasion. The pottery assemblage is otherwise rather homogeneous in appearance, despite fabric differences. One exception is a thin-walled, bright red-coloured spherical vessel, spotted by white inclusions, which would not have gone unnoticed among the pottery. Made with metamorphic-derived

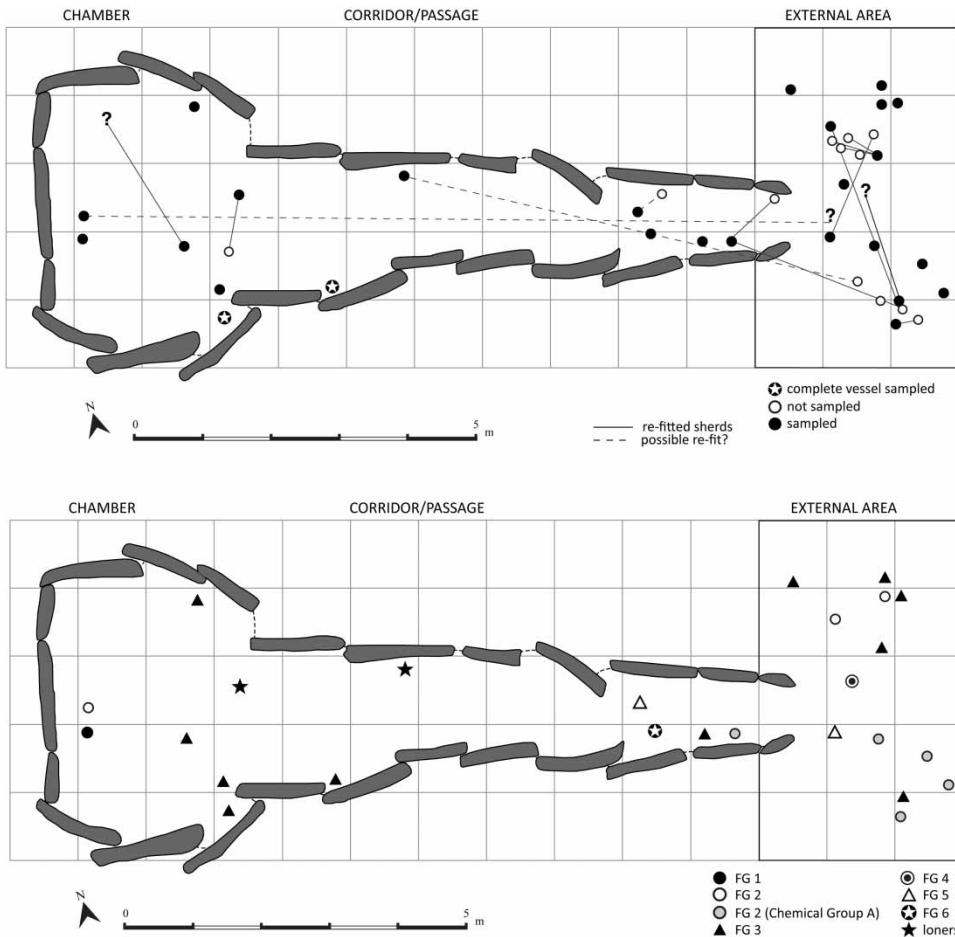


Figure 6. Schematic distribution of ceramic sherds sampled in the site plan of Faias, showing refitting patterns (above) and fabrics (below). The finds from superimposed layers were collapsed into a single representation. Site data adapted from Senna-Martinez (1989: figs. 2.31–33, 2.41, 2.42, 2.49–62).

clays, the pot would have had to travel at least 10 km from a settlement near those outcrops, and it is likely that connections with others and the events or places where the object was obtained were recognized as it was handled. So, how did similar and distinct vessels and parts of vessels come to be deposited at Fiais during the Late Neolithic? Answering this question requires considering: (i) the way megalithic monuments and funerary practices related to other activities; (ii) the geographical scale of the communities engaged in the maintenance and use of these sites; and, ultimately, (iii) the character of the social networks of this period. One way of addressing these issues is to investigate depositional practices involving the four artefact categories discussed above.

Biographical connections

The ceramic assemblage from Fiais does not consist only of fragments and complete vessels: it also includes two repaired vessels. The presence of holes in prehistoric pottery has been interpreted as a sign of either curation (when drilled after firing) or the vessels being hung while being used or stored (when made in moist clay). Both instances are represented at Fiais. Occasional breakage and repair of vessels tends to be seen as a random part of the natural cycle of pottery use in domestic contexts, which is why such features have received little attention. Acts of repair have been explained as a response to seasonality constraints to pottery production (Howard, 1981: 25), or linked to ceremonial contexts (Cleal, 1988). The relative rarity of repaired vessels in British prehistory suggests that pottery would not have been routinely curated, a practice probably reserved for specific vessels that could not be easily replaced (Cleal, 1988: 141–42). Similar studies have not been

undertaken in Iberia; however, site catalogues show that limited numbers of repaired plain vessels occur in western megalithic tombs (e.g. Delibes & Santonja, 1986; Senna-Martinez, 1989; Gonçalves, 2003) and in the Mondego settlements.

