RESSOURCENKULTUREN 35

‘PASS THE MOUNTAINS, FOLLOW THE MEGALITHS AND THERE YOU ARE!‘

LANDSCAPE, RESOURCES AND SOCIETY IN THE WEST OF THE PROVINCE OF TOLEDO (SPAIN) IN THE CONTEXT OF IBERIAN LATE PREHISTORY

Felicitas Claudia Schmitt

TÜBINGEN UNIVERSITY PRESS

“Pass the mountains, follow the megaliths and there you are!”
Landscape, Resources and Society in the West of the Province of Toledo (Spain) in the Context of Iberian Late Prehistory.

Dissertation
zur
Erlangung des akademischen Grades
Doktor der Philosophie
in der Philosophischen Fakultät
der Eberhard Karls Universität Tübingen

vorgelegt von

Felicitas Claudia Schmitt

aus

Herrenberg

2026

**Gedruckt mit Genehmigung der Philosophischen Fakultät
der Eberhard Karls Universität Tübingen**

Dekanin: Prof. Dr. Angelika Zirker

Hauptberichterstatter:	**Prof. Dr. Martin Bartelheim (Universität Tübingen)**
Mitberichterstatterin:	**Prof. Dr. Primitiva Bueno Ramìrez (Universidad de Alcala de Henares, Spanien)**
Mitberichterstatter:	**Prof. Dr. Raiko Krauß (Universität Tübingen)**

Tag der mündlichen Prüfung: 21. Oktober 2021

Tübingen, TUP (Tübingen University Press)

RESSOURCENKULTUREN

TÜBINGEN
UNIVERSITY
PRESS

RessourcenKulturen
Band 35

Series Editors
Martin Bartelheim and Thomas Scholten

Felicitas Claudia Schmitt

'PASS THE MOUNTAINS, FOLLOW THE MEGALITHS AND THERE YOU ARE!'

Landscape, Resources and Society in the West of the Province of Toledo (Spain) in the Context of Iberian Late Prehistory

TÜBINGEN UNIVERSITY PRESS

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie, detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

Herausgeber der Reihe: Martin Bartelheim und Thomas Scholten

Die Online-Version dieser Publikation ist auf den Verlagswebseiten von Tübingen University Press frei verfügbar (open access).
http://hdl.handle.net/10900/176122
http://nbn-resolving.org/urn:nbn:de:bsz:21-dspace-1761224
http://dx.doi.org/10.15496/publikation-117447

1. Auflage 2026 Tübingen University Press
Universitätsbibliothek Tübingen
Wilhelmstr. 32
72074 Tübingen
tup@ub.uni-tuebingen.de
www.tuebingen-university-press.de

ISBN (Hardcover): 978-3-98945-039-4
ISBN (Online): 978-3-98945-040-0

Redaktion: Dinah Beljanski, Regina Kocsis, Carolin Manzke, Uwe Müller, Henrike Srzednicki
Umschlaggestaltung: Henrike Srzednicki
Coverfoto: View across the fields around the dolmen of Azután to the Sierra Ancha in early-morning haze (photo: Felicitas Schmitt)
Layout: Büro für Design, Martin Emrich, Lemgo
Satz und Bildnachbearbeitung: Henrike Srzednicki
Druck und Bindung: Vereinigte Druckereibetriebe LAUPP & GÖBEL GmbH
Printed in Germany

To my Family

Contents

Appendix, online available at: http://hdl.handle.net/10900/176122

Prelude and Acknowledgements

As a young student at the age of 23 I could not imagine that the future would lead me to write a PhD thesis on Late Prehistoric Spain. I started to learn the Spanish language at the Special Languages Centre (Fachsprachenzentrum) of the University of Tübingen in autumn of 2008, while I was actually studying at the departments of Prehistory, Early History and Medieval Archaeology (major subject), Near Eastern Archaeology and Palaeoanthropology (minor subjects). I was interested in the language as well as in the country but had just begun to learn about the archaeological treasures of the Iberian Peninsula. A lecture on the Iberian Prehistory in the summer semester of 2008 held by Martin Bartelheim, who had just started as the director of the Department of Late Prehistory in spring, sparked my interest. During the same winter semester of 2008/2009 when I started with my Spanish lessons, I attended another lecture of Martin Bartelheim on Bronze Age. Especially two areas and periods captivated me: the Únětice (Aujetitz) Culture of Central Germany as well as the Argar Culture of southeastern Spain. Both should accompany me from now on.

When I told Martin Bartelheim that I was interested in joining an excavation in Spain and maybe in studying there for a semester because I was learning the language as well, he advised me to contact Francisco (Paco) Contreras Cortés, director of the Department of Prehistory and Archaeology of the University of Granada in Andalucía. Paco enabled me to take part in his excavations at Peñalosa, an El Argar site close to the town of Baños de la Encina in the province of Jaén. With just one year of Spanish lessons in August of 2009 and realising that it was not an option to communicate with the team in English, the Andalusian dialect made me realise the following: 'That must be how someone feels when they just started to learn German and decides to visit Swabia first instead of Hamburg or Hannover'.

Finally we managed my linguistic incapacities, I became part of one very interesting excavation as well as part of a welcoming and competent team.

Thus, it became obvious, the semester abroad had to take place in Granada. To make a long story short: After choosing to write papers on Andalusian Megalithic and Portuguese walled enclosures in different seminars at the University of Tübingen, my way led me to a semester abroad in Granada right after an archaeological excursion to the south of Portugal in autumn of 2010. A time of new archaeological and private experiences I did not want to miss.

While studying archaeology in Granada the plan evolved to write a master thesis on the comparison of Únětice and El Argar child burials.

Being back in Germany in spring of 2011 the master thesis faded a little into the background as my focus shifted to financing my daily life and I started waitressing while still attending lectures and seminars in archaeology as well as taking Spanish lessons at the university. Eventually, in summer of 2012 I registered for the Master of Arts exams (since I wanted to bring that to an end before my 28th birthday).

I had to admit that writing a comparison of El Argar and Únětice child burials was too complex for a master thesis and decided to treat the topic in Central Europe only. Almost at the same time when I handed in the thesis at the beginning of 2013 Martin Bartelheim and others applied for a Collaborative Research Centre (Sonderforschungsbereich, SFB) at the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) and the Chalcolithic of the Iberian Peninsula was supposed to be topic of a project with two PhD candidate positions. Of course, I decided to choose the topic 'Prehistory of the Iberian Peninsula' for my oral exam in June 2013, shortly before the SFB was approved.

In a nutshell, that is how this South German woman started to work on a PhD topic focussing on Late Prehistoric Central Spain in October 2013.

During the time of employment in the SFB, the archive and fieldwork as well as after my time at the SFB and working full-time in a different position at the State Office for Cultural Heritage

Baden-Württemberg (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart),[1] many people supported and helped me with the thesis, be it with practical advice and work or motivating as well as sometimes teasing words. I want to thank the colleagues and friends from the SFB as well as my colleagues and friends from the Office of Cultural Heritage. With both the SFB people and the companions from the Department of Prehistory I discussed several topics concerning the thesis such as geography, QGIS, archaeological theory and/or material, databases, problems in general or just random ideas. Gratitude is owed to each of them, as some ideas can only develop in discussions.

In case they will read this, the ones concerned will know it. Because of the quantity of persons, I forego listing each of them individually. They will understand and not hold it against me.

I am thankful to the DFG – which financed the project and still finances SFB 1070 ResourceCultures – that enabled new research in the region of Azután (Toledo). Many thanks as well to the German Archaeological Institute (Deutsches Archäologisches Institut, DAI) department in Madrid as project partner; in particular to Michael Kunst.

My gratitude also goes to the Junta de Comunidades de Castilla-La Mancha (Toledo) – especially to María Perlines Benito and Jacobo Fernández del Cerro – that facilitated the work in the west of Toledo by giving me permission to look through the archives and carry out the fieldwork. Special thanks to the team members of the 2014 and 2015 campaigns of fieldwork. They supported the case study with archaeological and social competence and a good sense of humour. During the different surveys and the excavation in 2015 Irene Álvarez, José María Barco, Daniel Herrero, Angela Hess, Ana Jesus, Adara López, Elena Marinas, Jacqueline Mena, Rafael Millán, Zulema Picazo, Estibaliz Polo, Marcos Sáez, Alicia Vaca, Jadranka Verdonkschot and Mareike Wichmann helped realising the archaeological work in Azután.

Many thanks as well to the citizens of Azután, especially the property owners, who welcomed us and enabled the access to their fields and pastures. I am grateful for the technical support and help on-site as well as in Tübingen of Matthias Lang, Karsten Schmidt and Dirk Seidensticker.

Peter Kühn (Tübingen) was the interdisciplinary supervisor of my PhD thesis. He supported me in the field of pedological topics and set up contacts to other specialists such as Dominik Faust and Daniel Wolf (TU Dresden). Both helped with information about geomorphology, as they have worked on the Iberian Peninsula as well, and on formation processes of landscapes and rivers in the upper Tagus basin. Simone Riehl (Tübingen) analysed the floated archaeobotanical samples and Michael Toffolo (Tübingen) did the same with the prepared phytolith samples. The samples for both analyses were prepared by Golnaz Ahadi (Tübingen). Marta Diáz-Zorita Bonilla (Tübingen) carried out the isotopic analyses and José Antonio López Sáez (CSIC, Madrid) studied the palynological samples of the excavation realised in Azután. Susanne Lindauer (CEZA, Mannheim) was the contact for all questions and explanations concerning the dating of the excavated site (^{14}C, TL). All of them made important contributions to the scientific analyses conducted for this PhD thesis. Furthermore, Enrique Cerrillo Cuenca (Madrid) helped me with LiDAR calculation trying to visualise the detected sites in a high-resolution digital elevation model. Antonio González Cordero, with his knowledge on the Chalcolithic of the adjoining Extremadura in the west of the study area, was a big support during the first phase of fieldwork.

Markus Siegeris gave me a hand defining silex and stone materials assuring that I could define the material groups detected during the excavation. Besides her help in the field, Jadranka Verdonkschot supported me with the processing of the finds of both survey and excavation, especially by creating drawings and taking pictures of them. Additionally, Adara López López did not only take part in two campaigns of fieldwork but was constantly in contact with me in a mutual exchange of literature and discussion about ditched enclosures or the results of our studies. Thanks also to Katja Thode for having a look at the archaeozoological

1 First as trainee in the Department of Archaeological Monument Conservation, later as scientific employee in the projects ‘Celts in Baden-Württemberg’ and ‘World heritage proposal Early Celtic centres of power’. Since 2021 in a permanent position in Operational Archaeology.

material of one structure of the excavation after I identified and determined it, ensuring I made no major mistakes. Moreover, Adara and Katja were extraordinarily helpful, as they were my proof-readers. Immense gratitude that they have read the manuscript with such close attention!

Of course, I will not end without thanking my main supervisors Martin Bartelheim and Primitiva Bueno Ramírez for sharing their knowledge and – in the case of Mimi – her research area as well, with me. I am very sure that especially after my employment at the SFB I strained their nerves and they may have started doubting some of my statements such as 'I am almost done'. Therefore, many thanks for the help as well as the time and patience Martin and Mimi had for and with me.

Special thanks to Leif Hansen who helped with the publication of the manuscript and gave me mental support as well as the strength and motivation to complete this PhD thesis. And last but not least, special gratitude to my parents Anita and Klaus as well as my older brothers Matthias and Sebastian. Thanks for always believing in me and that I have chosen the right profession.

¡Gracias!: Many thanks to the teams during the different campaigns of fieldwork.

Preface

This PhD thesis was developed within the framework of the Collaborative Research Centre (SFB) 1070 ResourceCultures at the Eberhard Karls University of Tübingen. During the first phase 21 different projects were dealing with the socio-cultural impact of tangible and intangible resources on human societies. The theoretical construct of the SFB has also been applied on Iberian Late Prehistory (late 4th and 3rd mill. BC) in the centre and the southwest of the peninsula. The following work focusses on the Spanish Central Plateaus, especially on the southern one, with new fieldwork conducted in the west of the province of Toledo (Castilla-La Mancha), close to the province of Cáceres (Extremadura). This area was said to be a deserted space with little evidence for human presence during the Neolithic and Chalcolithic periods, with people living a more or less semi-sedentary life. This at least was the predominant view of archaeological research. In contrast the populations of the southwestern coastal regions of Spain and Portugal appeared to have lived in a more structured, hierarchised society. To revise this view on the prehistory of Central Iberia detailed archive studies as well as fieldwork facilitated new insight into the topic of settlement structures, the organisation of the surroundings including the use and exploitation of material and immaterial resources. This work will also provide an impression of the networks of communication and a valuation of arguments that are in favour of a predominantly sedentary life of the communities of Central Spain.

For a better understanding of the initial context, I start with an explanation of the SFB's theoretical framework and aims (chapter 1; Introduction). It describes in detail the concept of the SFB as well as the sector divisions. Chapter 2 serves to lay out the key questions and initial assumptions of the project on Late Prehistory of the Iberian Peninsula and explains the choice of Azután (west of the province of Toledo) and its megalithic tomb forming the focal point for further studies. After discussing definitions specific for the SFB the terminology part of chapter 2 (chapter 2.3) is presenting topics closely related to the Late Neolithic and Chalcolithic research on the Iberian Peninsula. Current models and research questions concerning Iberian Late Prehistory will be approached.

Before dealing closely with the archive studies as well as the fieldwork and the newly generated data, chapter 3 gives an overview of the history of investigation, the available archaeological data former theories were based on and the published archaeological information of the micro region of Azután. Subsequently, for a better understanding of the modern and prehistoric environmental conditions, available data for a reconstruction of the palaeoenvironment in the west of the province of Toledo will be discussed (chapter 4). With this prior knowledge the focus of this thesis will be on the archive work, the different campaigns of fieldwork and the detailed description and discussion of the new results as well as the scientific analyses conducted on different materials (chapter 5 and 6).

Chapter 7 concentrates on the resources detected during the fieldwork and in other sites of the micro region but on the possibility of the exploitation of further materials in the surroundings as well. Additionally, immaterial resources will be included and discussed, leading to the next chapter on the organisation of the Chalcolithic landscape (chapter 8). Gateways and central places will be key issues as well as the possible functions of the prehistoric sites, reasons for the choice of exactly these spots, including potential conflict areas. The study will close with a synthesis – a conclusion and future perspectives – of the new information about Late Prehistory on the southern central plateau of the Iberian Peninsula (chapter 9). We are faced with societies without written sources, only accessible through modern interpretations of the structures and materials that survived the millennia. Due to the new, impressive results on the southern terrace of the Tagus River in the

municipality of Azután chapter 9 will also address the topic of ditched and walled enclosures of the so far less detailed studied areas of the peninsula (chapter 9.1).[2]

Finally, the catalogue (chapter 10 in the online appendix) will provide insight into the collected information of the published and unpublished sites of the province of Toledo, the tables of the survey material and the excavated finds as well as the compilation of walled and ditched enclosures. All data and information collected and generated during the work on this PhD thesis are provided for further research and are accessible via the scientific data management of the University of Tübingen (Open Research Data Portal[3]). This serves to check the information given here and facilitates further work with and development of tables and maps for future studies.

The catalogue and some extensive tables can be found in the online appendix, which is available under <http://hdl.handle.net/10900/176122>. The corresponding tables are marked with an * in the text (**tab. 16–21*).

2 As they are already published in an exemplary manner, the enclosures of southern Portugal as well as Andalucía and Murcia were not included.

3 <https://uni-tuebingen.de/forschung/forschungsinfrastruktur/digital-humanities-center/projekte/open-research-data-portal/>; <https://fit.uni-tuebingen.de/Home/Home>.

1 Introduction

The work on this PhD thesis was part of the first phase of the Sonderforschungsbereich (SFB) 1070 ResourceCultures (October 2013–July 2017), an interdisciplinary collaborative research centre funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation). Twenty-one projects investigated resources and their influence on socio-cultural dynamics, among others from an archaeological and ethnographic perspective. Starting in October 2013, researchers from different academic fields have been working on identical objectives, trying to answer key questions such as:

- What was regarded as a resource in a certain area or period and are there any traceable indications for a culturally connoted handling of resources?
- What kind of social processes are observable and how are they related to the use of resources?
- Are there any detectable multifaceted processes (ResourceComplexes) connected to the introduction of new technologies, utilisation strategies and patterns of exchange of resources?

To obtain a better understanding of the theoretical and terminological framework in which this dissertation developed, a short introduction to the SFB – its conceptual basis, ideas and preliminary objectives – will be given. The SFB-specific definitions of resource, ResourceComplex and ResourceCultures will be outlined.

1.1 The Concept of Resources and ResourceCultures

Resources in the view of the SFB 1070 are defined as tangible or intangible means that can be used for the formation, preservation or modification of social relations and roles. A resource does not stand for itself but appears in interaction with other resources. Together they act as a part of social processes and therefore form ResourceComplexes. These are characterised by the 'combination of objects, individuals, knowledge and practice' (SFB 1070 ResourceCultures 2016, 13). In consequence, the use of a resource includes all the stages of its 'life' together with the way it is used (e. g. the production, refining, exchange, sacral or profane use etc.), enclosing both the social relevance of it as well as its role in a ResourceComplex. Therefore, resources trigger and influence certain dynamics and multi-layered processes that change and hence concern either special parts or all of society. Before explaining the different project divisions that encompass the social dimension resources are embedded in, the specific definitions of the SFB will be outlined, starting with the key subject resource.

1.1.1 Resource

Deriving from the French *ressource*, which is translated as 'means' or 'source', the term 'resource' originates from the Latin adjective *resurgere* that can be translated as 'well up' or 'spring up'. Having a look at its definition in the Duden dictionary of the German language one is confronted with the traditional definition of resources: a natural stock of something specific, used for a certain reason, especially needed for human consumption and economic production. Or it is referred to as a stock of financial means (source of money) someone can draw on (Duden 2017). Economic sciences for example already use a more differentiated definition of resource that considers the term from different economic perspectives: Depending on the theoretical concept used, resources may be seen as a production factor, an organisational prerequisite or a means for maintaining systems (Müller-Christ 2011, 167–170). The division into tangible and intangible resources is essential. While tangible (material) resources comprise of e. g. land, financial capital or workers, intangible (immaterial) resources describe relevant factors like knowledge, relationships, social structures etc. (Storberg 2002, 469). Especially the study of immaterial resources was intensified in economics over recent years. Tendencies towards

a more open resource term can also be observed in social sciences.

Other definitions of resources regard them as means and abilities of a political consolidation as well as giving access to material aspects of life. More widely, resources can be described as economic and cultural capital, that incorporates skills, titles and objects alike that are dependent on the background of social capital (Bourdieu 1983). In cultural anthropology, resources are considered to be means for actions of people (social practice) but also serve as identifier or delimiter for other people or groups. Psychology developed the resource term beyond its economic context and divides resources into temporal, financial resources and control altogether embedded in social contracts (Giddens 1984; Bourdieu/Waquant 1992; Greenblatt 2002; Schlee 2006; SFB ResourceCultures 2016, 16).

One may justifiably wonder how far cultural sciences got discussing the term resource. What and where is the contribution of e. g. archaeology and cultural anthropology to the development of a new resource approach? Due to being based on the material culture, prehistoric research tends to concentrate on all kinds of raw materials – especially metals – and agriculture as central resources. Though automatically dealing with resources when studying a certain period, a real definition of what constitutes a resource in archaeology was absent. Neither scientific handbooks and encyclopaedias nor approaches on archaeological theory and practice include specific entries for resources. Everyone uses the term, but no one ever defined it.

The SFB 1070 presented a comprehensive working definition including both the tangible and intangible sphere of resources. The definition of the term 'resource' was extended by the immaterial dimension to include the developments in economic and social sciences. The functional view on resources was added meaning that nothing is a resource by nature but by function and context only. Resources are not only crucial for the survival of individuals but they are essential for the emergence, preservation and change of individuals and groups (social actors) and their relations, networks, institutions or systems. The particularity of cultural sciences had to be taken into account and with it the theory of contingency and variability of socio-cultural phenomena. Culture may not simply be reduced to certain necessities but regarded as a range of possibilities. Those possibilities can result in a diversity of believes, organisational forms and practices throughout distinct periods in different environments. Both the resource and the social are subject to this cultural openness. Raw materials and natural products (e. g. soil, water, ore) are therefore not only fundamental for survival but culturally connoted as well (SFB ResourceCultures 2016, 17; Hardenberg et al. 2017, 14). A conclusive definition of the term 'resources' for cultural sciences including the above-mentioned statements would see resources as 'the means to create, sustain and alter social relations, units and identities within the framework of cultural ideas and practices' (Hardenberg et al. 2017, 14).

Further points can extend the working definition of resources, including categories, terms and processes closely connected to resources. Resources also are an analytical category. When regarding different times and regions, the question arises which differentiations other people made or are currently making. Originating from this question, resource is no longer just the object of investigation but also an analytical category, capturing phenomena that so far were not classified to the semantic sector of the object. Alongside becoming an analytical tool, resources are under constant transformation because they are strongly dependent on their cultural context, existing practices and the interpretation of social actors. The context changes with shifts in believes and values as well as with the introduction of new technologies, other social practices and new social contacts or differentiation. Resources normally do not stand alone but rather appear in combination with other resources – often a combination of objects, people, knowledge and practices. Hence, a resource needs other resources for its maintenance, distribution or use acting and reacting together within a ResourceComplex. As the focus of the SFB 1070 ResourceCultures is on resources or ResourceComplexes, which are of central significance for social relations, units and identities the term 'reserves' gets a different meaning in the context of cultural science as well. 'Reserves' do not describe economically used resources but elements of a local culture, for example certain social networks or

religious practices, which are used in emergency conditions or under unstable conditions. Within the field of social relations and social actors it is not primarily the organic but the social life that is of relevance. This does not mean that individual actors vanish from the focus of consideration as without the actions of social actors, social relations would remain theoretical constructs. These actors can be both human and nonhuman. Therefore, the social area can include interactions between humans and animals, plants, ancestors and so on that a social agency is assigned to. Regarding social entities, they are defined in a broad sense as related terms that are used in the interdisciplinary comparison. Consequently, terms such as 'community' or 'society' are used in a polythetic way. A series of socially distinctive features is determined that can be of relevance for the comparison (SFB 1070 ResourceCultures 2016, 17–19; Hardenberg et al. 2017, 14–16).

Eventually, the SFB 1070 ResourceCultures presented the following definition of resources:

''Resources' may be understood as a category for analysis, serving to expand the semantic horizon of the term by the use of a comparative perspective. Resources generally are seen as means to create, sustain and alter social relations, units and identities within the framework of cultural ideas and practices. It is assumed that resources are variable not only culturally, but chronologically as well, and are affected by historical change. Resources often occur in ResourceComplexes, each having its own specific history of origin and distribution. They are bearing reference to other ResourceComplexes and are evaluated or hierarchised in their relation to each other. Acting on the fundamental assumption that resources (and ResourceComplexes) based on a culturally constructed interest, go along with learnt practices and do have social relevance, resources (and ResourceComplexes) that are used and are of practical significance can be studied. The use of resources implies the actions of social actors, taking into account that a number of societies also see nonhuman beings, such as animals, plants, ancestors or gods, as actors with social relevance. These actors can be assigned to very different social units, distinguishable by categories, such as homogenous or heterogeneous, real or imagined, predetermined or acquired, territorially and socially limited or unlimited' (Hardenberg et al. 2017, 16).

1.1.2 ResourceComplex

ResourceComplexes have already been addressed as part of the definition of resources. This chapter will provide the theoretical background ResourceComplexes are mainly based on.

As aforementioned, ResourceComplexes comprise of several resources because resources in general do not appear isolated. These complexes are predominantly a combination of people, objects, knowledge and practices (SFB ResourceCultures 2016, 18). If for example pottery production is the central ResourceComplex of an economy, then several resources are crucial. Besides good and rich clay deposits, tools are needed for the extraction as well as people to perform the extraction. These individuals and maybe animals are necessary as well for the transport of the clay to the production site of the pottery. Tempering material may have to be collected to prepare the clay but certainly experienced people are required for the further processing of clay in order to produce a pot. Usually, the clay is worked with water to keep its texture smooth, adding another resource to the complex. Finally, the vessels have to be fired at just the right temperature to keep their form and wood and other organic combustibles (e. g. animal dung) have to be collected. Further details of the distributional process if the ceramic objects were not produced for private purposes will be neglected here and even the extraction and production processes are only outlined and far from complete. It becomes apparent anyway that resources such as people, objects, raw materials, experience, knowledge and communication form part of a ResourceComplex. In particular, knowledge and communication are crucial. If it is not for the exhaustion of the known clay deposits, then it can be the lack of knowledge where to find good clay or how to produce the most functional pot as well as the unwillingness to communicate experiences and knowledge that can change or bring down the dynamic of the ResourceComplex.

ResourceComplexes have a specific history of appearance and dispersion, they affect each other and are valued or hierarchised in relation to one another. The term ResourceComplex corresponds to the 'base' concept of S. Gudeman: The base is 'consisting of entities that people appropriate, make, allocate and use in relation to one another. The base is locally and historically formed. In the Latin American countryside, a farmer considers as base his house, land and crops; a university's base includes its library, laboratories, offices, communication systems and concepts linking researchers […]' (Gudeman 2005, 97 f.). Like the definition of resources or the composition of ResourceComplexes, the base also changes over time and may vary throughout history. In general, communities construct their base and are combined by shared interests, hence relationship networks constitute communities and connect people within the base. The examples given by Gudeman, that describe what constitutes the base of a farmer, a university, an education system or an artist, indicate that multiple bases are shared. Constantly, people change, multiply, cross or negotiate bases. As a ResourceComplex 'base' combines different areas and consists of objects, knowledge, people, skills and practices (Gudeman 2005, 94–98). These areas are 'part of a changing heritage that is always necessary for market trade, from language to hand signs and from cognitive skills to values' (Gudeman 2005, 98). A community can also specify actions and/or materials that are prohibited to use in the base or supported by it; access to a certain resource thus can be limited, for example, for ritual reasons. To express and reinforce power and continuance, a base uses central symbols. The base is the means to connect and relate people of a community among each other as well as to the base by giving them an identity. Some bases are defined as unlimited, others as limited, it signifies that some bases have unrestricted access and are open, whereas the limited bases are restricted to certain people, ideas or materials (Gudeman 2005, 97–102).

The term ResourceComplex includes the theory of Gudeman and combines it with the new definition of resources by taking it away from a mainly economic background. They form the framework, more specifically the social, cultural and economic overall constellation for the use of resources as the basis of a functioning society.

1.1.3 Cultures and ResourceCultures

Before describing what can be understood as a ResourceCulture, the concept of culture itself and how the SFB defines it will be outlined. It was necessary to find a definition compatible for the interdisciplinary work in the SFB, especially because culture is one of its most central topics and at the same time the most controversial concept in cultural sciences. In public and economy, the term culture is usually used in a broad sense, describing art as well as continuous characteristics of people of common ancestry or shared customs, traditions and ideas of individual societies. For the SFB, a different concept of the term culture is of significance: the scientific concept (Beer 2012, 54 f.). It offers opportunities for certain perspectives on and interpretations of resources. During the last years, many papers and books discussing the term culture were published. They summarise different definitions of the term as well as the criticism of the concept of culture (e. g. Beer 2012; Bernbeck 1997; Eggert 2008, 303–316). Throughout the history of cultural sciences, many theoretically differently orientated definitions of culture were used. The concept of culture also depended on the approach focussing on structures or subjects, on discourse or practices (SFB 1070 ResourceCultures 2016, 20; Hardenberg et al. 2017, 16 f.).

For the collaboration in an interdisciplinary network, the concept of culture has to guarantee a plurality of the term on the one hand and on the other hand a certain kind of exaggeration as culture is one of the key issues of the concepts of the SFB. The interpretative or meaning oriented approach under the basic assumption of cultural contingency is of special relevance. The interpretative discourse basically states that people at all times and in all regions existed in a world of meanings. These meanings – both ideas and practices, learned and shared to a different degree – are expressed by different practices as well as objects, bodies, language, knowledge and symbols. The world of meanings is not chaotic

but structured and refers to each other, which is subject to change and processes dependent on interactions among social actors. Based on these assumptions, a first definition can be proposed that 'cultures are contested systems of meaning, learnt, shared and negotiated in various ways, that are expressed empirically for example by language, written documents, knowledge, objects, bodies, institutions, symbols and a wide variety of actions' (SFB 1070 ResourceCultures 2016, 20; Hardenberg et al. 2017, 17).

As it is only a first definition of culture, further clarifications are needed and the categories included will addressed briefly. Overall, materiality plays a significant role when investigating cultures and especially in prehistoric archaeology the main resources are defined by their tangible character. Being often reduced to their physical characteristics in earlier research more recent studies discovered the symbolic and social meaning of objects. The orientation of prehistoric archaeology to material culture manifested within the contextualisation of objects with other objects, landscapes, people and their actions. Materials also have abilities and effects, which are often directly connected to and involved in representation and social relations. Culture is dependent on basic existential functions, which means that the cultural dimension of resources does not exclude socially relevant resources having a basic function providing life to human beings. Based on the concept of contingency, the use of resources is not in a predictive manner or necessarily assigned by the existential function. Subsistence activities as well as distribution and practices of consumption very often trigger the formation, renewal or change of social relations for example between gender, generations, age groups, ethnical groups. Consequently, there is no contradiction between existential functions and cultural constructions of resources within the conceptual ideas of the SFB. While earlier monothetic comparative categories and a single culture term were used, a shift to polythetic categories and a plurality of the term occurred during the last decades. It was questioned if cross-cultural or cross-temporal comparisons were and are still legitimate. In the polythetic context, comparisons have a particular heuristic value by pointing at aspects that remain unnoticed when only studying a single case. Other than that, comparisons can indicate formal similarities, recurring structural principles. These cultural comparisons are often concentrated on phenomena and processes that are regionally and temporally interwoven but can also be completely disconnected from each other. Comparing case studies of different times and forming analogies leads to generalisations about societies and cultures. At the same time they are subject to a relativising and differentiating approach through the spatial and temporal subjective as well as objective reflections of the investigator. Considering social and cultural systems, the SFB is following the holistic perspective, which means there is no division between the two spheres; they cannot be separated. The social, the cultural, material and symbolism are connected and influencing each other while often being ordered differently in different cultures. Therefore, the term socio-cultural shall express that the idea and use of resources lead to dynamics, which influence social relations, entities or identities. These relations, entities and identities have already and always been symbolically constructed (SFB 1070 ResourceCultures 2016, 20–22; Hardenberg et al. 2017, 17–19).

Eventually, the aforementioned additional statements result in the following holistic definition of cultures:

'Cultures are contested systems of meaning, learnt, shared and negotiated in various ways, and are expressed empirically for example by language, writing, texts, knowledge, objects, bodies, institutions, symbols and a wide variety of actions. The aspects of these systems of meaning are interrelated and result in a more or less meaningful whole. These systems of meaning are assigned to the tangible world, but a strict dichotomy between tangible and intangible has to be avoided, because human beings themselves are part of the tangible world. The fact that the contextually changing characteristics of objects and matters (including resources) affect the emergence of systems of meaning and their related practices has to be kept in mind. Cultures are contingent, their respective ideas and practices, and the ways these change, cannot be

reduced to general or natural conditions, but instead are a result of specific horizons of meaning. Presupposing cultural contingency, comparisons in cultural studies use polythetic categories and are focussed on the understanding of cultural difference as well as on the investigation of formal similarities, such as analogical courses of action or repetitive principles of composition and structure. The assumption of contingency does not imply that the importance of resources for basic human needs is denied. Instead, it stresses the point that the perception and resource use is not determined by general or natural principles. Still it is assumed that especially resources needed for human subsistence and survival as well as practices related to them, are those to which cultural meaning is assigned. The perception and use of resources leads to dynamics referring to social relations, units and identities that are always constructed symbolically beforehand' (Hardenberg et al. 2017, 19).

What constitutes ResourceCultures and how are they effected by the SFB's definitions of cultures and resources? First, ideas, values and practices that are learned and shared influence the perspective on resources to a certain extent, which conclusively is always a culturally influenced perception. Second, the exploitation, the distribution, the consumption etc. of a resource are culturally specific and may find different ways of expression. Resources are means and the base for the emergence, preservation or change of social systems. Resources are always used by people connected to each other because of their similar interests and therefore have an impact on social organisation. Consequently, ResourceCultures differ from cultures as they are interwoven with resources, closely connected with ideas, practices and values as well as social relations, structures or identities. As a result, ResourceCultures underlie specific socio-cultural dynamics; they are in motion. These dynamics are both multidimensional and open, which is why societies can develop or change through the use of resources while social processes can also influence the kind of resource use. Culturally constructed interest in resources can lead to spatial developments and processes for the acquisition of resources, which may have an impact on social orders and identities (everything is in motion, non-static). Symbolic representations have an effect on resources and give or refuse them a value. The symbolic interaction with a resource can turn into a resource for society itself (SFB 1070 ResourceCultures 2016, 22 f.; Hardenberg et al. 2017, 19).

Summarising the concept of the SFB with the specification of ResourceCultures they 'may be understood as specific, dynamic models connecting certain resources, social forms of use, social relations, units and identities in a contingent, yet meaningful way' (Hardenberg et al. 2017, 20).

1.2 Project and Sector Divisions of SFB 1070

With the terminological framework of the collaborative research centre in mind, the structure of the SFB 1070 ResourceCultures can be outlined. As aforementioned, resources both trigger and influence social dynamics and processes that in turn change and affect certain parts of a society or the whole society. To achieve a better insight into these processes, the SFB focusses on three core areas (or project divisions of the research centre) of socio-cultural dynamics and groups the research projects into: A. Developments, B. Movements and C. Valuations (*fig. 1*). Resources are part of these permanently happening social processes and included in the human evaluation of every social activity. Every project division is focussing on one of these different types of ResourceComplexes (SFB 1070 ResourceCultures 2016, 13).

1.2.1 A. Developments

Societies and resources are in a reciprocal relationship (SFB 1070 ResourceCultures 2016, 23). Project division A investigates processes of cultural, social and political change. In this case, change is not seen as a unilinear evolution but as a dynamic within social structures and respective cultural expressions. The focus of this project division is on historical situations that enabled access to raw materials and natural products, both on a local and regional level but also along continuously

established routes. Through extraction and use, these materials and products have been converted into resources and entered the social sphere. Structural changes in societies have been a main research area of cultural studies since their very beginning. Especially archaeology allows to track formation processes over longer periods while cultural anthropology rather captures present times. During periods without or with scarce written sources only, as it is the case for Pre- and Protohistory, analogies played an important part in the interpretation of archaeological finds and structures. Because of the temporal distance of the finds to modern Western cultures, comparisons for these early societies were mainly taken from two disciplines: history and cultural anthropology. In this regard, analogies concerning the emergence of hierarchies have always been of special interest. In particular, studies of the 1960s and 1970s considered hierarchical social structures as a continuous development from simple to complex. Even though this simplistic point of view had been widely accepted, it has also been criticised: firstly, for its unilinear view and, secondly, for the application of ethnoarchaeological methods (SFB 1070 ResourceCultures 2016, 38).