Significantly, repaired vessels found in funerary contexts were not made for burial deposition. Rather, signs of repair hint at extended use-lives and more complex biographies; crucially, they connect ritual deposition and special places with life beyond them—spatially and temporally. The presence of sherds belonging to two repaired pots at Fiais needs to be seen in this light. The coexistence at Fiais of vessels that might have been produced specifically for deposition at the tomb (Fabric Group 2A) and vessels with much more complicated life histories draws attention to the complexity of links (biographical, geographical, conceptual, temporal) made through the objects assembled at these monuments.

Other materials allow for a similar argument to be made, stone beads being perhaps the most evocative. While it is impossible to isolate individual necklaces within most collective burials, at least in some instances a single piece of jewellery incorporated more readily available materials and others of more distant origin. At Fiais, burial rites brought together stones that could only have been collected from areas dispersed within the broader Mondego Basin: the widely available beryl, the schist outcropping over 10 km away, the various greenstones, some of which possibly related to mineralization detected 30 km northeast, and the unidentified blackstones, which point to extra-regional origins. However, the bead collection from Fiais more than exemplifies the varied geographies assembled at megalithic tombs. Necklaces are composite items, which may combine elements

obtained at different times and places. Their Bronze Age counterparts have been seen as articulating connections through 'the kinds of exchanges which create categories of kin, marriage patterns, signs of personal veneration' (Barrett, 1994: 121–22). Beads themselves might have been given, divided, worn, and passed on as heirlooms deriving from ancestral objects (Woodward, 2002: 1043). While necklaces might have been considered an essential part of the burial attire, their social significance precedes death: beads handled and accumulated through an individual's life spoke of personal history; beads adorning the dead might have been assembled by the living as part of mortuary rites. We know that some were repaired and some probably quite heavily worn (Domínguez-Bella & Bóveda, 2011: 377–78).³ Such a perspective does not change the fact that different people would have had unequal access to 'precious' stones. However, looking at these necklaces as biographical objects where the personal and the collective are intertwined helps to explore exchange outside the frame of formal economies and to highlight the multiple ways in which materials were brought together to form burial assemblages.

The artefacts assembled at tombs were brought together through a complex web of personal life histories, political alliances, and social relations that simultaneously preceded, accompanied and followed the actions surrounding death and burial. Composite objects like necklaces convey this image more easily, but other categories of material culture, such as pottery, do the same when queried. Contrary to longstanding expectations (e.g. Delibes, 1995: 61), many burial goods were not

produced or obtained expressly to fulfil the demands of funerary rituals.

Conceptual connections

The blend of old and new, distinctive and (apparently) unremarkable, complete and fragmented is a fundamental characteristic of Neolithic funerary monuments; one that extends to the various categories of stone objects. For example, it is common for unfinished, used, and damaged edged stone tools to coexist with pristine-looking items, sometimes made in unusual sizes and raw materials. While there is little difficulty in recognizing a votive function to the latter (e.g. Guerra-Doce et al., 2009: 47–48), and in accepting their deposition during burial, archaeologists often struggle to justify the presence of the former (e.g. Delibes & Santonja, 1986: 167–68; Soler Díaz, 1991: 43; Carvalho, 2005: 184–85). The outcome is that many objects normally found in Iberian megalithic burials have been largely ignored.

Nowhere is this more obvious than in relation to remainders of technological activities, such as knapping waste and re-sharpening flakes from polished stone tools, which are attributed by default to practical tasks surrounding the building, maintenance, and visiting of the monuments (e.g. Gonçalves & Cruz, 1994: 209; Estremera & Fabían, 2002), rather than ritualized actions. Another case in point is that of querns, which are commonly interpreted as building material and evidence for nearby settlements (e.g. Sanches, 1997: 156–57; Senna-Martinez et al., 1997: 664; Bueno et al., 2005: 84). Yet, 'quern stones are now recognised as having been frequently deposited, singly or in groups, whole or fragmented, in votive contexts' across prehistoric Europe (O'Connor, 2009: 154). In southern Portugal, for instance, querns were found as

³The only systematic use-wear analysis of Iberian Late Neolithic/Chalcolithic stone beads, undertaken for burial sites in Estremadura, western Portugal, was largely inconclusive (Thomas, 2011: 43).

single fragments within the sealed Late Neolithic hypogea of Sobreira de Cima alongside other burial goods (Valera, 2009: 27–28), and grinding stones were elements of structured deposits inside the funerary chambers of Outeiro Alto 2 (Valera & Filipe, 2012: 34). Their widespread presence within domestic, communal, and funerary depositions throughout Europe suggests their significance as a medium of social reproduction in the context of Neolithic agricultural societies (Graefe et al., 2009: 94) and highlights the ability of such everyday objects to cross-cut categories of ‘mundane’ and ‘sacred’ (O’Connor, 2009: 154–55).