Alternative perspectives of change in societies confront the previous doctrine with other possible models: The long time dominant view in archaeological research of a linear development from egalitarian social structures to complex, hierarchical societies is shifting. Wave-like ups and downs in the formation of hierarchies in a society or cyclical movements of the prehistoric cultural developments have become traceable. A look 'beyond elites' was suggested as ancient societies have been reduced to a vertical differentiation instead of intending to get an insight into the diversity of social relations on a horizontal level. The study of social structures is closely connected to the foundations of their development – maintenance and change. For the study of prehistoric societies, the investigation of economic conditions is the central approach to record the interaction of social entities. In this context, especially the use of resources, mainly raw materials, agricultural strategies or exchange systems are considered in close connection with the emergence and maintenance

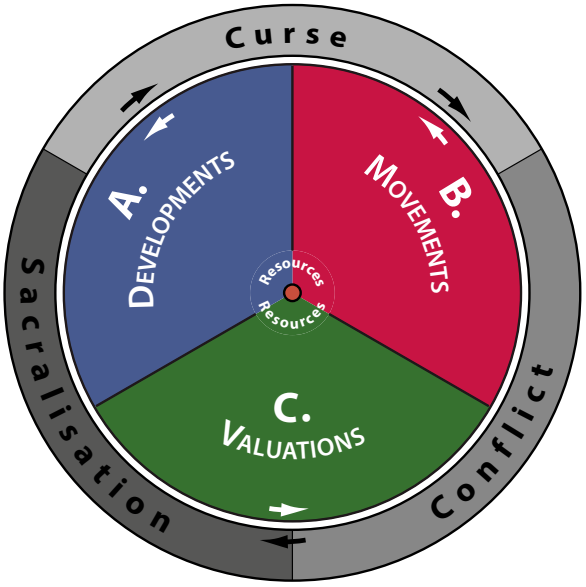


Fig. 1. Model of the structure of SFB 1070 ResourceCultures, showing the interconnection of the project and sector divisions (Scholz et al. 2016, 7, fig. 1).

of hierarchies. Therefore, access to resources is deemed to be the reason for cultural and social change. Within the SFB, resources became a mutual analytical category. Not only does the use of resources influence and change societies but social processes have an impact on the use of resources as well (SFB 1070 ResourceCultures 2016, 39).

1.2.2 B. Movements

The culturally constructed interest in a resource leads to spatial developments and processes of acquisition of resources. Those again have an impact on social orders and identities (SFB 1070 ResourceCultures 2016, 23). Movements involve people (individuals, parts of bigger groups or whole communities) who are not or not exclusively staying at one place or in one region but who are changing residence temporarily, for longer periods of time or permanently. Contrary to the terms used in research to describe movements which are already loaded with valuations like migration, colonisation or mobility, this project division intentionally uses the underlying, neutral term of Movements. 'Migration' normally describes a longer lasting relocation of individuals, families or groups. However,

it implies bigger groups of people who begin to move because of differing reasons and often cover larger distances. The term 'colonisation' is mostly applied to a target-oriented process that strives towards a geographically distant destination in order to occupy and exploit the land. 'Mobility' can both start from and come back to a certain point and can be restricted to movements on a rather small-scale level. Often, the movements of individuals are categorised under that term (individual mobility). Besides a spatial mobility also a social mobility can be considered. A more or less targeted action where people relocate from old to new spaces is described in a neutral sense by the terms 'spatial development' or 'spatial occupancy', more generally also called 'settlement'. Occasionally, the term 'land grabbing' is used in the same sense in the German language, usually in context of medieval processes. An ecological push is assumed as the main reason for the movement of people in pre-industrial times. Therefore, resources are discussed as the cause for many of these movements in both archaeology and cultural anthropology. A lack of resources – e. g. soil or arable land in connection with overpopulation or excessive use of the land – is thought to be the central point for spatial development. Economical, technological and social aspects play a significant role as well. In archaeology, the traceability of the role of resources is of central concern from a methodological point of view (SFB 1070 ResourceCultures 2016, 39–41).

Project division B focusses on the role of resources within socio-cultural circumstances that led to a movement of communities. Clearly resource-related actions like the colonisation of a region in order to exploit its resources represent just one superficial reason for moving. The valuation of resources or their symbolic meaning play a decisive role in the emergence of their demand. If they are not available locally, people are economically and maybe also socially forced to move towards them. Movements in the context of resources therefore are the initial point of several investigations on the economic-, social-, symbolic- or identity-related role of resources in the clearance of the landscape and the settlement of spaces. Through variable processes of clearing spaces and diverse resource-based identities, socio-cultural development of respective societies can be reconstructed (SFB 1070 ResourceCultures 2016, 41).

1.2.3 C. Valuations

Symbolic representations, on the one hand, have an effect on the identification and the use of resources and can, on the other hand, be converted into a resource for the community themselves (SFB 1070 ResourceCultures 2016, 23). Terms like 'value', 'valuation' or 'added value' in the connection with resources are often defined from an economical point of view. 'Value' is seen in the sense of results or positions that individuals achieved because of their efforts or it can be considered as the description of a measurement of goods within their exchange, differentiating between a subjective usage value and objective exchange values. Dependent on the approach, the value can be expressed by the demand for goods, the price or through the services, functions and features used. Resources are the essence that facilitates this additional value for instance in the form of material or immaterial assets.

This economic comprehension value is designed for certain academic fields (economy, finance etc.) and differs largely from its usage in other disciplines such as philosophy, psychology or sociology. As the SFB especially focusses on the role of resources within social phenomena, the definitions of social sciences like psychology, sociology and cultural anthropology are of relevance. Values can be considered something desirable. Following this approach, sociology and psychology dealt with questions of the origin of values, their relation to oneself and personality as well as for the motivation of actions influenced by values or how and why values change. The research interests of the SFB lead to an investigation of the way how specific values – maybe even cross-cultural ones – motivated the search for and the use of resources and whether changes in ResourceCultures are an expression of a change in values (SFB 1070 ResourceCultures 2016, 41). Project division C and the valuation of objects used as well as practices performed revealed a methodological problem for prehistoric research: Grasping

valuations in the archaeological context is complicated because the equivalent is mostly unknown.

While universalists hold the opinion that there is a worldwide existing core of values, which diversifies under different environmental conditions and historic processes, cultural relativists postulate the uniqueness of cultural value systems. Following this concept, a value is understood as something learned supra-individually, integrating cultural elements meaningfully and creating the whole system. Thus, in terms of significance, value establishes relations or systemic connections. Within symbolic or structural anthropology as well as in the same branches of archaeology, relationship systems that may become visible in ritual actions, architecture, settlements or the arrangement of burial gifts are investigated based on this idea of values. In this perspective, resources are means to express value as an indicator of social hierarchies or of organisations. With the term 'added value' the SFB intends to investigate how values convert something into a resource for social relations, entities and identities. What kind of practices or organisational structures develop to acquire the valuable, to explain its value comprehensibly to others and to use the value? Especially different ways of representation and symbolisation as for example myths, legends, historiography or translations are main issues because they legitimise demands, preserve knowledge and enable changes. These types of added values thus can become a resource for society within themselves (SFB 1070 ResourceCultures 2016, 41 f.). For Prehistory, the sphere of myths, legends and translation remains largely inaccessible. It is legitimate to remark and have notice of these areas as they surely existed but it is beyond any proofs and therefore rather a tool for anthropology or history and to some extent for protohistory.

1.2.4 Curse, Conflict and the Sacred

Social effects can occur in societies because of the use, disuse, a shift in the value or the impact on the environment of a resource and may lead to both positive and negative events affecting the socio-cultural dynamics. As resources have a certain impact on society, they can be a curse or a blessing, an object of sacralisation or a cause for conflicts on various levels. These resource-influenced processes formed the Sector Division of the research centre's first phase (*fig. 1*; SFB 1070 ResourceCultures 2016, 26).

The 'curse of resources' concept derives from the economic debate about the mechanisms of so called 'natural resources'. In economy, the concept refers to raw materials (oil, gas, ores, precious metals etc.) that have an economical use. The extended socio-cultural definition of resources on which the SFB is based clearly exceeds the one of 'natural resources'. According to this, other types of resources that could develop curse-like characteristics can be defined. Certain religious behaviours can be used as resources for the stabilisation of societies, for example. But there is also the possibility that these stabilising means could convert into a curse. If rituals successfully created shared identities but the surroundings perhaps changed, and the religious resources did not adapt to the new situation, the resource may have a negative impact on parts of society. Knowledge, experience and expertise are also important, as the impact of the curse often leads to conflicts because of institutional knowledge or the lack of it (SFB 1070 ResourceCultures 2016, 43 f.).

Resources in the context of conflicts are often investigated with a focus on power and social inequality. Early approaches of conflict theory already considered resources to trigger conflicts, wars or revolutions. The unequal distribution of means of production and power was said to be the reason for class conflicts in Marxist theory, for instance. It can be assumed that conflicts themselves form a kind of resource. Not only do they destroy social relationships but ironically also contribute to social cohesion as within the context of conflict solution collaboration is crucial. Hypothetically, a mutual relationship between a specific society and their characteristic conflicts is supposed to exist. Thus, social order influences which resources cause conflicts and how these conflicts will be dealt with. *Vice versa* conflicts and the resulting actions aiming for conflict resolution affect social entities and require social change (SFB 1070 ResourceCultures 2016, 44 f.).

'Sacralisation' as the last Sector Division opens a vast field for interdisciplinary and spatially as well as temporally spread studies of resources. Depending on the use and the cultural connection, resources are categorised as sacred, profane, prestigious or useful. At the same time, they can be divided into several categories. The sacred has a lot in common with resources. Both include tangible and intangible dimensions like objects, landscapes or specific knowledge. The sacred as well as resources in the sense of the SFB are closely connected to social relationships, entities and identities. Everything related to the sacred sphere and resources is understood as socio-culturally constructed and historically changeable. The approach especially highlights processes, strategies, media and practices as a fruitful area for interdisciplinary research. The investigations of the conditions that are needed for something or some actions to become sacred and which political consequences would be inherent in this process are in the focus of research. The role of sacralised resources might play a central part within the emergence of hierarchies and possibly resulting social inequalities (SFB 1070 ResourceCultures 2016, 45 f.).

It is obvious that resources, the way they were used and the socio-cultural dynamics that are connected to them, are closely interlinked and interact with the concept and the practices of society. As this varies strongly from culture to culture, the comparative perspective of the SFB is a good tool to identify differing ResourceCultures. This can be achieved through an insight in the kinds of socio-cultural dynamics that derive from the use of resources. Of course, archaeology – especially prehistoric archaeology – is mainly restricted to tangible resources. But as different academic fields from the Palaeolithic to modern times work together within the SFB, researchers benefit from the results of different disciplines what might lead to ideas on how to approach the intangible side of resources in archaeology (SFB 1070 ResourceCultures 2016, 13 f.). Nevertheless, the intangible side of resources in prehistoric archaeology has to remain object of speculation and can only be an interpretative part of the research work.

SFB 1070 ResourceCultures has been structured in three different levels to facilitate a mutual communication, influence and learning. On the macro level, all projects related to the SFB describe and compare their own models of what ResourceCultures are. How these models connect to the socio-cultural dynamics of resource use can be discussed on this scale. On the meso level, the project divisions (A, B and C) deal with specific dynamics, again with the aim of comparing and discussing hypotheses. Finally, on the micro level, within each project itself, a huge variety of comparable issues exist, for example investigating the dynamics within the same time frame, a shared geology, similar political systems and further contexts. In the case of project A 02 – of which this PhD-study was part – it would be the same region and time frame (Iberian Copper Age). Despite the fact that they share a common chronology and a similar material culture, the areas of the two case studies within the project differ highly in geology and apparently also in social structures. Due to having common features (material culture, time frame) as well as differences (geology, social structures), the project was predestined for further research on settlement and social structures. According to the theory of the SFB, research questions arise if certain resources, a set of resources or a different handling of them played an important role for the seemingly different socio-cultural dynamics of the Iberian Chalcolithic societies (SFB 1070 ResourceCultures 2016, 14).

2 Guiding Light – Project, Case Study, Terminology

Regarding the description of the case study, which is the core topic of this work, a specific theoretical approach and definitions related to central research questions of the Late Prehistory of Iberia will be stated. This chapter will serve as a guide to the most common terms and topics of this PhD-thesis. It aims to provide both the framework of the project and the initial situation of the surroundings of the area the case study is located in. The project A 02 'Many Ores and Little Water. Socio-Cultural Change in Connection with the Use of Resources in the Later Prehistory of the Iberian Peninsula' executed research on the prehistory of the Iberian Peninsula. Two case studies were conducted during the first phase of funding (October 2013–July 2017) in different regions of Iberia – one in the middle Tagus Basin, province of Toledo, and another in the lower Guadalquivir Basin, province of Sevilla – focussing on the end of the 4th and the whole 3rd mill. BC (Chalcolithic Period/Copper Age). In addition to details on the project, the chapter will provide definitions beyond the concept of the SFB 1070 ResourceCultures. Certain processes and activities or structures investigators are regularly confronted with when dealing with the settlement and economy of late prehistoric societies on the Iberian Peninsula will be discussed.

2.1 Project A 02 on the Iberian Peninsula

As the title 'Many Ores and Little Water. Socio-Cultural Change in Connection with the Use of Resources in the Later Prehistory of the Iberian Peninsula' suggests, resources and their possible influence on socio-cultural dynamics are the central issues both case studies have dealt with. The studies aimed to obtain comparable archaeological information from different areas, giving a supra-regional and long-term temporal perspective. The key question is whether change can be triggered by resources or if change can be restrained by not using a certain resource. What changed since the end of the Neolithic or during the Chalcolithic, and did this transformation happen because a new resource was used? Often the use of copper ore was said to have had changing influences on socio-cultural dynamics and the structure of society during the Copper Age. Apart from the role of ores, it can be discussed whether the local settlement conditions or some of them might have caused changes in society as well. In 2013, it still seemed that the different regions of the Iberian Peninsula were very heterogeneous in their socio-cultural developments. This view had been shaped by the low number of excavations and the unawareness of the research carried out on the Spanish Central Plateau (Mesetas)[4] in comparison to the well-researched and therefore normative south of the peninsula. Whether this heterogeneity of the archaeological record is reflecting the actual state of the Chalcolithic society and environment, or whether it only developed due to the different amounts of archaeological investigations in the centre compared to the coast, was supposed to be tested with two case studies within the project (Bartelheim 2013, 87 f.; 2016). They were carried out as PhD-studies, one in an area in Andalucía near Valencina de la Concepción (lower Guadalquivir Basin, province of Sevilla) where archaeological fieldwork had been carried out for more than 100 years already (García et al. 2013). The other study was conducted in the southern Meseta (middle Tagus Basin, province of Toledo) in the surroundings of the megalithic burial of Azután, which was first excavated in 1981 (Bueno 1991; Bueno et al. 2005a). On a macroscopic level, both regions show a similar cultural context (artefacts, burials etc.) but seem to have very distinctive natural settlement conditions (for details see chapters 3 and 4).

Among other topics, the works dealt with resources used during the Iberian Copper Age and intended to detect more or different resources,

4 In the following text, the Spanish Central Plateau will be referred to with its Spanish term Mesetas for both the northern and the southern part together, or as northern or southern Meseta when writing only about one of the plateaus.

which can be traced in the archaeological record and may have played a role in socio-cultural dynamics besides copper ore and agriculture alone. The key questions that had to be addressed to the detected resources to approximate to their former value/meaning were the following ones:

– How are these resources evaluated?
– What are the reasons for the given value and is a different evaluation possible?
– Can the modern valuation of a resource be proofed in a persuasive way?

By finding possible answers to these questions, an approach to changes in settlement structures and in the control mechanisms as well as in the routes of communication that involve the handling of certain resources was made possible and the objective of this thesis, which conducted research in on the southern Meseta, province of Toledo (Bartelheim 2013). But first of all, the situation of the strongly differing amount of research at the beginning of project A 02 and the case studies in 2013 will be described briefly before the central questions and objectives will be specified.

2.1.1 Initial Research Situation and Assumptions

Since antiquity, the Iberian Peninsula has been known for its wealth in raw materials (mainly mineral resources) and one of the most favourable agricultural landscapes in the Mediterranean area (emphasised already by the antique authors Strabo, Herodot and Hesiod). There is no archaeological proof that exploratory trips of people from other Mediterranean regions did take place before Phoenician times. During the millennia before the 'discovery' of the peninsula by external cultures, supra-regional exchange was said to have happened rarely, thus forming only a minor economic factor – at least this was the opinion of researchers mainly operating at the coastal regions. The famous abundance of raw materials and natural products primarily reflected the situation of the coastal areas and formed a clear contrast to the circumstances of the arid interior of the peninsula. This contrast can be traced to differences in the landscapes: The coastal regions were characterised by economic growth and favoured by agricultural and organic raw materials, whereas the inland regions had to deal with a lack of water and harsh climatic conditions. Almost all of the so far existing models of the Chalcolithic society and environment of the Iberian Peninsula are based on the archaeological record of the climatically favoured South and the Mediterranean coastal area (Bartelheim 2013, 88 f.). This is due to the focus of research on the Chalcolithic in this region as well as a larger number of construction activities in the respective regions close to the sea and larger numbers of excavations and finds. For the Mesetas, only a smaller number of archaeological finds is recorded. Similarities in burial customs and the material culture indicate that close cultural connections to the South must have existed. In general, the low number of finds and features is explained by less favourable climatic conditions: An economic focus on animal husbandry, the *policultivo ganadero*, forced people into mobility with long-term transhumant cycles (Bartelheim 2013, 89; Bueno et al. 2011; Harrison/Moreno 1985). Especially later in the Bronze Age, a rather low vertical social differentiation is presumed and discussed for these predominantly mobile societies. Unfortunately, this assumption is based on a low number of excavated settlements and burials as well as on survey finds and is wide open for critique.