In contrast, ritual depositions of polished axes and adzes in mortuary settings have long been recognized. Although only one such object was found at Fiais, they occur in fourth and third millennium megalithic burials across western Iberia, sometimes in large numbers, often unfinished. On the Mondego Plateau, concentrations at tombs have been seen to reflect in the ritual sphere the economic importance of amphibolites among Late Neolithic communities (Senna-Martinez et al., 1997: 665). Lillios (1999, 2000), however, has argued for the power of amphibolites as mediators between the ancestors and the living, while Valera (2009: 29–30) has stressed their potential for symbolic transformation during funerary rituals, including in the building and sealing of tombs. Valera (2009) has further attempted to contrast the roles played by unworked amphibolites (placed outside the tombs) and finished artefacts (placed inside the tombs) in southern Portugal, but the Mondego evidence warns against this dichotomy. For instance, amphibolite blanks were grave goods in the Sobreda, Seixo da Beira, and Carvalhinha dolmens (Senna-Martinez et al., 1997), while the votive deposit placed inside the tumulus of

Dolmen 1 of Moinhos de Vento included both tools and roughouts (Senna-Martinez et al., 1997: 665; Cardoso et al., 2003). Moreover, unfinished and damaged tools recur within burial assemblages. It may be that some stages of manufacture were ‘undertaken in the context of ritual activity’ (Bradley & Edmonds, 1993: 172) and that at least some of the worn and broken objects had to be dealt with in prescribed ways.

Flint blades provide a similar picture. Complete blades deposited in burials are considered prestige items, their production having required high-quality stone and considerable skill, and their size being believed to have made them impractical (cf. Gibaja et al., 2010). As with most objects associated with funerary sites, the prestige status of flint blades has also partly derived from the assumption that they were made expressly for burial. This was not the case: use-wear analysis of long blades from northeast Iberian burials confirms that the majority was heavily used in a variety of activities, as in other European contexts (Terradas et al., 2005: 355–56). Interestingly, small flint flakes and knapping waste are also present within these northeast burial sites (Gibaja et al., 2010: 442–43).

What is clear from these examples is the inadequacy of viewing megalithic tombs through the lens of the exotic, and through concepts of votive (special, valued, valuable) and practical (ordinary, domestic) that are intrinsic rather than contextual. When attention moves from the exotic to the whole funerary assemblage, it becomes apparent that the bulk of the artefacts would not look out of place in a domestic setting—a situation that is not specific to this part of Europe (e.g. Saville, 1990; Bradley, 2003: 16). Indeed, the ‘sobriety’ of Late Neolithic burial goods in northwest Iberia has been remarked upon (e.g. Sanches, 1994: 283). Some have even

suggested that the predominance of ‘domestic objects’ (plain pottery, local lithics, used tools, etc.) in late fourth millennium tombs reflects a devaluation of the burial ritual (e.g. Ventura, 1999: 44). Such a perspective betrays little understanding of the conceptual connections made through objects and materials between different arenas of practice.

The key point here is that artefacts commonly involved in quotidian tasks are as much a part of the ways in which ideological principles and social norms were (re)affirmed in ceremonies performed at tombs as the objects archaeologists associate exclusively with ritual contexts. Settlements are often the beginning of the story: artefacts were made, used, and repaired in settlements before some were recontextualized as components of burials through acts of ritualization (Stahl, 2008: 169–70). The next section assesses the evidence from settlements and discusses the implications of artefact provenance data and depositional practices at dwelling sites for our understanding of how Late

Neolithic communities constituted and sustained themselves.

REVISITING SETTLEMENTS: AMEAL AND MURGANHO 2

Dwellings

The temporality of settlement sites is particularly difficult to grasp in the Mondego. However, the restructuring of hearths at Ameal (Senna-Martinez, 1989: 179–83, 1995/96: 86–92), which involved digging through previous fills, could indicate the reuse of these features after the temporary abandonment of individual huts (Figure 7), and quantitative rather than qualitative differences between artefact assemblages from Huts 1 and 3 might suggest distinct processes or moments of abandonment.

A fundamental question remains over whether settlements such as Ameal represent an accumulation over time of short-lived events or contemporary

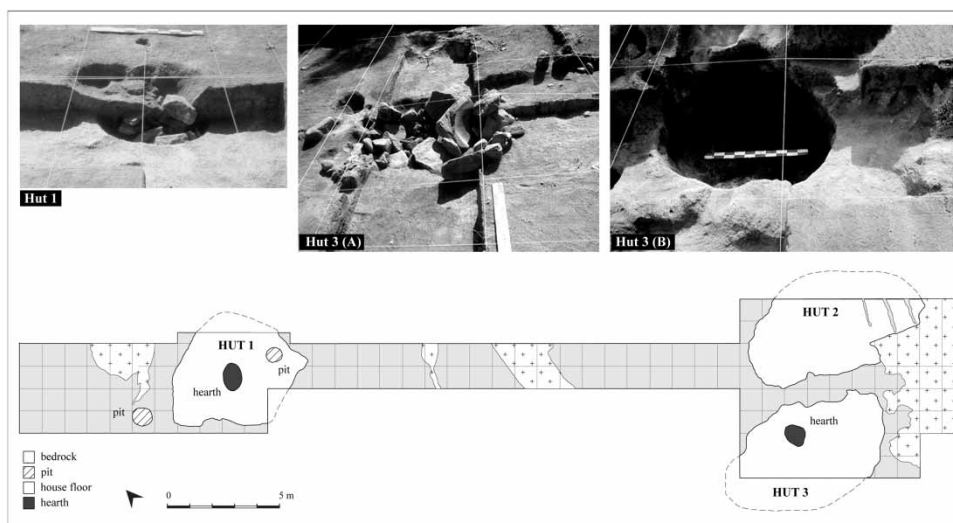


Figure 7. Simplified plan of Ameal's Sector A (adapted from Senna-Martinez, 1995/96: 111) and images of the pit-hearth of Huts 1 and 3 during excavation showing the two phases of use/fill. Photos: J.C. Senna-Martinez.

aggregations of people for longer periods of time, during which houses were built, abandoned, and even moved as the group itself changed in size and composition. Yet, the model of short-term occupation by small groups engaged in ‘seasonal mobility’ continues to be reproduced (for critique, see Valera, 2007; Bueno et al., 2010), seemingly justified by the perishable architecture, evidence of wild resource exploitation (acorns), the assumed inadequacy of soils for cereal cultivation, and knowledge of twentieth century transhumance in the region (e.g. Senna-Martinez, 1995/96: 102). These arguments do not withstand scrutiny: they reflect an idea of ‘marginal land’ and a projection onto the past of traditional forms of land use that are, themselves, historical products (García Martín, 2000). Ephemeral structures are not a sign of impermanence, as plentiful ethnographic examples (Dethier, 1993; Font, 2005) and Late Bronze Age/Iron Age wattle-and-daub architecture demonstrate (Sanchez & Pinto, 2006). They do suggest, however, that the visibility and longevity of Neolithic dwellings were not important. It may be that people’s ability to move house within, into and out of a particular residential site was central to the way they created their place in the world and maintained the mesh of connections, which constituted these societies.

The insistence on a higher degree of mobility is also partly rooted in the belief that settlements were very small—no more than a couple of dwellings. In reality, this remains to be established as excavations have been very small scale. The identification of new huts during a recent excavation at Ameal, more than doubling the previous number (Senna-Martinez & Luís, n.d.), suggests that Late Neolithic settlements could have been much larger than has previously been recognized. It is likely that these settlements were places to which people returned: a situation

consistent with the overlaying of two huts at Quinta Nova and the infillings of the hearths at Ameal. However, we must acknowledge that strategies of mobility other than ‘seasonal movement’ may have been at play and may have affected different members of the group differently. They could have involved residential groups breaking away and coming back together again at different times of the year (e.g. Eder, 1984; David & Kramer, 2001: 228–54; Halstead, 2005; Barnard & Wendrich, 2008), rather than the ‘moving on and moving around’ (Whittle, 1997) of the entire group. A ‘domestic site’ need not be fixed or monolithic; nor must it be equated with a stable co-residential group operating as a bounded unit, as is implicit in much archaeological interpretation. These are important issues to be considered when trying to understand how settlement assemblages were created.

Towards an inhabited landscape

We know that on the Mondego Plateau pottery was made at each dwelling site, but it also circulated across a relatively wide area, from the higher northern plateaux to the foothills of the Estrela Mountains to the south and, in a few instances, perhaps also from the Upper Mondego (Jorge et al., 2013). Vessels were occasionally repaired and some were later selected for burial, possibly alongside others made specifically for the occasion. Other vessels were finally placed inside pits/hearths along with amphibolite edged tools and numerous fragments of granite querns and grinding stones (Senna-Martinez, 1995/96: 102), possibly as huts were prepared to lay empty (temporarily or permanently). An unworn adze may also have been part of foundation deposits associated with the initial use of pits at Ameal (Senna-Martinez, 1995/96: 98).