Hitherto, the archaeological record for the Chalcolithic of the Mesetas knows only few settlements of limited size and mainly consists of burial sites, especially of the megalithic tomb type, most often without related settlements. The central plateaus of Iberia were seen as regions of unfavourable ecological conditions that did not allow sufficient nutrition for a large group of people and thus it was impossible to centralise the political power; societies were regarded as barely stratified in the interior of the peninsula. Hence, strongly centralised and stratified ruling systems based on a coercive system as developed and discussed for the south of the Iberian Peninsula (e. g. Arteaga 2001; Nocete 2001; Lull et al. 2010) cannot be assumed for the central plains (e. g. Garrido-Pena 1994; Díaz-del-Río 2004). Supra-regional connections did not seem to have played an important role back in the Copper Age of the Mesetas. Despite the presence of imported goods and material like ivory

or amber (Schuhmacher 2011; Murillo/Martinón 2012), the Iberian Peninsula seemed to have been largely isolated from long distance routes over a long period of time due to its geographical and topographical location (Bartelheim 2013, 89).

2.1.2 Key Questions and Objectives

During the last decades, investigations showed a higher variety both within the archaeological record of the Mesetas and the coastal areas (Blasco et al. 2007; Bueno et al. 2016a; Cerrillo 2011; Delibes et al. 2014; García et al. 2013; Valera et al. 2013 and futher more). The project aimed to test and verify or falsify the assumption of the egalitarian and mobile centre vs. a hierarchical sedentary South by conducting research on a supra-regional, comparative level. To achieve these goals, both case studies followed key questions to assure comparability of the results within the PhD-projects:

- What was considered to be a resource and how was it used?
- Which technological and logistical conditions were needed to use these resources and what kinds of ResourceComplexes can be identified?
- Which connections between the use of resources and socio-cultural dynamics are visible in the different regions of the case studies?
- Do these connections explain the clear differences in the socio-cultural developments of the south and the interior of the Iberian Peninsula?
- Does the archaeological record of the study areas provide indications for a characterisation of a utilisation strategy (of resources) during the emergence, the preservation and change of social entities that can be applied to other parts of the Iberian Peninsula (Bartelheim 2013, 90)?

With the concept of the SFB 1070 ResourceCultures and the central questions especially concerning project A 02, several key objectives are aimed at this phase of the project:

- Both the dynamics and the diversities of socio-cultural manifestations in relation to the use of resources shall be analysed and reconstructed. With the concept of the SFB, it should be easier to trace and identify resources more clearly within these processes as before. First, the available and used resources in the respective regions have to be determined.
- Resources are socially and culturally shaped constructs. This offers the chance to try and go beyond the traditionally discussed metals or agricultural products as trigger for social change in the Chalcolithic. It needs to be discussed whether potential resources were available that were not used. And if so, what might have been the reason?
- Relations between varying natural conditions, ways of resource use as well as differing socio-cultural interaction and transformation processes will be analysed. This especially applies if certain resources were culturally connoted and may not have fulfilled a purpose important for subsistence. Also, the identification of the role resources played in socio-cultural dynamics under different natural conditions is a significant point, if detectable in the archaeological record (Bartelheim 2013, 87 f.).

This summary of the project's initial ideas, its archaeological framework and the embedding within the concept and theories of SFB 1070 ResourceCultures helps to show the common theme of this thesis: resources, societies and development. Project A 02 is located in the core area of A. Developments. It is investigating 'development' on at least three different levels: Development 1) through time, 2) connected to subsistence strategy and 3) under different natural conditions in comparative case studies. A closer look at the case study that served as the starting point for this thesis will clarify the intriguing initial situation and interpretation as well as the location of the investigations on the southern Meseta.

2.2 Case Study – Azután (Toledo, Castilla-La Mancha)

Without going into detail, a short introduction in time and space of the case study will be given in the context of SFB 1070 ResourceCultures. Both the geographical background and chronology as well as the history of archaeological investigation will be covered at length in their respective chapters (chapters 3 and 4).

Especially the analysis of the settlement structure, the dynamics of these structures during the Copper Age and the natural conditions of each case study area are paramount the approach to answers regarding the key objectives of the project. Both case study areas are located in nowadays mostly agriculturally used landscapes. In comparison to urban and industrialised zones, a relatively good conservation of the archaeological record and paleogeographic information as well as a good accessibility of the potential sites could be assumed in a predominantly agricultural environment (Bartelheim 2013, 90).

Hitherto, the archaeological record of the southern Meseta does not allow an interpretation of social differentiation with distinct hierarchies as assumed for the south of Iberia during the Copper Age. To compare the archaeological evidence and the credibility of the existing socio-cultural interpretations, the two case studies simultaneously investigated predominantly the Chalcolithic period, both detecting new, impressive sites. The surroundings of the Chalcolithic site of Valencina de la Concepción in the province of Sevilla (lower Guadalquivir Basin) formed the centre of the first case study (Escudero et al. 2017). The second case study was located on the southern Meseta (middle Tagus Basin, province of Toledo) in an area where only megalithic burial mounds of the Neolithic and Chalcolithic period were known from prehistoric times (Bueno 1991; Bueno et al. 2005a) but evidence for settlements or larger sites was absent. The latter region, along the Tagus River and in its mountainous hinterland, formed the research focus of this PhD-thesis.

Both studies had the objective to focus on indications that might reveal interrelations between different settlement conditions, to investigate the way resources were used and their connection to mobility (routes, exchange etc.) and how they may have impacted the socio-cultural structures of the research areas (Bartelheim 2013, 94 f.; chapter 1.2).

The valley of the Tagus River seemed to show a settlement cluster without evident hierarchy or indicators for obvious social differences and hardly any information on the general subsistence strategies. The southern Mesesta and the southern Iberian coast share similar Chalcolithic finds as well as types of megalithic monuments. But yet a better accessibility to copper ores as well as fertile and favourable soil, which allowed a surplus production of agricultural goods, are supposed to have led to the emergence of centralised and hierarchical structured societies in the south of Iberia (Bartelheim 2013).

As mentioned above, the study, which is the main topic of this PhD-thesis, is situated on the southern Meseta. The municipality of Azután is located on the southern terrace of the Tagus River in the western edge of the modern province of Toledo between the Gredos Mountains in the North and the western foothills of the Montes de Toledo in the South (*fig. 2*). So far, archaeological investigations focussed on the transitional phase between the Neolithic and Chalcolithic periods as well as the Chalcolithic (approx. 3500–2000 BC) (Hurtado/Hunt 1999). The megalithic burial of Azután – named after the corresponding municipality – has been excavated in several excavation campaigns since the 1980s (Bueno 1991; Bueno et al. 2005a) and has been dated to 3800–2600 BC. The surroundings of Azután were thus predestined for further, more detailed studies. Even though the Chalcolithic material culture from the Mesetas is very similar to the one from the South, burials defined as ‘rich’ as well as large ditched or walled enclosures were missing. While in southern Portugal or Spain spaces of up to 80ha and more were enclosed (e. g. Hurtado 2008; García et al. 2013; Valera 2013a), the sites on the Mesetas are of sizes less than 1 to 4ha (Delibes et al. 2014; Díaz-del-Río 2003). Thus, the working hypothesis was that a different economic base of the society, more egalitarian social structures and a lower population density did not have the potential to concentrate the manpower necessary for the construction of large monuments. Through the reconstruction of the landscape, settlement patterns and the use of resources, socio-cultural dynamics will hopefully be presented and compared in regions with markedly different natural conditions: the fertile area around Sevilla and the semi-arid southern Meseta. Especially the analysis of least cost ways for an interpretation of the amount and significance of transhumance (Galán/Martín 2009; Murrieta-Flores 2012) in combination with strontium isotope analyses (e. g. Díaz-Zorita 2013) as a

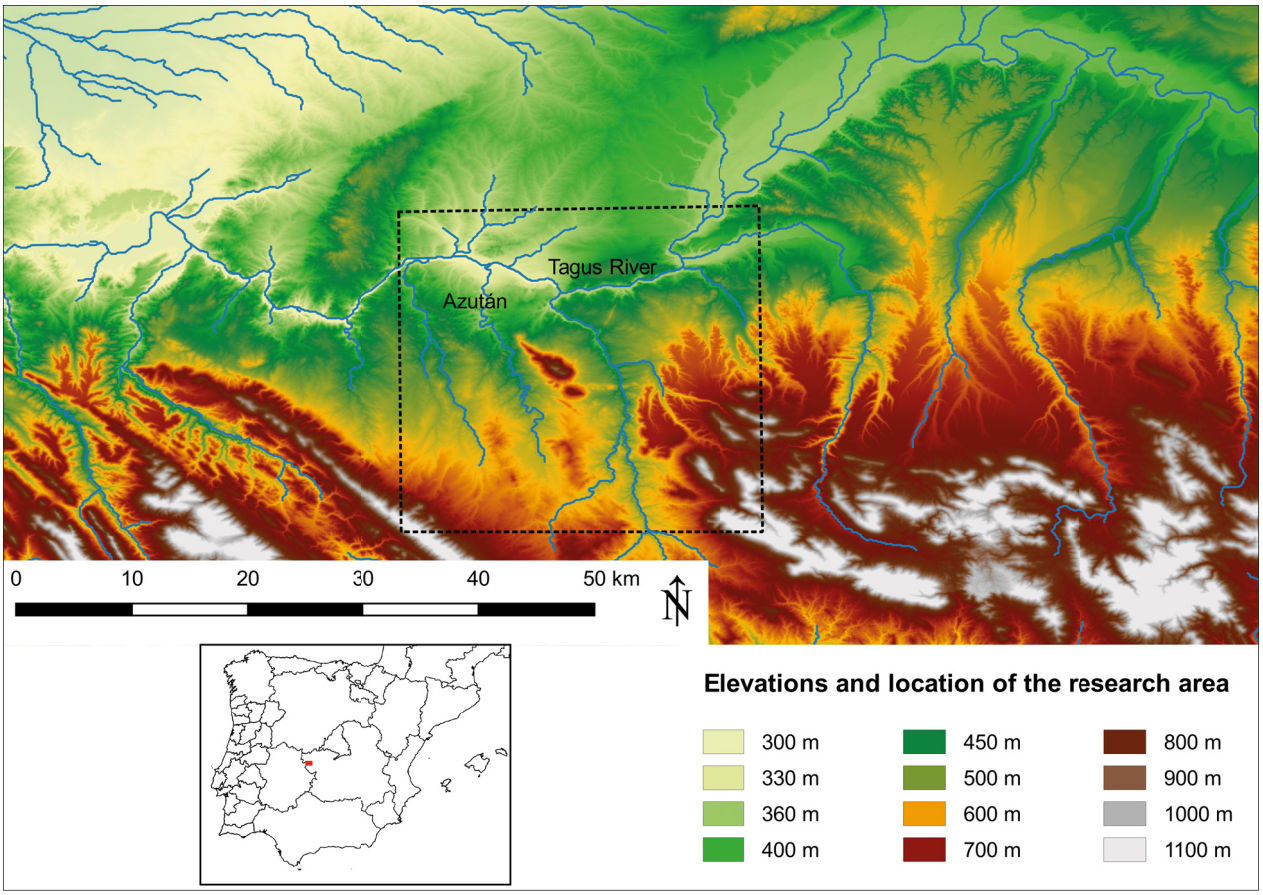


Fig. 2. Top: Location of the research area of the study in the western part of the province of Toledo in the central Tagus Basin. Bottom: Location of the research area indicated on a map of the Iberian Peninsula (red).

measuring tool for the degree for mobility may lead to interesting results. This study aims at the reconstruction of settlement patterns as well as at the investigation of mobility and communication: Which ways of control of the landscape – e. g. trade or communication routes – had been used?

In chapter 1.2.4, the sector divisions of the SFB 1070 were briefly discussed (curse and blessing, conflicts, sacralisation). Throughout the work in the collaborative research centre, each PhD-project was asked to choose its own focus on one sector division, which resulted in the selection of 'conflicts' as another motor for developments (positive, negative or neutral) within prehistoric societies for this study. Conflicts not only dominate the progress or regression of a society but also appear among different approaches of archaeological research on Iberian Copper Age.

The 4th and the 3rd mill. BC on the Iberian Peninsula are characterised by the phenomenon of ditched and walled enclosures, which will form a central topic of this thesis, especially regarding social conflicts. The interpretative research history of enclosures on the Iberian Peninsula started with an interpretation as fortifications and a product of conflicts. Nowadays, it is assumed that the enclosures have had different and probably often multiple uses, each site having a different biography. Not every ditched or walled enclosure had the same use as a refuge, a ritual place or a cattle kraal, but each of them was to some extent the product of social conflicts. Indicative of this is the fact that spaces were surrounded by ditches or walls, which created an inner and an outer area, maybe demonstrating possession and not only separating ground but also people, forming groups of enclosed and unenclosed. They may also have served as gathering points where social issues were discussed. As a matter of fact, conflict penetrates all divisions of the SFB, as conflict is inherent in all of them: A conflict can be both, curse or blessing, for a society depending on its solution

and the sacred world causes conflicts not only between different ritual beliefs but also within the same religion. Movements, developments and valuations have tendencies to lead to conflict as well with their need for space and categorising objects or actions in groups of positive/negative, new/old, yours/mine etc. In this way, 'conflict' provided the most holistic sector division to work with in a prehistoric surrounding, especially for a topic that is confronted with a lot of different areas of social interaction, such as the one presented here.

2.3 Terminology as a Theoretical Approach

After having dealt with the SFB-specific definitions that will be applied in the following chapters, this part about terminology is presenting topics closely related to the Late Neolithic and Chalcolithic research on the Iberian Peninsula. Current models and research questions concerning Iberian Late Prehistory can be approached. Though no additional or new definition will be stated, pros and cons for certain definitions and models will be developed in the subsequent chapters based on the case study results.

As already indicated in chapter 1, several key issues are going to be of special relevance: societies, the economy and resources. Did the use or disuse of a certain resource lead to varying developments within the societies of the Iberian Peninsula? Or does the society encourage the use of a resource by charging it with symbolic meaning? If so, how did this effect the economy? Though prehistoric archaeology can only approach questions like these with the help of detected materials and structures, developing ideas about ancient societies is what helps to make the past a little more comprehensible. Reducing research to classifying artefacts and structure types would give prehistoric people an abstract and two-dimensional appearance, disregarding the complexity of social processes. Definitions, models of economy and society as well as ideas about ritual beliefs are the tools for creating a three-dimensional model of early communities considering processes and interactions. Besides the three core issues of the SFB (chapter 1.1), three further issues are significant and will shortly be addressed in the following pages. Transhumance, *policultivo ganadero* and the organisation of societies focus on models of activities, economies and communities, mainly applying ideas developed in geography, ethnology and especially prehistoric archaeology. Transhumance and *policultivo ganadero* are discussed as possible central subsistence/economic systems of Iberian Late Prehistory, and inseparably the question about the organisation of prehistoric societies arises. Several ideas about the organisation of societies will be given that are under consideration for the Iberian communities. First, the meaning of the term transhumance will be outlined, which will help with the explanation of *policultivo ganadero*, while the chapter will be closed by the complex situation of dealing with ancient structures of societies.

2.3.1 Transhumance

The term 'transhumance' has no entry in the Webster Engish dictionary. When searching for the term ('Transhumanz') in the Duden dictionary of the German language and for foreign words in the German language, the following description can be found: Transhumance is 1) a rural economy in which herdsmen drive the cattle to distant summer pastures (e. g. alpine) or 2) migratory sheep farming with repeated change between distant pastures (known e. g. from the south of Germany). The term 'transhumant' found its way into German and English through the French word 'transhumance' (verb. *transhumer*), derived from the Spanish 'trashumar', which literally means 'to lead to the pasture' and describes the act of walking with the herds. The Brockhaus encyclopaedia broadens the definition with a slightly more detailed description of transhumance: It is described as a specific form of the semi-nomadic distant pasture economy when, based on the seasonal climatic changes, cattle or sheep and goats shift between pastures that are a long way from each other. It is most common that the herds spend the summer in the mountains and return to the lowlands during the winter months. In contrast to alpine farming, hibernating the animals in stables is not common. Whereas in pastoralism (nomadic herdsmen) the owners of the herds walk with their animals,

herdsmen are involved in the process in transhumance. The description of transhumance informs the reader that, mainly in Mediterranean countries and the USA (here in the state of Utah), transhumance is practiced and widespread. In Germany, the migratory sheep farming between the Swabian Alb, Black Forest and Upper Rhine Plain is a way of practicing transhumance (Drosdowski et al. 1990, 788; Brockhaus 1993, 314).

D. Zöbl (1982) differentiates three types of pastoralism in her work about the transhumance of the European Mediterranean countries during Medieval times from a historical, geographical and folkloristic perspective. Zöbl's definition does not vary extremely from the one stated above. She also comments on the difference between transhumance and the other two pastoral systems. Transhumance is defined as climate-related seasonal migrations predominantly of sheep between the summer pastures in the mountains and the winter pastures in the lowlands. The owners are sedentary farmers or exclusively dedicate themselves to animal husbandry, while the herd is accompanied by a professional herdsman. Mainly due to climatic conditions, the animals are generally not kept or hibernated in stables. Though animal husbandry and agriculture are both in the hands of the owner, they are not directly connected in an administrative context. Transhumance can easily be distinct from nomadic pastoralism and alpine economy (mountain pastures). While in nomadic pastoralism the livestock is accompanied by the whole social community, in transhumant societies the herd is only accompanied by professional pastoralists. Alpine herding practice differs in that respect to transhumance by short migration in summer and climatic conditions determine the need to protect the cattle in stables (Zöbl 1982, 1 f.).