Amphibolites could have been quarried in areas south of the sites studied, a day's walk away, but they might have been brought from the Upper Plateau. Blanks seem to have been fashioned at the source and made into tools at settlements, but along the way some roughouts were selected for funerary ritual. Tools were resharpened and repaired also at tombs, or at least the remains of such activities were sometimes taken there. Flint was imported from distant regions as long blades, which were deposited complete, segmented and transformed into tools in both burials and settlements, where there is evidence for flint knapping. Beads were made in various stones, the majority of which could have been collected across the plateau and the surrounding highlands. More rarely, they employed materials that had to travel upstream from the mouth of the Mondego or from elsewhere beyond the region. Beads were not included in formal depositions outside the mortuary realm and were seldom abandoned at settlements, although they would have been produced and (at least some) worn there.

The circulation of these materials tends to be viewed in rather monolithic terms, primarily by distinguishing direct procurement from exchange. This approach effectively reduces settlement to a relationship between 'the site' and 'the outside' where they are simultaneously geographical and social units of analysis. The settlement site is conflated with an idea of community as a bounded social unit, an unproblematic entity (Isbell, 2000). Consequently, interactions with groups living in other sites are always seen as relationships with 'others'. The existence and importance of strong ties between people that cross-cut settlements and did not involve all co-residents is largely absent from archaeological narratives about this period unless social hierarchies are thought to exist (justifying models of elite exchange). In other words, the

possibility of multiple forms or axes of community, connecting Neolithic groups at different scales, rarely comes to light. The result is an image of the Neolithic landscape as a patchwork of self-sufficient units, which interacted with each other to suppress reproductive and economic needs, mostly through exchange. Yet, meaningful communities operated at a much larger geographical scale, as suggested by the importance of kinship as a structuring principle among small-scale societies and the relatively low population density in this period, which would have required marriage and other forms of alliance between people living across a potentially extensive region. The building of megalithic tombs is but one manifestation of such connections. This has key implications for how we understand raw material acquisition and the circulation of objects.

First, the exploitation of different resource areas does not have to follow the patterns predicted by site catchment analysis, which has an enduring tradition in southern European prehistoric archaeology (Walsh, 1999: 1). Such analysis assumes that a territory is a bounded, continuous piece of land and that each settlement site had its own separate (if overlapping) territory used by its residents. However, resource exploitation is structured by tenure, obligation, affiliation, prescription, and taboo. People living in different settlements may have shared access to resources that may have been located at some distance from certain sites but not others. For instance, it is likely that other dwelling sites existed nearer the amphibolite sources exploited by the inhabitants of Ameal and Murganho: the metamorphic pots found there suggest visits to others living in those areas (and vice versa), which may have involved negotiations over quarrying or collaboration during such tasks.

Second, people are likely to have exploited various locales routinely: hunting

grounds, wild berry patches, stands of woodland for nut harvest, garden plots, cereal plots, pasture, stone quarries, and perhaps fishing locations. Although still limited, increasing subsistence evidence for the later fourth millennium BC in Iberia supports this assertion (e.g. Sanches, 1997; Bueno et al., 2005, 2010; Berrocal et al., 2006). In short, a wide range of areas would have been regularly visited and managed. Díaz-del-Río (1995: 106–07) considers such diversity through the concept of agroforestry, according to which multiple ecosystems are managed and exploited as part of an integrated economic strategy involving dispersed areas. Ultimately, we must recognize the routine engagement with a potentially wider and perhaps more fragmented ‘territory’ than is usually accepted. This is not merely a matter of geographical scale.

Third, there is no reason to assume that procurement activities were single-task or single-resource oriented. On the contrary, ethnographic literature on domestic ceramic production, for example, shows that potters commonly collect clays from locations already frequented for other purposes (e.g. Gosselain, 1998: 91; Bowser, 2005). This may partly explain why analyses of Late Neolithic pottery point to the use of various local clay deposits at each settlement on the Mondego Plateau (Jorge et al., 2013) as elsewhere (e.g. Jones, 2002; Clop, 2004: 184; Basso et al., 2006; McClure et al., 2006; Martineau et al., 2007). Furthermore, clay sourcing did not necessarily require specific trips (e.g. Arnold, 1985: 36, 51; Bowser, 2005). The collecting of ‘greenstones’ for some of the Mondego beads may have occurred similarly during the undertaking of other activities. People would have been used to exploiting less abundant and/or more dispersed resources, such as quartz, used in approximately 20–30 per cent to 60 per cent of chipped stone finds from Ameal

(Senna-Martinez, 1995/96: 96–97; Senna-Martinez & Luís, n.d.), and minor veins of siliceous rocks (Valera, 1994). Ruiz-Taboada and Montero (2000: 363–64) have suggested that short-range transhumance and shepherding provided a context for the procurement of grindstones and grinders from unusually distant sources (5–40 km) during the Copper and Bronze Age in central Spain. They argue that understanding the exploitation of everyday lithic resources beyond the surroundings of settlements requires seeing economic activities as integrated and interdependent. In this case, however, the need to explain the acquisition of grindstones through direct procurement was partly motivated by the difficulty in justifying the exchange of everyday objects made with non-exotic raw materials and, therefore, lacking discernible added ‘value’.