The article by W. Schenk and I. Eichfeld on 'animal husbandry and pasture farming' in the 'Reallexikon der Germanischen Altertumskunde' (2006) adds prehistoric and historic information to the different types of cattle breeding and pasture economy: The entry about pastoral economies states that this economic branch, which probably has been practiced in several European regions for millennia, contributed a lot to the formation of large areas of grassland due to the natural selection of plants that tolerate grazing. Such development of the vegetation can be detected by pollen analyses, even though the reconstruction of prehistoric pasture economy (alpine, nomadic or transhumant) is complex and difficult because it barely leaves any material traces. Thus, a set of different analyses besides ethnological comparisons and historical examples has to be applied to approach the prehistoric situation. Ideal for a comprehensive analysis are favourable conditions for the detection of sites as well as a high quantity of finds. For the Roman and the Medieval period, both images and written sources are available and can provide evidence of the practice of transhumance or other types of pastoralist systems. These are absent in prehistory. For those earlier periods, palynological and archaeobotanical studies can provide an indication of a pastoral system. As during the beginning of animal husbandry and agriculture, Neolithic herdsmen drove the cattle on pastures in the woods – open grassland barely existed – the environment slowly turned into an open, park-like landscape (clearance of vegetation). This results in a proliferation of heliophilic (sun-loving) plants and smaller plants, like bushes, that can be traced by the higher amount of their pollen. Spores of coprophilic fungi suggest a significant increase in animal husbandry (Schenk/Eichfeld 2006, 352 f.).

Transhumance is a pasture farming system with a seasonal change of locations and, as already mentioned, not the whole family or community is moving with the animals, but single herdsmen accompany the cattle from pasture to pasture, while the majority of the sedentary community that is not moving with the animals is engaged in agricultural activities, locational animal husbandry and probably hunting to guarantee the surviving of society. Taking its agricultural and pastoral components together, it becomes evident that it is – for the main part of society – a sedentary form of agropastoralism. Predominantly animals that are adapted to a mobile life and used to living in herds are kept for breeding. These are goats, sheep and cows for the alpine economy or sheep, cows and horses in the nomadic pastoralism. In the transhumant economy, the most common animals are sheep. Hence, transhumance is an agricultural-pasture farming supplementary economy and especially common in regions in which the

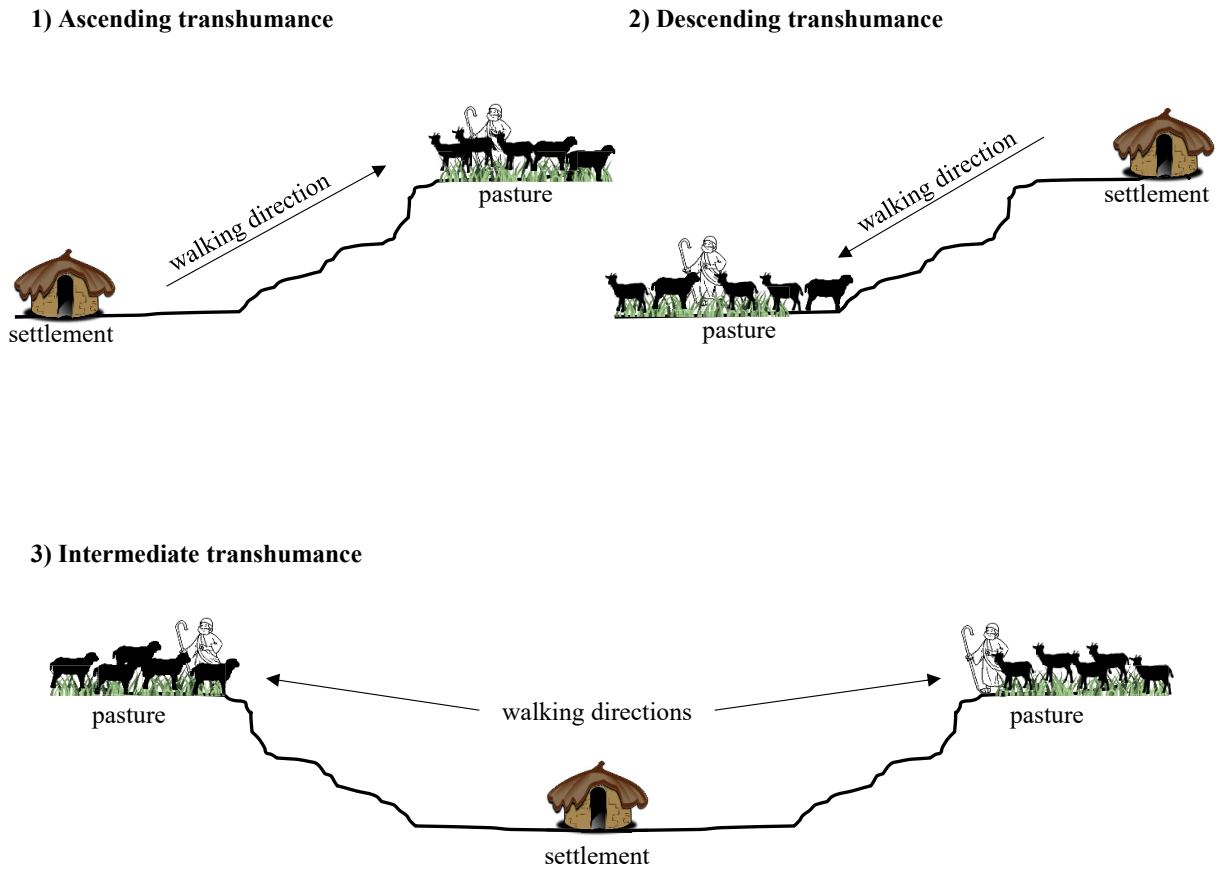


Fig. 3. Model of the three main directional types of transhumance: 1) ascending, 2) descending and 3) intermediate transhumance.

mountain areas can be used as pasture during the summer. When the mountains are covered in snow during the winter, the milder climate of the lowlands provides the necessary pasture. The other way round, in lowland areas, which become too hot and dry during the summer, the more temperate climate of the mountainous areas is used as pasture during this time of the year.

Transhumance can be divided into three main types, referring to the direction of the path: ascending (normal), descending (inverse) and intermediate (mixed) transhumance (*fig. 3*), depending on the seasonally changing climatic background of a region. The latter means that the place of departure is situated between summer and winter pastures. Besides this horizontal transhumance, there are also examples for vertical transhumance (for example ascending transhumance etc.) as for example practiced in Flanders. As transhumant pastoralism is in direct competition with other economies like forestry and agriculture for land use, first written testimonies regulating the use of paths and areas appeared early: Specific rules are mainly known from the High Middle Ages. In this connection, it is uncontroversial that this type of pasture farming seems to have played a significant role in the development of peripheral settlement areas at least during the formation and use of new pastures and path systems (Schenk/Eichfeld 2006, 352–355).

For the Iberian Peninsula, written evidence of transhumance exists since the establishment of the *mesta*.[5] As soon as rules and authorisations appear in written form, it can be deduced that the subject of these rules has been practiced long

5 The *mesta* in Spain was 'the guild of owners of transhumant livestock, especially merino sheep, founded in 1273 by Alfonso X to enforce the payment of certain taxes, and having great political power' (Lexico 2020).

before. For several decades, a connection between megaliths and transhumance ways was discussed. It was hypothesised that these Neolithic and Chalcolithic sites (tombs or stelae) had been constructed as visual markers for the least exhausting and safest paths besides other social meanings which they certainly possessed (e. g. ritual, ancestral tradition, territorial markers). Thus, the location of megaliths in the investigated areas was compared to the courses of the *cañadas reales*.[6] Certain correspondences between them were detected; for example, the location of the dolmen in the west of the province of Toledo along the *cañada real leonesa* (Higgs 1976; Bueno et al. 2005a; Galán/Martín 2009). Also, the calculation of least cost paths between megaliths and other contemporaneous sites matches the transhumance routes (Murrieta-Flores 2012). These correlations are commonly interpreted as a proof for transhumant practices back in the 4th and 3rd mill. BC (chapters 7 and 8). Later on, during the Iberian Iron Age, rock carvings of rams situated along transhumance paths were interpreted as confirmations of seasonal migration (Klein 1920). It has been tried to prove transhumant activities for the Visigoth period (Toledean Empire: beginning of the 6th until the first quarter of the 8th cent. AD) with passages from the 'Lex Visigothorum'. The resulting ideas are highly questionable, as they either referred to shepherds or to travellers, but not to herdsmen moving with their flock. Hence, these references cannot serve as proof of practiced transhumance. It is not until the time of the Spanish Reconquista that transhumance eventually can be verified as a practiced economic system thanks to written sources. This development of transhumance being a major economic system was a consequence of the conquest of the southern pastures, which assured the hibernation of cattle of the northern territory in the mild South. During the 11th and 12th cent. AD, an intensification of animal husbandry can be observed in the north of the Iberian Peninsula that is reflected in the allocation of grazing rights. Amongst other examples, a monastery in Navarra gained the privilege to let its herds graze in the whole kingdom of Navarra. Although the written sources do not contain direct evidence for a transhumant economy, migration can be assumed due to the topographical situation of the Navarran territory, which enabled seasonal change of pastures (Zöbl 1982, 7–10). The use of grazing areas that were predominantly assigned to the monasteries obviously increased the conflict potential between peasants and pastoralists. The use of pasture areas was not part of the written sources till the end of the 13th cent. AD when the *mesta* was founded.

What made the formation of the *mesta* necessary? The heart of its development lies in the competition for spaces between transhumance and other economic systems. Because of that, the royal protection of single herd owners was renewed and extended to all herd owners to assure safe travels on the migration routes. It was written down in 1273 AD and allowed the members of the *mesta* tax-free transport of all means necessary to sustain both sheep and shepherd. A minimisation of local taxes along the routes was supposed to relieve the transhumant economy by minimising the taxes for shepherds to town gates only. Additionally, they were given the right to sell up to 60 animals tax-free in the towns along the way. Of course, the crown had a claim to the taxes paid at the town gates and in return promised to maintain the transhumance ways and to protect the shepherds on their way. By the end of the 14th and the beginning of the 15th cent. AD, this system did not work anymore. The reality showed that the royal officials were not able to keep local taxes on the mandatory level, leading to many herd owners establishing direct agreements with the local authorities without taking the officials into account (Zöbl 1982, 13).

This heavily abbreviated presentation of the historical context of the *mesta* on the one hand explains why Spain to this day is considered to be a traditional country of transhumance, and on the other hand demonstrates the historical and probably also prehistorical depth of transhumant practices. Obviously, such a structured and organised system as the *mesta* cannot be applied to prehistoric societies but it serves as a description

6 *Cañadas reales* are the traditional transhumant paths in parts still used as transhumance ways nowadays. The paths that are called royal (*reales*) go back to the foundation of the *mesta* by Alfonso X in 1273 and were regulated by royal edict.

of the development of the transhumant type of pasture farming. A closer look at the traceable development of transhumance during the centuries AD can support the development of ideas on how transhumant practices may have manifested during Neolithic and Chalcolithic times – if they were practiced at all – and what might remain visible of them.

Not only the calculation of least cost ways and the connection of megaliths and historic *cañadas reales* hint towards a high mobility or at least interconnection in late prehistory (e. g. Bueno et al. 2005a; Galán/Martín 2009; Murrieta-Flores 2012), but faunal and human remains as well as objects and sites can reveal mobility and contact. Similar objects and site types on the northern and southern Meseta and in the south of the peninsula suggest that at least objects and ideas travelled throughout the Iberian prehistory (amongst others Bueno et al. 2016a). Strontium isotope analyses of enamel of human molars (Hillier et al. 2008; Díaz-Zorita 2013) conducted on southwestern Chalcolithic sites point to mobility of humans and animals as well. In the case of La Pijotilla, almost 30% of the investigated individuals showed non-local traces in their isotopic fingerprints (Díaz-Zorita 2013, 256). The cited examples give clear indications of mobility both in the south and in the centre of the Iberian Peninsula. The suggested transhumance for the Mesetas has automatically been regarded as a nomadic way of life in former research. Remembering the definitions of transhumance, it can be clearly distinguished from nomadic pastoralism because not the whole social group, but professional herdsmen are walking with the herds, while the rest of the group is sedentary and dedicated to agriculture. As already stated in the paper of Schenk and Eichfeld (2006), transhumance cannot be proven with written sources in prehistoric times. Several analyses can help to trace indicators of a transhumant lifestyle. Besides an analysis of strontium isotopes as direct indicator of mobility, analyses of pollen, phytoliths and macro fauna give indirect proof of agriculture and animal husbandry. Especially since the end of the 1990s, palynological and archaeobotanical methods have been applied to sites in Central Iberia, revealing interesting results concerning the question of a nomadic versus a sedentary way of life. Luckily, two sites in the province of Toledo (the Valle de Huecas and the dolmen of Azután) also contributed data to the reconstruction of both the vegetation of their surroundings and the subsistence strategy of the prehistoric communities. The results of the Toledean sites – especially Azután and the tumulus of Castillejo – demonstrate that the location on river terraces and close to arable land are preferred for prehistoric settlement. The palynological studies support a clearance of the landscape, as they show an increase of grasses, herbs, shrubs and bushes as well as oaks throughout the Neolithic. An increasing amount of pollen of coprophilic fungi indirectly indicates a rise of the number of animals, too. This was also recorded in the structures below the chamber of the dolmen of Azután, which clearly date back to times before the erection of megalithic monuments at the beginning of the 4th mill. BC. The presence of cereals that derived from Castillejo (Huecas) and from the dwelling below the dolmen of Azután additionally confirmed the practice of agriculture in the 5th mill. BC on the southern Meseta. The investigation of faunal remains from the site of Los Picos (Huecas) revealed pigs (both boars and domesticated) as the dominating part of the fauna, followed by sheep/goat and cattle. In the dolmen of Azután, ovicaprids clearly dominated. The processing or use of olives, wheat, acorns and other plants was proven by phytoliths, pollen and residue analyses as well as the use of honey. The plant types detected in the analyses of materials from Huecas and the dolmen of Azután ripen during different times of the year. Thus, cereals, honey, olives and acorns as well as wild and domesticated animals provided the food supply throughout the seasons; a nomadic lifestyle cannot be supported by this data (*fig. 4*). An occupation of the sites throughout the year may be indicated by the presence of seasonally available food or the slaughter age of animals, contradicting an unequal distribution of mobile animal husbandry and agriculture. The results of the conducted analyses point clearly to a sedentary way of life: the clearance of the landscape, an increase in domesticated animals and an adaption to the seasonality of

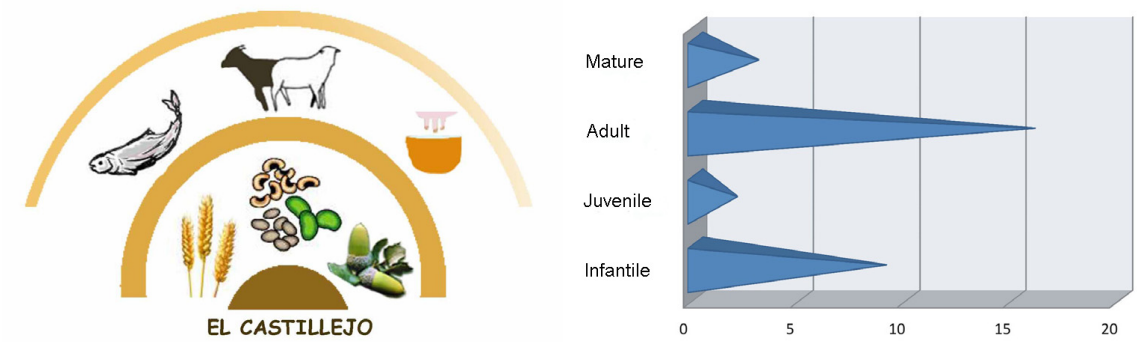


Fig. 4. Example from the burial mound El Castillejo (Huecas, Toledo) for the seasonality of the human diet as well as the slaughter age of the domesticated animal. Besides the sedentary character of this community the use of secondary products is indicated as well (after Bueno et al. 2012a, 71).

wild and domesticated plants. This does not mean that people or objects were not mobile, as the comparison of site types and material culture between the northern Meseta and the south and the southwest of the Iberian Peninsula indicate contacts with the southern Meseta (Bueno et al. 2002; 2005a; 2009; López/López 2005; López et al. 2009; Liesau 2009, Sánchez 2005; Tresserras/Matamala 2005). Transhumance in the centre of the Iberian Peninsula cannot be considered a nomadic practice of animal husbandry, but all the data analysed so far are pointing to transhumance being a part of the way of living of a sedentary society of which parts walked with the herds, while most of the community practiced farming and used the resources of the rivers and forests. Resources near Neolithic and Chalcolithic sites formed a supplementary source of nutrition in addition to domesticated animals and agriculture, ensuring subsistence. Whether animals like sheep, goats and cattle were driven to pastures far away or whether transhumance has rather been practiced on a regional level could not yet be established.

A stronger focus on the reconstruction of the environment of the 4th and 3rd mill. BC (considering both floral and faunal remains) as well as a discussion of the paleoenvironmental data of several Central Iberian sites close to the study area will be presented in chapter 4.2. As already mentioned earlier, transhumance and agriculture are inseparable topics. Because of that, the following subchapter will deal with what has been introduced to prehistoric research as *policultivo ganadero* in more detail.