Yet, the link between exchange and resource acquisition is much more complex than models that view sourcing as either planned expeditions to obtain raw materials or prestige trading networks acknowledge (Bradley & Edmonds, 1993). The circulation of small amounts of archaeologically visible things will also have reflected the various forms of travel, which are intrinsic to the course of normal social life (Robb & Farr, 2008: 33). The presence of non-local plain pots in both Ameal and Murganho, for instance, is a strong indication that interactions between groups were an integral part of how routine life was organized on the Mondego Plateau. They require us to consider how diverse social relationships beyond the site gave rise to a variety of contexts and means of acquiring materials. It may be impossible to establish how these non-local pots arrived at the settlements: (i) they could have been obtained through direct exchange with groups living near the metamorphic and granodioritic terrains (e.g. during visits to kin or

neighbours); (ii) have been handed-out through the multiplication of one-to-one exchanges along more extensive social networks and longer periods of time; or (iii) represent longer-distance movements of a single group. What is key is the fact that the circulation of pottery and other objects would have been nested in other kinds of encounters: for example, exchanges related to marriage obligations, gift giving intended to ensure access to forest resources or grazing areas, or the sharing of meals and knowledge during the planning of collaborative tasks between groups residing in different sites (including the exploitation of amphibolite quarries). These relationships maintained Late Neolithic communities at a broader scale, a scale essential for both the social and biological reproduction of these groups.

SOCIAL LANDSCAPES: SCALE, NETWORK AND COMMUNITY

As Rodman (1992: 650) puts it, 'a focus on place ... can eliminate the micro-macro distinction, for region and village are points on a sliding scale. Both are "social landscapes", albeit seen in different degrees of detail'. We can successfully investigate prehistoric social landscapes through the study of artefact provenance and biographies because they expose webs of connections between people, places, and events across time and space that otherwise are either only assumed or not recognized: the sourcing, making, transport, use and deposition of objects, as well as individual mobility, movement of group residences, the breaking up of settlements into segments, and their congregation for different purposes. All of these things taken together, in whole or in part, are implicated in the production of the social landscape.

On the Mondego Plateau, Late Neolithic communities partook in networks linking places across the wider plateau and surrounding highlands. Crucially, these connections were not restricted to the megalithic tomb and were equally traceable in dwelling sites. This study suggests that most objects deposited at burials and settlements would have been produced, circulated, and consumed through similar social networks, showing that activities associated with settlements also mobilized regional and extra-regional materials. These findings resituate settlement sites firmly within the wider Neolithic social landscape. By exposing residues of such transactions in arenas of everyday life, it highlights the need to re-think the character of exchange, through which pottery and other things moved. It also further demonstrates that the occurrence of translocal objects in megalithic monuments cannot be understood outside relationships developed and maintained as people went about their lives.

Ancestral rites and cosmologies were undoubtedly fundamental dimensions of the Late Neolithic. The investment in funerary monumentality is a testament to the ability of institutions based on the relationship with the dead to mobilize resources. However, the communal labour involved in building, maintaining, and using monumental tombs would have drawn upon 'reserves of knowledge and cooperation which routinely operated in the widespread and diverse practices of subsistence activities' (Barrett, 1994: 29). They connected different kinds of places through these networks, including those related primarily to work (quarries, pastures, agricultural fields, hunting grounds), domestic life, and formal information exchange. Subsistence practices do not determine the character and purpose of encounters between people, but they are implicated in the way social relations are reproduced (Edmonds, 1999: 73). These

informed everyday interactions as much as connections that ensured ties with ‘the distant’ (Edmonds, 1999: 160).

The premise that exchange operated within separate spheres of prestige (primarily long-distance, between elites) and mundane (primarily short-distance, involving the whole group) interaction has contributed to (i) abstracting ‘elites’ from their ties with the broader community, and (ii) disregarding the multiple inter-group relations acknowledged for earlier periods, for example in the capillary model for the Mesolithic/Neolithic transition (Vicent, 1997). Moreover, such a perspective is ill-equipped to deal with the kinds of transactions highlighted by this study: the circulation of abundant, non-specialist objects (like pottery), which cannot be explained through the need to suppress basic economic requirements or to secure access to valuable materials. This is particularly significant when evidence points overwhelmingly to domestic production, use and discard, in the Neolithic and Chalcolithic of central and northwest Iberia (Díaz-del-Río, 2006: 71–72), not just the Mondego.

Acts of exchange cannot be understood in isolation from each other, or from wider social relations. Exchange implicates people, places, and events beyond the individuals directly involved at any one occasion. Exchanges occurring in the context of ritual performance were not independent from relations maintained through quotidian transactions; neither were dealings ‘at home’ less effective or socially consequential than those taking place at greater distances. This is because ‘exchange is always, in the first instance, a political process, one in which wider relationships are expressed’ (Thomas, 1991: 7). Intra-group relations do affect and are affected by inter-group exchange, sometimes at a much later date (Munn, 1990). It is not just events that are simultaneously

local and translocal in the synthesis of their presents, pasts, and futures (Munn, 1990: 12–13); so are the objects through which such relationships are constructed. Bead necklaces like those from Fiais, for example, embodied the geographical and social relationships that created them as they stood at a given time and place; not just the social identities of those who wore them (and those who did not).

One way in which social obligations were created was through marriage. Marriage is frequently evoked to explain cultural similarities between regions and the dispersal of particular styles of objects, although more often than not it remains an abstract mechanism. Securing marriage partners would have been a major concern among Late Neolithic groups, and it is likely that marriage relations connected geographically dispersed people. The resulting individual mobility and obligations with people living far away must be acknowledged, not just in principle but also in their very real social, political, and economic consequences. Among the material consequence of such networks of relations is the circulation of objects and people (as brides/grooms, as visiting kin, etc.). In this context, the thirty shell bracelets and a large number of Catalonian variscite beads adorning one individual at the collective tomb of Montjuïc d’Altés (Ebro Basin) could represent the mortuary remains of someone originally from the Mediterranean coast, rather than trade in these items between the two regions, as has been suggested (Rojo-Guerra et al., 1996: 245–46). The burial of migrants, possibly from Alentejo, in Estremadura (Waterman et al., 2014: 125) is significant. It is unlikely that strangers were granted burial in collective graves; rather, their interment could suggest shared kinship or affiliation with local groups, perhaps ones through which exchange between the two regions (e.g. variscite,

amphibolites) was partly sustained. Similarly, people on the Mondego Plateau may have had access to flint blades and other flint objects through kinship ties between hinterland and coastal groups; ties that may also explain the rare jet adornments found in Beira megalithic tombs.

Kinship and affiliation are fundamental structuring principles in pre-industrial societies, laying out obligations between people in relation to a host of different kinds of interactions beyond ritual, from negotiations over access to resources (Hitchcock & Bartram, 1998) to cooperation surrounding farming and herding (David & Kramer, 2001: 243, 248–50). These need not have always been discussed formally; they were guided by practical knowledge about how to do things and with whom (e.g. in whose land to collect clays, with whom to organize quarrying, etc.). Settlements were the loci for much of these transactions, including those of ceremonial character. Places like Ameal and Murganho were not just where quotidian life unfolded and people got on with business; they were also the settings of other public rites and formal political negotiations, occasions when genealogies, kinship relations, and alliances would have been made explicit. The funerary arena was not the only context in which people became aware of their place in society. Moreover, funerary ceremonies themselves may have occurred at settlements: the belongings of the deceased would have to be dealt with, and the body was likely treated prior to burial.

The point is not just that ‘cyclical involvement in labour investments and ritual performance, *mainly but not only in funerary monuments*, was one of the mechanisms by which small Neolithic communities assured their reproduction’ (Díaz-del-Río, 2006: 70, my emphasis); social institutions that archaeologists usually identify at megalithic tombs

operated during other activities and were relevant in settlement contexts too. As Rodman (1992: 644) puts it, ‘regional relations between *lived spaces* are developed through infusing experiences in one place with the evocation of other events and other places’ (original emphasis). These become present through material culture—often, as we have seen, through the same categories of objects.

CONCLUSION

Megalithic tombs have been interpreted through a myriad of different perspectives. Nonetheless, their architecture stands for the concerted effort of a collective, independently of its size and internal power structure. Their construction and use allow us to envisage the existence of relations among (dispersed) groups; so much so that, where bone preservation allows, new research is attempting to trace the movement of people themselves. As for settlements like Ameal and Murganho, it is only through artefact provenance studies that we can begin to glimpse the scale and character of interaction beyond single sites.