2.3.2 *Policultivo Ganadero* – A Type of Agropastoralism

The concept of *policultivo ganadero* is inspired by A. Sherratt's (1981) model of the so-called Secondary Products Revolution and it was tested on faunal remains of late prehistoric sites of Iberia between 5000 and 1000 BC (Harrison 1985; Harrison/Moreno 1985). Sherratt describes the use of secondary faunal products (traction, dairy products etc.). An increase in their use is visible in both the quantity of animal bones in the archaeological record and in traces on the skeletons of domesticated animals. Archaeozoological studies on faunal remains show that animals – besides the use as meat provider – have been used for traction as well as for the production of dairy products. This animal husbandry combined with the Mediterranean polyculture[7] based on plants is called *policultivo ganadero* (Harrison 1985, 75). A specialisation in animal husbandry on the Iberian Peninsula has been detected by R. J. Harrison's research for the second half of the 2nd mill. BC, especially when comparing sites over a large area (Harrison 1985; Harrison/Moreno 1985).

In his model of the Secondary Products Revolution, Sherratt states that certain abilities or

7 Polyculture is the opposite of monoculture. A monoculture comprises of large agricultural areas based on just one plant species and one annual harvest (single crop). Polyculture based on different plant species of an ecosystem enables multiple crops because the plants ripen at different times throughout one year (amongst several dictionary entries see also Chrispeels et al. 1994).

utilisation methods of domesticated animals were not included in the original complex of domestication in oriental Europe and western Asia but appeared approx. 3000 to 4000 years later. These secondary products include the option of using cattle for traction as well as to breed animals for milk and wool production. The use of these secondary products is accompanied by the intensification of agriculture as well as an intensified transport of goods and people, hence both exchange and the personal mobility increased. Additionally, ploughs pulled by cattle enabled the people to transform larger areas into arable land. Other secondary animal products such as the milk of cows, sheep and goats as well as the wool of predominantly sheep facilitated the development of a strong economy in areas that were initially regarded as unfavourable for the maintenance of large groups of people because they lacked the amount of fertile soil necessary for the nutrition of larger groups. Milk and fabric production centres could emerge in the formerly considered unfertile areas as products made of wool and milk could be traded for sufficient food. Eventually the secondary products fostered the settling of marginal areas as well as the expansion of the pastoral economy with a supraregional transhumant economic branch. Sherratt even extended the impact of the Secondary Products Revolution from economy to society arguing that not only economic but also social development took place (Sherratt 1981, 262 f.; Harrison 1985, 75). The key points of Sherratt's model find empirical support in the collections of faunal remains from Iberia (Harrison 1985, 75). Starting in the 5th mill. BC, the archaeological sites are characterised by a large range of domesticated animals as well as some cereal plants (sheep/goat, pig, cattle, wheat and barley). A rapid increase in animal husbandry and a larger interest in milk and traction does not become visible in the archaeological record until the Bronze Age. This is especially well traceable in the Bronze Age sites of La Mancha and Andalucía, mainly due to excellent faunal collections (Harrison 1985, 75–78). Harrison's opinion is based on the archaeological record available in the 1980s. Residue analyses of the earliest pottery of the eastern Mediterranean proved the existence of milk lipids in vessels. As sheep and goats of the western Mediterranean mostly derived from the East, it is very probable that the secondary product 'milk' has been used long before the Bronze Age (Evershed et al. 2008).

Particularly regarding the discussed significance of transhumance on the Spanish Mesetas and the reputation of the centre of Iberia as an almost deserted, marginal area, the statement of Harrison about sheep and goats as the animals dominating the transhumant economy in more arid regions will be stressed. It emphasises that a higher number in sheep and goats does not necessarily reflect a lower degree in social organisation, but mainly shows a good adaption to climatical and geographical conditions. Sheep/goats have a huge potential for a stabilisation and an increased efficiency of mixed farming. In addition, they can function as a buffer in times of distress and conflict. As Harrison states explicitly 'these animals have many advantages over the larger livestock; they breed at an earlier age, and more quickly, and so are easier to replace; they have a marked tolerance of the droughts which are a perennial feature of the Iberian climates; and they provide milk, manure, and the ability to tread a seed bed to a fine tilth. Perhaps most importantly of all, they are a basic resource to which communities can turn in their moments of greatest stress. When drought or crop failure strikes, or pestilence or destructive raiding by other groups saps the strength of the community, sheep and goats provide a buffer against complete destitution for the survivors. They can extract nourishment from abandoned or marginal lands, either in a pastoral system of exploitation, or a loose-herding one' (Harrison 1985, 92 f.).

The adaption of sheep/goats to a more arid and warmer climate might be visible in the percentage of individuals in the archaeological material of prehistoric sites. The more arid the surrounding environment the higher the number of sheep/goats should be while the amount of cattle should decrease. The comparisons of animals per site and per period between 5000 and 1000 BC and predominantly of southwestern sites in Spain revealed that cattle remained at almost the same ratio throughout the periods, whereas the amount of sheep increased during the 2nd mill. BC compared to the previous millennia. These differences are more likely to have emerged due to a higher level of regional

economic integration than because of a worsening of climate to drier and warmer conditions (Harrison 1985, 96). As Zöbl (1982) stated and is further supported by scientific analyses (chapter 2.3.1), the different types of animal husbandry are dependent on many factors and their development is specific to the historical and geographical background of the region pasture farming is practiced in.

Policultivo ganadero as a type of agropastoralism can be described as the combination of farming and animal husbandry to probably equal extents. The definition of transhumance points out that the farming component increases as societies live a sedentary life and only few professional herdsmen travel with the animals. The concept of the *policultivo ganadero* developed as a reaction to more arid conditions in Central Spain. In analogy to historical economic systems and on the base of archaeozoological material deriving from excavations of prehistoric settlement sites, an economic concentration on animal husbandry has been postulated. Why is *policultivo ganadero* important for a case study dealing with the period between the end of the 4th and the end of the 3rd mill. BC? Closely connected to the breeding of mobile animals like cattle, sheep and goats is the mobility of the human owners or herdsmen, which often oblige to long-term transhumance cycles. This mobility is used as an explanation and responsible factor for a rather temporary seeming settlement architecture until the Iron Age of Central Spain. Primarily mobile societies are usually considered to have had a comparatively low vertical differentiation (Harrison/Mederos 2000; Bartelheim 2013). So far, the mixed crop agriculture and animal husbandry had mainly been appointed to the Bronze Age in which a specification in animal husbandry becomes extremely evident (Harrison 1985; Harrison/Moreno 1985). The ideas of Harrison were established over 30 years ago and are hence based on the archaeological record of the early 1980s. As already indicated while discussing the term transhumance, the image of the Central Iberian Neolithic and Chalcolithic has shifted during the past years due to a larger amount of investigations. The ideas of the practice of *policultivo ganadero* and thus a rather sedentary population can nowadays be applied to and tested on these periods also because the amount of known 4th and 3rd mill. BC sites noticeably increased since the mid-1980s. Nowadays the known number of Chalcolithic settlement structures of the Mesetas is still low and they are mainly of small dimensions. This is contrasted by a higher number of burial sites – though still less than in the Iberian Southwest – dominated by megalithic tombs.

Environmental data derived from the excavations at the sites of Huecas and of the dolmen of Azután (Bueno et al. 2002; 2005a; 2012a; López/López 2000; 2005; López et al. 2007a; 2009) in the province of Toledo and additional data from the province of Cáceres point to a practice of the *policultivo ganadero* in Central Iberia long before the Bronze Age. The development of an early *dehesa* landscape and its related economy, typical for modern Iberia, played a central role in the emergence of this type of agropastoralism. A *dehesa* is a savannah or park-like landscape comprised of vast grassland with scattered trees and two main vegetation layers. The tree level consists of oaks, dominated by holm and cork oaks. The herbaceous level varies much more; this in part includes vegetation covers of cereals or native plants, which are then used as pasture for grazing animals. The *dehesa* is an anthropogenic ecosystem, shaped by people intervening in the pristine forest and encouraging its deforestation either by fire or by using it as grazing space for the livestock. This causes the cover of shrubs and bushes to disappear and generates new open spaces where even more cattle can be fed. In the traditional system of the *dehesa* sheep, goats, pigs and cattle played an important role and formed a highly diversified economy that comprises of a multi-purpose agroforestry until today. For the herbaceous level, the trees serve as a water resource because their shade provided by the leaf canopy creates a cooler climate and enables the roots of the tree to store water. Additionally, a well-kept *dehesa* secures the availability of nutrition for animals and people (grass, cereal, acorn) and is sometimes also used as a source for firewood or construction material (Joffre et al. 1988; 1999, 57–62; López et al. 2007a, 494).

Nowadays *dehesa* is frequently used to describe this certain type of landscape but originally the term did neither refer to a certain structure of forestry nor to a type of landscape or a special type of agropastoralism. The term *dehesa* derives

from the Latin 'defensa', which means 'defence' or 'restriction' and referred to a restricted territory that primarily comprised pastures. *Dehesa* described a parcel or plot of land with special regulations concerning grazing rights. In any case, the term as it is used today is ambivalent and describes a concept regularly used in politics, economics as well as in different academic fields (Ezquerra 2009, 6; López et al. 2007a, 494). A subsistence system based on *dehesa* as described especially by J. A. López and his colleagues (2007a) is assumed to have already existed in late prehistoric periods of Iberia. But how can the beginnings of a *dehesa*-like landscape be approached? How can it be traced in the archaeological record? It is necessary to take the available palaeoenvironmental data into account, especially fossilised pollen and spurs, which can be detected in deposits of lakes, wetlands and archaeological sites. In the palynological record, a *dehesa*-landscape would be characterised by the dominance of herbaceous plants, an absence of shrubs and bushes and a sparse cover of trees. Additionally, coprophilic fungi would hint at an increase of animals just as the use of fire for the clearance of the forest can be assumed by the presence of the carbonicoli types (López et al. 2007a, 495 f.).

Studies conducted on the two Neolithic sites Los Barruecos and Cerro de la Horca in the province of Cáceres (located in the west of the research area of this case study; chapter 4.2) had the objective to detect human intervention on the pristine forest that eventually created a landscape similar to the modern *dehesa* (López et al. 2007b). The key concern was to find out since when pastoral and agricultural systems were clearly connected. López and his colleagues found out that the vegetation at about 5000 BC was not yet massively influenced by humans. Although local cultivation of cereals close to both sites could be traced for the Early Neolithic, the presence of bones of domesticated animals was not high enough to declare a significant practice of pastoral activities. Additionally, the percentage of tree pollen is higher than 40% during that period, which is an indicator for a forested area and a high number of shrubs and bushes could be revealed as well (López et al. 2007a, 497 f.). By the beginning of the second half of the 4th mill. BC, a change in the vegetation can be detected in the site of Los Barruecos: The gradual deforestation due to the effect of livestock breeding on the vegetation clears the way for pastures. According to López and his team, the type of pasture identified is doubtlessly of anthropogenic nature: Plants like plantain (*Plantago* spec.), stinging nettle (*Urtica* spec.) and those of the goosefoot family (Chenopodiaceae, now part of the Amaranthaceae) characterise these pastures (Behre 1981; Galop/López 2002). Their percentages increase sharply during the Middle Neolithic period. They are the result of intensified pastoral activities, which are also reflected in a larger amount of fungi of the coprophilic type (López et al. 1998; 2000; 2007a, 499). Furthermore, the way in which cereal cultivation spread becomes evident with the help of pollen data from the second half of the 4th mill. BC: With systematic fires, the forest was cleared of the shrub and bush cover as well as of smaller trees. The deforestation created new and large open spaces as grazing areas, the ashes fertilised the ground and facilitated the development of agriculture. An abundance of fungi of the carbonicola family present the best evidence for the use of fire to gain arable land and pastures, as they prefer burned organic layers to reproduce (López et al. 2007a, 499–501). In conclusion, the researchers were able to determine the origin of the *dehesa* in the Extremadura to the Middle Neolithic (around the middle of the 4th mill. BC), when direct human influence on the pristine forest becomes evident in the use of fire to clear the forest so that in a next step the cultivation of cereal was possible as well as keeping larger amounts of livestock (López et al. 2007a, 501).

For the Toledean sites of Huecas and Azután the clearance of the landscape, the spread of oaks and an increase in the amount of coprohilic fungi can be traced as well, which strengthens the arguments for the expansion of the *dehesa* already by the end of the Neolithic of the Mesetas (*fig. 5*). So far, pigs, sheep and goats present the major part of the known faunal remains. Features connected to the use and processing of wheat, acorns and olives allow insights into the seasonal use of agricultural and agroforestal products (chapter 2.3.1; *fig. 4*). *Policultivo ganadero* as a mixed crop agriculture with a transhumant component and a sedentary society can clearly be proven for the beginning

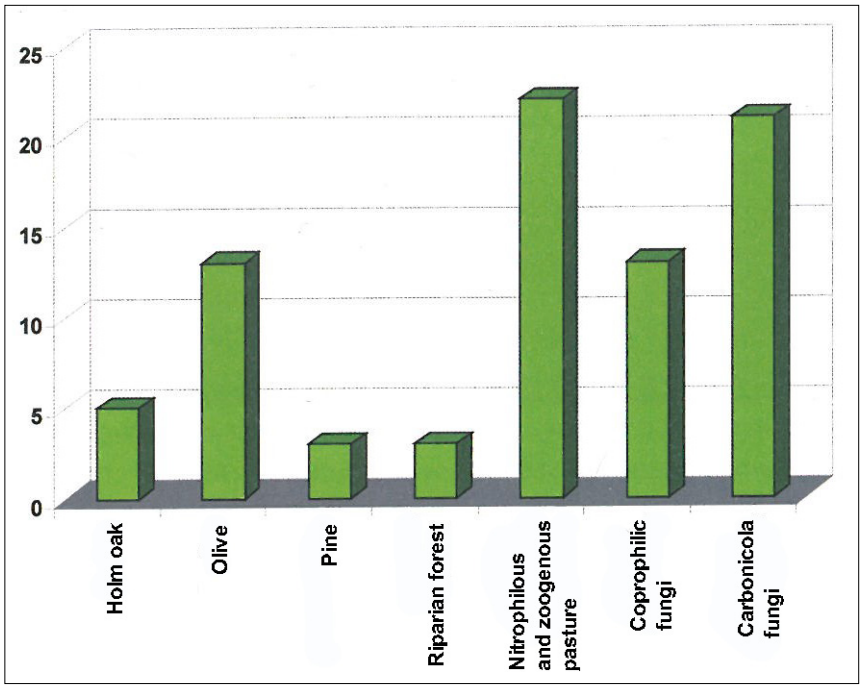


Fig. 5. Palynological analyses in Huecas (Toledo) clearly indicate anthropogenic deforestation through the amount of the *carbonicola fungi* and an increasing number of animals by the amount of coprophilic fungi. It demonstrates the clearance of the landscape to a *dehesa*-like environment (after López et al. 2009, fig. 4, 105). Y-axis showing the percentage of each species listed on the X-axes.

of the second half of the 4th mill. BC in the central parts of the peninsula. The argument that the exploitation of the *dehesa* did not spread from the west of Iberia to the central tablelands before the construction of the megalithic monuments must be negated because evidence for this kind of landscape has been found in the pre-construction layers of the megaliths. The *dehesa* seems to have been a genuine development and not to have been introduced from any of the neighbouring regions. Once more the investigations on the Mesetas change the formerly established image of the Central Iberian Late prehistory and demonstrate that as a matter of fact no large deserted spaces existed during that time (Bueno et al. 2002, 72–75; 2005a, 19–36). The arguments for just one Neolithic development that slowly spread throughout Iberia are weakened. Results like the ones from Azután, Huecas, Los Barruecos or the Valle de Ambrona (Bueno et al. 2005a; Benítez et al. 2009; López et al. 2007b; Rojo et al. 2005) show that not just one but several Neolithic developments existed on the Iberian Peninsula.

Attempts of interpreting the archaeological record for this period also aim for a society with a low degree of stratification. In many parts of the centre of the Iberian Peninsula, the ecological conditions are regarded as unfavourable. Larger communities could not be fed and, thus, no power base for potential autocrats could arise (Bartelheim 2013). Ideas about the organisation of societies both for the apparently more developed South and the apparently underdeveloped marginal area of Central Iberia will be presented in the following and final subchapter of the terminology part. The aim is to describe them free of any critical rating, which will be added in the related chapters on resources and communication (chapter 7) and on the organisation of the landscape (chapter 8); here some of the approaches for society will be evaluated. The fieldwork campaigns conducted within the framework of the case study as well as the scientific analyses (chapter 5 and 6), will give enough reasons for questioning the assumption of a deserted interior of the Iberian Peninsula.

2.3.3 Organisation of Societies

‘Inside every group, he decides, there are more groups. Circles within circles, and inside of those, more circles still, all of them infinitely divisible. You could spend your whole life wondering which ones you’re in and which ones you’re not and which ones really want you and which ones are holes that have no bottom’

Thomas Pierce 2015
(Hall of Small Mammals: Stories)

The opening quote emphasises the complexity anyone is confronted with when dealing with societies or groups. A large number of very divers relationships, connections within and between groups or behavioural rules make societies and their organisation complicated to understand even at present times and especially when trying to understand foreign communities. The reconstruction of prehistoric communities based on site character and material culture can always present an approach to the ancient reality only because a lot of the information from the past is not or cannot be preserved (organic objects, knowledge of symbolism, oral tradition etc.). When intending to understand individual and social lives of the past, the discussion of the development within Neolithic and Chalcolithic communities on the Iberian Peninsula is necessary. Basically, there are two major trends in the interpretation of social organisation on the Iberian Peninsula during the 4th and the 3rd mill. BC. One postulates stratified societies with an organisation described as early-state-like, especially for the southwest, while the Mesetas are regarded as underdeveloped and barely settled (Cámara/Molina 2006; Morán/Parreira 2003; 2009; Nocete 2001). The other interpretations postulate transegalitarian social structures for the end of the 4th and the 3rd mill. BC (Díaz-del-Río 2006; 2008; Garrido-Pena 2006; Hayden 1995) as well as the gradually increasing importance of family and ancestral lineages, strengthening groups and accumulating influence over the centuries (Bueno et al. 2005b). Below I will present the basic arguments for each line of interpretation and later will apply them to and test them on the archaeological record of the case study (chapters 7 and 8).