Late Neolithic communities in regions like the Mondego Plateau consisted of relatively small groups, who lacked spaces designed for large-scale congregation but who were highly connected through both subsistence and ritual practices. Connectivity was clearly a key aspect of Neolithic lifeways, irrespective of the mobility strategies of individual groups. It is not enough, however, to recognize that people were connected; the crucial task now is to understand how such connections might have been maintained over time and space. This requires (i) abandoning a view of social landscapes as composed of separate building blocks, where different contexts of practice are effectively treated independently, and (ii) adopting an approach

capable of grounding theoretical discussions on the material evidence effectively. By viewing objects in terms of their biographies and the social networks through which they circulated, this microregional study shows that it is possible to reassemble a landscape of interconnected communities even when sites are scarce and artefact collections small. Its findings reiterate the need to firmly embed both settlements and tombs ‘in the wider landscapes of routine of which they were once a part’ (Brück, 2005: 63) if we are not only to understand these places, but also to answer fundamental questions about Neolithic social production and reproduction. Then we will be in a better position to query the changes brought about by the Chalcolithic.

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BIOGRAPHICAL NOTE

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Réconnecter le paysage social du Néolithique final: une étude micro-régionale des objets, habitats et tombes en Ibérie

Le contraste entre les sépultures monumentalisées et les villages presque invisibles a dominé les études du Néolithique en Europe de l'Ouest, tout en renforçant le clivage artificiel entre les paysages cérémoniels et ceux matériellement productifs. En combinant une approche relevant de la culture matérielle à l'échelle du paysage, des études comparatives d'artefacts peuvent être redevables des connexions entre personnes, lieux et contextes sociaux. Cet article étudie les réseaux sociaux au Portugal à la fin du Néolithique en examinant la provenance, les biographies et le dépôt des artefacts sur le plateau du Mondego. Il se focalise sur trois sites et quatre catégories d'objets caractéristiques de cette période et révèle une grande diversité dans les domaines suivants: matériaux bruts, circulation des objets de la vie quotidienne et disponibilité régionale de ressources considérées auparavant comme importations. On suggère que les communautés utilisaient d'une manière intégrée des régions de ressources dispersées et que l'échange faisait partie intégrante de la vie de tous les jours. Les preuves des liens à travers la région ne se trouvent pas seulement dans les tombes. Les ensembles funéraires résultaient d'un complexe réseau de relations sociales qui précédaient, accompagnaient et suivaient les actions concernant la mort. Pour comprendre ces places et les questions fondamentales au sujet de la reproduction sociale et de la reproduction au Néolithique, il faut reconnecter les tombes et les villages dans un contexte de paysages habités plus large. Translation by Isabelle Gerges.

Mots-clés: Néolithique final, paysage social, tombes mégalithiques, village, biographies des objets, réseaux sociaux, provenance, Ibérie

Eine Wiederverbindung der spätneolithischen sozialen Landschaft: Eine mikroregionale Studie von Objekten, Siedlungen und Gräbern von der Iberischen Halbinsel

Der Kontrast zwischen monumentalisierten Gräbern und nahezu unsichtbaren Siedlungen hat die Studien zum Neolithikum in Westeuropa dominiert und eine künstliche Trennung zwischen zeremoniellen und materiell produktiven Landschaften untermauert. Durch die Kombination eines Ansatzes der materiellen Kultur auf Landschaftsebene, können vergleichende Artefaktstudien Verbindungen zwischen Menschen, Orten und sozialen Kontexten nachvollziehen. Durch die Untersuchung der Artefaktherkunft, von Artefaktbiographien und -deponierung auf dem Mondego-Plateau untersucht dieser Beitrag soziale Netzwerke im Spätneolithikum des heutigen Portugal. Er betrachtet drei Fundplätze und vier Objektkategorien, die für diese Periode charakteristisch sind, im Detail. Die Studie erbringt eine große Diversität an Rohmaterialien, Umlauf von Alltagsgegenständen und regionaler Verfügbarkeit von Ressourcen, von denen zuvor angenommen worden ist, dass es sich bei ihnen um Importe gehandelt hat. Sie machen es wahrscheinlich, dass die Menschen verstreut liegende Ressourcengebiete auf integriertem Wege nutzten und dass Austausch einen integralen Bestandteil des alltäglichen Lebens bildete. Nachweise für Verbindungen quer durch die Region sind nicht allein auf Gräber beschränkt. Grabausstattungen ergaben sich aus einem komplexen Netz sozialer Verbindungen, die den Handlungen, die den Tod umgaben, vorausgingen, diese begleiteten und nachfolgten. Für das Verständnis dieser Orte und fundamentaler Fragen zur sozialen Produktion und Reproduktion bedarf es der Wiederverbindung der Gräber und Siedlungen in die erweiterten Besiedlungslandschaften. Translation by Heiner Schwarzberg

Stichworte: Spätneolithikum, soziale Landschaft, Megalithgräber, Siedlung, Objektbiographien, soziale Netzwerke, Herkunft, Iberische Halbinsel