Because of the long history of archaeological investigations in the south of the Iberian Peninsula since the late 19th cent. and a large number of excavated and surveyed sites, theories about the social development and the organisation of sites and society for this area are numerous. Many of them come to similar results and ideas about the social organisation of the Chalcolithic societies of southern Iberia often regarding the Chalcolithic communities as highly stratified, equal to the level of early states. In contrast to that, the central tablelands of Iberia had a low number of archaeological investigations and, hence, less excavated and surveyed sites were known until the 1980s. This is the reason for both the idea that Central Spain was an almost deserted place until the Iron Age and the theory that the communities of the Mesetas lived in low stratified societies during prehistory. Due to the growing amount of investigations, ideas about social organisation in prehistoric Iberia are shifting, especially for the central tablelands where hypotheses have been less static over the last years. For a comparison of current theories on social organisation during the end of the 4th and the 3rd mill. BC, approaches from the first decade of the 21st cent. were chosen to be presented here.

Nocete – Centre and Periphery

Starting with the south of the Iberian Peninsula, for instance, F. Nocete's assumption of the organisation of late prehistoric society developed on the basis of archaeological material and sites detected in the Guadalquivir Valley of southern and southwestern Spain. The title of his work already indicates that he is suggesting central places and a classified society during the 3rd mill. BC: 'Tercer milenio antes de nuestra era. Relaciones y contradicciones centro/periferia en el Valle del Guadalquivir'[8] (Nocete 2001).

Because of the results of his investigations in the valley of the Guadalquivir River, Nocete suggests not only a social organisation but also a territorial organisation showing socioeconomic inequalities. Apparently, this region of Spain was characterised by a territorial division in different types of labour during the 3rd mill. BC, forming one of the first states in western Europe that collapsed at the end of the millennium. What kind of social background is reflected by the contemporaneous sites along the Guadalquivir Valley? Nocete used the following parameters to define the socioeconomic background of the Copper Age. A hierarchised system requires:

8 English translation: '3000 BC. Relations and discrepancies between centre/periphery in the Guadalquivir Valley'.

(1) Central places and a classification of society.
(2) A territorial division of labour (e. g. mineral exploitation).
(3) The circulation of exotic and prestige goods (e. g. metal products and ivory).

Nocete argues that all these conditions are present in the archaeological record of southern Spain 5000 years ago. So-called prestige and exotic goods circulated over distances of more than 200km and the importance of mineral resources was indicated by a concentration of mineral products especially in large central places like Valencina de la Concepción or Gandul (both in the province of Sevilla). According to the researcher, these centres allow an evaluation of the amount of centralisation as well as an approximation of the area under political influence of these places due to an unequal distribution of and restricted access to minerals. Areas of a high agricultural potential were always located near the central places in the valley, while small settlements specialised in metallurgy and mining activities were situated in the periphery of the northern mountain regions (e. g. Sierra Morena). Not only was the periphery dependent on the agricultural centres but the centres also controlled the circulation and distribution of minerals as well as exotic products like copper, variscite and ivory (Nocete 2001, 41–47).

On the arable land of the upper Guadalquivir Basin, sites with defensive structures (ditches and or walls) appear around the middle of the 4th mill. BC. The emergence of these large territorial centres was accompanied by modifications of the surrounding settlements because smaller settlements disappear when large centres gain political influence. With growing influence, the territory expands as well. Concentrations of smaller settlements in the lower Guadalquivir Valley therefore disappear in the middle of the 4th mill. BC due to the emergence of large centres, which is interpreted as being the result of a spatial concentration of the population in the strategically located settlements with defensive structures enabling the control of the territory (Nocete 2001, 81–87). With the emergence of these centres, peripheries and social inequalities were formed. The complex development of different peripheries was investigated by Nocete, who distinguished their development into four different processes:

(1) A temporal and spatial expansion takes place; territories of control are formed.
(2) Systems for the circulation of products and stable mining areas (extraction and production) develop.
(3) Especially in the peripheral areas, social resistance increases.
(4) Social processes take place in the area situated between different territories (Nocete 2001, 89 f.).

Apparently, the beginning of these economic and social changes started around 3000 BC with the development of a modular territory, defined by the first materialisation of control mechanisms and the spatial concentration of population. Centuries later, around 2500 BC, the territorial organisation increased in its complexity. Further spatial extension took place as well as relocation and differentiation of labour within the territory under control of the central place. As a result of the growth of former settlements to twice their former size and others staying the same size, a so-called spatial asymmetry occurred, creating an unequal, modular territory, accumulating people in one place while other areas became less attractive. At least two different territorial classes are detectable for this time period. At the same time expansion, division of labour and the disposition of sites driven by the centre were leading to a classified society. Social inequalities became stronger and the sizes of the territories expanded not only from south to north but also along the Guadalquivir River from east to west. If accepting the arguments of Nocete, besides the modular territory and the modular, asymmetric territory model also the models of hierarchised territories up to state-like territories can be applied to the Guadalquivir Valley around 2500 BC. While the simpler model (modular territory) is found in the upper river valley, the socio-economic organisation is said to increase when following the Guadalquivir from the northeast to the southwest towards the coast. Here the territory's organisation becomes constantly more complex resulting in large centres as for example Valencina de la Concepción close to modern Sevilla (Nocete 2001, 90–93). In a territory as complex as

the area around Valencina, several peripheries developed around 2500 BC to strengthen and support the political power of the centre, while the periphery of resistance is usually located in the area between territories of different centres. The so-called interperiphery was responsible for the communication between the centre and the mining periphery in the mountainous region. Although variscite and copper artefacts derived from the peripheral mountain areas, they were detected predominantly in the burials of the valley. Eventually the territory was marked by large enclosed settlements as well as megalithic burials claiming the territory through communal constructions and ancestral lineages; a process that began during the 4th and peaked in the middle of the 3rd mill. BC (Nocete 2001, 100–138). According to Nocete, sufficient proof of a clearly structured and state-like organisation as well as of a strongly stratified society exists for the 3rd mill. BC along the Guadalquivir Valley. The society was characterised by a division of labour, not within a settlement itself but within the territory where settlements were specialised on certain tasks.

Morán and Parreira – Inequalities and Centralisation of Power

Following the hypothesis of F. Nocete, E. Morán and R. Parreira (2009) established the theory that the megalithic burials of southern Portugal (Algarve) served as an exhibition of power. The erection of these monuments and their funerary context are taken as proof for the beginning of classified societies, social inequalities and the centralisation of power. On the one hand, the emergence of early political organisation apparently did take place in the fertile areas around Lagos and Cacela visible in the megalithic constructions as well as in the presence of exogenous artefacts and material. On the other hand, a technologically highly developed and complex mining economy in the 'periphery' of the Guadiana Valley implied a growing demand of mineral products. The latter was interpreted as a sign of clear division of labour – each area obtained a different task – that needed organised structures for the circulation of goods, which could only be directed and organised by the hegemonic centres of the southwestern Mediterranean-Atlantic facade (Morán/Parreira 2009, 140).

In the centre, monumental architecture was common while constructions in the periphery appeared only reluctantly. Morán and Parreira consider the difference in the use of territory and the types of constructions as an indicator of social inequality. Territory analyses helped them to detect political centres supporting their assumption of classified societies. In the project on Alcalar and its territory, it was supposed that the settlement area of Alcalar could be considered a centre of political power, forming an early state in the territory of the bay of Lagos during the 3rd mill. BC. Underneath the chamber of the Alcalar 7 tumulus negative structures were found, which are evidence for a human occupation of the area already during the 5th mill. BC. Further negative structures of the same millennium have been detected in a distance of 3km to the necropolis. The Neolithic evidence is scarce but nonetheless indicates a continuity of use from the 5th mill. BC onwards. By the second half of the 4th mill. BC, a denser occupation of the site of Alcalar begins with the construction of funerary architecture and results in the development of a megalithic necropolis starting by the end of the 4th and continuing during the 3rd mill. BC. The earliest stage is represented by the monument Alcalar 1, a dolmen of the second half of the 4th or the beginning 3rd mill. BC. Within the same period as Alcalar 1 a necropolis of hypogea was constructed in Monte Canelas, 2km north of Alcalar. So far four artificial caves that were dug into the rock have been detected, two of which have been partially excavated. In contrast to the dominant position and visible architecture of the megalithic burials in the valley, those hypogea are rather discrete in their choice of location and visibility. They were interpreted as being situated in the periphery of Alcalar, which would be the territorial and political centre of the area during the beginning of the 3rd mill. BC. Morán and Parreira assume a hegemonic position of the sites of Alcalar at least at the beginning of the 3rd mill. BC, as not only a necropolis from that period has been excavated in this area but a settlement has been detected as well. The enclosure of approximately 20ha in direct southern vicinity of the megalithic

burials should point to an agglomeration of population. Several defensive structures (ditches and walls), houses and storage facilities were detected in the area, postulating separate quarters for different purposes, for example for food production and agriculture. Together with the necropolis and the adjacent inhabited enclosure, Alcalar formed a ritual, ceremonial as well as production centre during the 3rd mill. BC (Morán/Parreira 2009, 141–148).

While Alcalar formed the centre, Santa Rita in the eastern Algarve apparently controlled the fertile soil and the communication between centre and periphery. Prestigious goods in the monumental necropolis of Santa Rita indicate the presence of elites. The eastern Alto Algarve in turn represented the periphery of the territorial organisation with numerous copper deposits. Communities specialised in mining and metallurgical processes settled here. Whilst doing complex metallurgical work, the amount of agriculture and husbandry detected in the area is rather low and indicates an economical dependence of the population on the centres of power that controlled the agricultural production (Morán/Parreira 2009, 156).

Díaz-del-Río – The Incapacity to Accumulate Wealth

A different approach was used to detect indicators of socioeconomic organisation in the interior of the Iberian Peninsula. P. Díaz-del-Río (2006) investigated political and socioeconomic inequalities in Central Iberia from the first farmers at about 5300 BC until the end of the El Argar culture (ca. 1600 BC). Within these three millennia, he put the focus on settlements, the funerary process, production abilities and available labour. In the following summary of his paper, his arguments against permanently established social inequalities on the Mesetas from the Neolithic until the Bronze Age will be outlined. Especially the incapacity to produce sufficient surplus and to gather enough labour force because of limited group sizes are key issues besides an absence of the ability to accumulate value. In comparison to southeastern and southwestern Iberia, where social inequality has been debated especially for Los Millares and the El Argar groups since the 1970s, the archaeological record of Central Iberia did not allow the postulation of social inequalities because of the lack of clear evidence (Díaz-del-Río 2006, 67). The economic and political nature of social relations in Central Iberia during the 3rd and 2nd mill. BC will be highlighted, stressing the empirical limits of the study as well.

In order to understand the changes during the Copper Age, the development of social relations during the Neolithic must be considered. The Early Neolithic of Central Iberia is characterised by rather scarce settlement evidence in caves as well as along rivers. The open-air sites predominantly comprise of a small number of negative structures. Communities seem to have been rather small and their use of domesticated plants and animals varied strongly throughout time and region. This almost invisible settlement evidence is in strong contrast to the huge flint mine of Casa Montero with over 4000 extraction shafts. Only a low number of Neolithic finds are scattered on the surface of the area, which is interpreted as being the result of repeated seasonal extraction expeditions within only a few centuries. Not long after the Early Neolithic, by the end of the 5th mill. BC, burial mounds and megalithic tombs became part of the funerary traditions, while evidence for settlements is still rare. Throughout the 4th mill. BC, passage graves became more abundant and increased in size as well. The largest megalithic monuments of Central Iberia were built by the end of the 4th mill. BC. The erection of the first megalithic burial not only indicates a shift in the religious beliefs but their increase in size may also point to a higher amount of available labour force. Maybe several groups collaborated in the construction and ritual process. Social roles between those groups and within one group had to be defined for the act of communal building. These collective burials emphasised the act of collective work, while the pattern of the funerary process of that period implies the beginning of lineages and differences within groups. The ability to gain enough supporters for a leader failed and therefore social restrictions limited the emergence of permanent political territories (Díaz-del-Río 2006, 68–70).

Chalcolithic sites are characterised by the random distribution of pit structures used as hearths,

for storage, the disposal of waste or even the regular burial or disposal of the deceased. Only scarce evidence for wattle and daub dwellings exists until now and the sites are broadly distributed and located far apart from each other. This was regarded as an argument for a pastoral, seminomadic character of the Copper Age groups. This impression is shifting due to research programs of the past years and large surveys of the area recording numerous 3rd mill. BC sites. Although the sites appeared in different locations, they were densely distributed and always situated on rich soils and on land permanently usable as pasture. A site type on the northern Meseta detected mainly through aerial archaeology, and in the province of Madrid also through excavations, are the ditched enclosures. They are predominantly occupying fertile soils and suggest permanent settlement. The three ditched enclosures in the autonomous community of Madrid show dimensions of 50 to 100m in diameter. Although the ditches have been backfilled before Bell Beaker finds appeared, the places have not been abandoned. The presence of artefacts from the Early Neolithic (around 5300 BC) up to the beginning of the Middle Bronze Age (around 1600 BC) indicates to a continuity of place. Evidence of ditched enclosures in Central Iberia was unexpected. Although the concentration of labour must have been crucial for the erection of these earthworks, Díaz-del-Río suggests that the erection of most of the ditched and walled enclosures of Central Iberia can be explained by the additional labour force of relatives (direct kin-groups) and thus they are no argument for the emergence of social inequalities. Compared to the huge size of ditched sites in Andalucía and Badajoz, the size of the sites of the central tablelands hints to a limited level of labour investment. A growth of labour would also lead to an increase of production especially in the agricultural sector but a surplus that would have been sufficient to sustain social, economic and political inequalities could not be proven for the Chalcolithic. The domestic sphere significantly gains more importance as proven by the increasing amount of the common circular wattle and daub dwellings with storage pits, flint-knapping and cereal processing areas (grinding stones), suggesting these processes were in the hand of nuclear families. Most of the pottery of the sites consists of simple and practical vessel types with only a small amount of carinated or decorated vessels. Resources like flint can often be found in the direct vicinity of the settlements. On the northern Meseta, evidence for a barely specialised and small-scale copper production can be found as well. Faunal analyses show that domesticated species clearly dominate the faunal remains of the sites. They were used for both their secondary products like milk or wool and their meat, which was consumed seasonally depending on the breeding intervals of the animals. Regional palynological research – as aforementioned – revealed a park-like landscape caused by the increasing human impact.

It was not possible to detect a regular burial pattern, as megalithic tombs were reused; small barrows were constructed or collective burials in caves appeared. At the same time, depositions of human remains in the surroundings of settlements or in ditches were not uncommon. The irregular burial pattern is often taken as proof for egalitarian structures because many deceased were part of a collective ritual secondary burial, a public exposure of the body on the site is assumed. Meanwhile, the shift in the Bell Beaker phase from collective to single burials has been considered to represent a greater shift from simple to complex rituals and societies. In the author's opinion, a primary burial ritual with maybe the exposure of the deceased, followed by partial burning and/or decarnisation and a secondary deposition in a former burial mound or ditch does not indicate a simple ritual, nor does it necessarily describe an egalitarian community. Díaz-del-Río argues that surplus production during the first half of the 3rd mill. BC was rarely possible and production was based on mainly nuclear families. He also argues that in comparison to previous or later periods the Chalcolithic communities were significantly better in the organisation of labour and production activities. The inability to concentrate labour force led to insufficient surplus and the lack of the accumulation of significant wealth to centralise political power, creating social inequalities (Díaz-del-Río 2006, 70–72).

The appearance of the Bell Beaker culture was traditionally associated with the emergence of chiefdoms or big-man societies. The archaeological record shows a temporal and regional variability especially in Central Iberia, the cradle of the Ciempozuelos style of the Bell Beaker. Díaz-del-Río describes the Beaker period of the Mesetas as a fuzzy phenomenon not least because of it being a pan-European phenomenon. The urge to find a chronological sequence is reflected in the spatial distribution of Bell Beaker material and as the claimed increase of social complexity in Bell Beaker research contributes to the blurred image of the Iberian interior of this time. Bell Beaker artefacts known from the Chalcolithic period as well as from the Early Bronze Age reflect the complexity of the archaeological record. Additionally, Bell Beaker pottery does not seem to define a different community but seems to have been a type restricted to certain social activities, as Bell Beaker fragments are almost absent in domestic contexts but can be found in burials, some of them described as exceptionally 'rich'. Besides the temporal and spatial distribution of Bell Beakers also the funerary patterns are highly variable. Burials were conducted in former megaliths, small mounds, caves, hypogea (artificial caves) or as individual burials in pit graves. Only a little more than 10% of the total number of Bell Beaker burials presented the whole 'Bell Beaker set' (beaker, bowl, carinated bowl). The Bell Beaker pottery production is also far from standardisation, as it varies through regions and centuries. Both material and sites do not support the assumptions of Bell Beakers as first chiefdom societies. A small amount of settlement evidence, no changes within the domestic sphere compared to the Chalcolithic period, funerary patterns with minimal investment of labour and only few metal objects (e. g. Palmela arrowheads, axes, daggers) display minimal effort to show power through materialisation. The current state of archaeological research indicates a presence of leaders appearing occasionally and acquiring status and power to a certain extent. It seems to have been impossible for those leaders to expand their social and political influence beyond the local community (Díaz-del-Río 2006, 72–74).

Garrido-Pena – Transegalitarian Societies

In addition to the Bell Beaker period in Central Iberia, R. Garrido-Pena (2006) developed his model on the social organisation of these communities in a theoretical approach by also considering previous periods. Key issue is the concept of B. Hayden's transegalitarian societies, of political leadership going beyond boundaries of kinship by not strictly acting locally and going beyond the life of the leading individual. The heritage of power would be possible but neither mandatory nor institutionalised power or clear centralisation existed. Compared to the regions on which the former studies about the organisation of societies were based, the Mesetas cannot be described as an area that suffered of resource shortage. Arable land and water were available and ecological stress is less noticeable. Theories based on the archaeological record of other regions with a very special ecological background and resource stress cannot be applied to the Mesetas, as those studies are too focussed on one specific area. It is hard to accept approaches that deny socioeconomic changes in an area as huge as the interior of Iberia over a period of three or four thousand years. Especially when considering that the Mesetas have never been isolated from the rest of the peninsula or the continent and Megalithism as well as the Bell Beakers as so-called pan-European phenomena are widely present in the archaeological record. While the erection of megalithic monuments or the appearance of Bell Beakers in other regions were often related to social and economic changes, such profound transformations were missing in Central Iberia (Garrido-Pena 2006, 82).

All societies and even small groups contain seeds of inequality. During the Late Neolithic until the Late Copper Age, the archaeological record does not imply complex societies, but neither does it support egalitarian ones. Not only do archaeological groups vary both regionally and temporally but they also show a variety of social contexts. Considering Hayden's characteristics for transegalitarian societies regarding for example the aspect of special access to a certain resource by an individual or group, this access must be negotiated with the whole group before it can be

granted. Only if resources that are important for subsistence are abundant, privileged access to them can be permitted if the survival of most of the groups can still be assured. This contrasts with other assumptions on the origins of socioeconomic differences that see the cause of inequalities in the privileged access to resources, demographic pressure, resource shortage or in ways of risk management. In times when everybody's survival is assured individuals are given the opportunity to transform production surpluses into social influence and personal power by organising and holding competitive feasts that create interdependencies between leader and supporters. A network is established in which the leaders benefit from debt relationships, motivating others to produce surplus that they control. Possible benefits of the supporters can be the increased interest of the leader to gain a growing influence in community affairs. Consequently, during times when surplus is produced, socioeconomic inequalities increase as well (Garrido-Pena 2006, 83).

Garrido-Pena argues that Bell Beaker cultures are at stage three of Hayden's description of transegalitarian societies: close to chiefdoms with leaders that Hayden called 'entrepreneurs'. How can this be tested and what kind of archaeological indicators support this hypothesis? The previous periods have to be considered as points of departure for the development of stage three egalitarian societies with the Secondary Products Revolution playing a crucial part in it. The Secondary Products Revolution surely affected life in the interior of the Iberian Peninsula since the 4th mill. BC, diversifying economic systems and social structures by increasing the amount of surplus. An indicator of the Secondary Products Revolution in Central Iberia may be reflected in the megalithic monuments presenting social and ritual complexity. The idea of a transformation taking place is also supported by the enormous increase in the number of sites during the Late Neolithic and Early Chalcolithic. The rising number of sites equals a demographic increase that started in the 4th mill. BC. Proof for economic surplus can be detected within the available data, for example in the Neolithic and Chalcolithic *campos de hoyos* (pit fields). Most of these pits have been used at least in their primary function as storage facilities as their size and the remains of the former filling indicate. Pollen analyses additionally point to an intense rate of deforestation, revealing the growing human impact on the environment at least since the Late Neolithic. Faunal remains within Chalcolithic sites indicate the dominance of adult individuals and suggest that, besides for meat, animals were exploited for secondary products like milk or wool, which made prolonging their lives an economic advantage. As these processes started around the beginning of the 4th mill. BC, they reached an advanced level around the middle of the 3rd mill. BC when Bell Beakers first appeared on the Central Iberian plateaus. As it has been previously stated, Bell Beakers were rarely ever found in domestic contexts or used as everyday pottery. It is obvious that they were considered to be valuable goods and circulated within the exchange networks used by leaders to take part in the emergence of social complexity. Long distance exchange in Central Iberia has already been proven for the Late Neolithic and especially the Chalcolithic period. For example, copper, flint and ivory objects circulated the networks using natural routes (e. g. river valleys) indicated by visual markers like natural rock formations, megaliths and enclosures along the way. Exchange certainly was used as a social strategy to obtain more power through exotic goods, alliances and marriage, where Bell Beaker vessels served as symbols of status. Within the Bell Beaker society, leaders would permanently have had to struggle to obtain their position using symbolism to reinforce it. Although inherited status cannot be proven yet in Central Spain, the long duration of Bell Beaker compared to a rather short existence in the southeast might be explained by the possible establishment of inheritable positions (Garrido-Pena 2006, 83–85).

As a matter of fact, the Spanish Beakers were used for alcoholic beverages like beer as chemical analyses of the residues within the ceramics proved. Since alcohol plays an important part in social interactions as a sign of hospitality, to strengthen relations, during negotiation or to create dependencies among the drinkers, it was part of a system to keep up social relations and could be used as a manifestation of status or group identity. Hospitality and feasts assured the support of the followers and strengthened the tie between

followers and leaders in preindustrial societies. Already the production of alcohol can be a means to create and maintain power and wealth because the amount of grain used to make the alcoholic beverage is not used for subsistence. The usual Bell Beaker set in Central Spain comprises of a beaker, a small bowl and a bigger carinated bowl and seems to be part of a feasting set which could be used for drinks as well as food. Only 5% of the pottery found in settlement areas belong to the Bell Beaker type, but the Bell Beaker pottery found in the domestic sphere is predominantly represented by large Beaker vessels. These vessels usually have volumes of two to ten litres but could also contain up to over 20l. Chemical analyses still have to confirm it, but the possibility that the containers were used to brew and serve beer at the communal feasts cannot be denied (Garrido-Pena 2006, 86–88).

Another important feature of transegalitarian leadership according to Hayden can also be found in the archaeological record of the Bell Beaker phenomenon in Central Iberia. The leaders or 'entrepreneurs' ambitiously tried to unite all important roles within their person (economy, politics, ritual and military) and some Beaker burials are full of objects that carry symbolic meaning (weapons, beverages and food, luxury goods etc.). Even supernatural claims for the legitimisation of power can be found and manifest in the use of the ancestral relation by reusing the megalithic burials. Regional connections of leaders also served to maintain their control of local and imported prestige goods. The decoration of Bell Beaker pottery carries meanings and can have a social, religious and intellectual background that might indicate the membership to a certain group as known from the symbolism of traditional costumes all over the world. Funerals seem to have been very important events in Bell Beaker communities, as the burial objects were often produced exclusively for that particular burial and were chosen to transmit certain messages to the participants, which might explain the high standardisation of the grave goods. Especially in the shapes of the pottery, the degree of standardisation is very high in Central Iberia. A further novelty and in strong contrast to earlier burials is the increasing importance of individual burials in Bell Beaker societies (Garrido-Pena 2006, 88). Although the archaeological record and the data about socioeconomic transformation are still lacking information about Central Iberia, the presented patterns support the presence of the main features of Hayden's transegalitarian model. Leaders emerge and use different means (feasts, exchange, ancestor lineages) to consolidate their position and power and in some cases maybe also established inheritable leaderships (Garrido-Pena 2006, 93).

Bueno, Barroso and de Balbín – Collectivity and Individuality

The Bell Beaker phenomenon has almost exclusively been interpreted based on its relation to the burial ritual (mainly due to the long-existing lack of settlement sites). The presence of pottery with Bell Beaker decoration was directly linked to political power and regarded as the symbolic proof for the hierarchisation of society. Bell Beakers were seen as something new, infiltrating over the course of European Late Prehistory, disregarding that several phenomena before spread over large areas along the Atlantic facade. Palaeolithic art, shell middens, megalithism and others stand in the long tradition of interrelations on the Iberian Peninsula and in the area of Toledo way before Bell Beaker complex appeared and benefited from previously established networks. All the interpretations of Bell Beakers (luxury goods indicating power of warriors, metallurgists etc.) on the southern Meseta were based on their occurrence in individual burials. Because only few megalithic burials were known, Bell Beakers were always seen in direct connection with individuality. The increasing research on collective burials in Central Spain, including the investigations in the Valle de las Higueras (Huecas, Toledo), demonstrate that these interpretations referred to a fragmentary archaeological record. The area of Huecas proved a stable population since the Middle Neolithic based on the exploitation of a *dehesa*-system (according to surveys and palynological data). It gives impressive insights into a complex of diverse burial architecture in a densely settled region. The exclusively collective burials in artificial caves and burial mounds revealed a mixed set of vessels with Bell

Beaker decoration, metal objects, jewellery, undecorated vessels and bone artefacts. Bell Beaker vessels are additional objects within the set of burial gifts that were likely used in the collective ritual of eating and drinking with the deceased. It is a ritual continuity and symbolic repetition used by social organisations referring to lineage to legitimise a higher status than other group members. P. Bueno's research group (Bueno et al. 2005b; 2017) proved the aforementioned statements with the results of the excavations, especially from the burial ground of the Valle de las Higueras; substantiating their claims with radiocarbon and palynological analyses as well as a closer look at territories, symbology and exchange networks (Bueno et al. 2005b, 68–70).

In general, Bell Beaker vessels appear in all sorts of megalithic burials along the Tagus Basin. Constructions with chambers and long or short corridors, in monuments with false vaults or masonry construction mounds, but also burials with Bell Beakers in caves, artificial caves, burials within the area of the living or individual burials on burial grounds can be found along the course of the Tagus River. The variability of the grave construction types associated with Bell Beaker vessels is reflected in the high variability of the composition of burial gifts in collective burials; the Bell Beaker phenomenon did not lead to a standardised set of objects here. The megalithic burials, in which pots with Bell Beaker decoration were found, were constructed from the 5th to the 3rd mill. BC. It appears that communities wanted to connect to the Neolithic tradition and emphasise ancestral relations. Examples are, among others, the dolmen of Azután (Toledo) with a chamber and a corridor, the small burial mounds with false vault of El Canchal de la Vera (Cáceres), the artificial caves (Palmela) between the estuary of the Tagus and the Sado Rivers as well as the masonry construction burial mounds of Alcalar (Portimão) in the south of Portugal. Of special interest: In the province of Toledo, individual burials, dolmen, natural and artificial caves, partly with place continuity like in Azután (constructed in the 4th and reused during the 3rd mill. BC), contained burial objects with Bell Beaker decoration. Not least since the discovery of the archaeological sites in the municipality of Huecas, it could be demonstrated that the construction types and chronology of burials associated with Bell Beakers in the province of Toledo are comparable with the ones in the estuary of the Tagus and the whole southwest of the peninsula. This means that differences between the coastal areas and the interior of the peninsula that were suggested in the past become less with each day the knowledge about Late Prehistory on the Mesetas increases (Bueno et al. 2005b, 70–72).

In the southwest of the village of Huecas, an impressive archaeological territory from the Middle Neolithic up to the Bell Beaker Chalcolithic could be revealed. In the Valle de las Higueras, west and north of it especially, burial sites provided new insights. By excavations as well as surveys contemporaneous settlement sites could be detected as well. The burials show large constructional differences; on the one hand the burial mound of Castillejos, then artificial caves next to silex extraction sites excavated in a limestone mesa (necropolis of Valle de las Higureas) and on the other hand the masonry burial mound at the foot of the mesa in the Valle de las Higueras, abbreviated TVH (Túmulo Valle de las Higueras). The geographical proximity of burial sites and economical activities is nothing unique on the Iberian Peninsula. Additionally, the sites show a good intervisibility, as from Castillejos Cave 1 of the Valle de las Higueras can be seen and the settlement site of Los Picos in the north of the burial mound as well. From Cave 1 the burial mound in the valley (THV) can be spotted and from there the eastern Cave 5 is visible. Contact between all the sites at the same time could be possible if necessity arose (Bueno et al. 2005b, 73).

The burial mound of Castillejos was a dry-stone wall construction in combination with wood and adobe. The chamber with a diameter of 3m, an approx. height of 2m and an entrance pointing to the east contained the majority of the buried individuals. Of special interest is the annex of another circular chamber of 1m in diameter in the southeast of the main chamber. An approx. 18-year-old male and a mature adult man were buried here. The older male was considered a secondary burial by the excavators, as the bones seemed to have been laid down in a kind of bone package (no correct anatomical position).

Similar separations could also be observed in the construction of the interior of the artificial caves. These caves were dug into the ground and carved into the bedrock of the mesa; the interior was protected from the exterior – the outside world – by stone and clay walls. The deceased, in some cases, were placed on constructions interpreted as 'beds' (stones of 1m x 0.8m) or structures built of clay and stone separated different burial units from each other in niches. Besides these constructional differences, the majority of burial gifts presented collective items and only seldom individual objects. In Cave 1 a dagger and an arrowhead of the Palmela type were found but the objects could not be assigned to a specific individual. Likewise, the main chamber of Cave 3 revealed almost nothing but collective burial objects of the ten individuals buried there. Only one woman (M9) carried a variscite necklace as well as a large shell as individual items. Niche 3a – where also cinnabar was detected – contained the remains of two children. One of them (between five and nine years old) was wearing a necklace of beads made of bovid scapula; several beakers and two bowls decorated in the Ciempozuelos style were placed at the back of the child. Back in the main chamber of Cave 3, a group of three individuals placed on stone beds revealed individual burial gifts as well. The group of an adult male, an adult female and a newborn were buried with a necklace of cowry shells, variscite beads and amber; a copper awl was found at one of the adults' postcranial skeleton. These are not all the examples of individual treatments found in the sites of Huecas but they give a good insight into the variability of individual expressions within collective burials (Bueno et al. 2005a, 73–76).

The detection of very different burial constructions with Bell Beakers in the Valle de Huecas brought up the question of contemporaneity and whether these differences in architecture might express regional specifics. Radiocarbon data verified the contemporaneity and the close spatial relation amongst the burials contradicts the hypothesis of regional peculiarities. The recurring combination of juvenile and adult or mature individuals buried together in separated areas as it can be found in the annex of Castillejos, Niche 3b or in Cave 5 is remarkable. The younger individual always appeared to be a primary burial, while the older individual was interpreted as a secondary burial. This contrasts with the hypothesis that Bell Beaker burials have been singular and final events for the deceased leaders. Rather, processes of decarnisation and reburials have been considered. In some cases, a separation of burials with Bell Beaker items within the collective burials in the artificial caves can be observed. But this is also not standardised, as Bell Beaker vessels accompanied the composition of burial gifts in the chamber of Cave 1. Eventually, Bell Beakers formed part of the separated burials as well as of the objects in the chamber. The niche of Cave 1 was a separated space without Bell Beaker pottery, but with variscite beads and undecorated ceramic objects. Additionally, separated individuals as well as individuals with Bell Beaker vessels or prestige goods were not restricted to a certain age or sex. The fact that women and children received the same treatments as men in the Valle de las Higueras implies that the social status and therefore the familiar organisation and the reference to ancestral lineages were more important than the sex (Bueno et al. 2005a, 77–79).

The analysed vessels (both decorated and undecorated ones) revealed new information about the palaeodiet; they contained remains of food and drink. The meals were based on pig and fish but also mush based on vegetables or grains. Drinks mainly consisted of cereal or honey based liquids, meaning the vessels showed remains of alcoholic beverages like beer and mead. Still, the drinking and eating with the ancestors or the offer of alcohol and food was no new phenomenon but goes back to Neolithic times. Also rooted in Neolithic traditions is the use of cinnabar in the burial ritual, which is also present in Cave 1 and 5 in the Valle de las Higueras. Objects such as cowry shells or variscite and amber beads go back to communication and exchange networks established since the 5th mill. BC that have been intensified through the centuries until Bell Beaker times. These exotic or prestige goods, sometimes combined with Bell Beaker and metal objects, were part of a public display of dominant familiar organisations that constructed or reused the collective burials. The family or lineage, which occupied the burial, equipped their deceased with several objects that would

prove their power. Bell Beakers are additional items within the composition of the burial gifts but not the only ones. They presented new complementary prestigious objects like the others that highlight individuals or groups in collective burials since the 5th mill. BC (Bueno et al. 2005a, 81–84).

Individuality, hence, is a tendency that can be observed since the construction of the first megaliths. Segregation of a group or individual burial gifts emphasised the significance of these individuals for the community as a whole. The act of collective meals and drinks within the ritual strengthened ancestral lineages. Together with individual burial gifts and prestige goods for selected members, power and influence of a group inside the community were emphasised. The continuity seen throughout the millennia – from the 5th until the end of the 3rd mill. BC – is interpreted by Bueno and her colleagues as the use of ideological resources in favour of more and more consolidated elites. These attempts to demonstrate and enhance a social order based on ancestral lineage and thus inherited status might cause more social conflicts. Megaliths, ditched enclosures and fortified settlements are the three visible elements of the system of social cohesion, using certain burials as means for the constitution of political power (Bueno et al. 2005b, 86; 2017, 31). Social differences existed throughout the Iberian Late Prehistory and even during the 5th mill. BC no proof for exclusively egalitarian communities can be found, although social differences became more striking during the 3rd mill. BC.

This consideration of different approaches to the social organisation of especially 4th and 3rd mill. BC communities on the Iberian Peninsula shall provide an overview of the common research directions. The tendencies of presenting the south of Iberia as very complex and almost state-like in its organisation of landscape and society while considering the interior as almost deserted, rather egalitarian and resistant to changes was especially popular during the last quarter of the 20th cent. With the new models that were established due to a growing amount of data and an increasing archaeological record of the Late Neolithic and Chalcolithic of the Mesetas, a more distinguished image of the central tablelands is emerging. Most of the researchers cannot get rid of an evolutional consideration of societies as developing from simple to complex communities, although transformations can also lead to a decrease in complexity. As Díaz-del-Río stresses, the Chalcolithic communities – compared to previous or later periods – were significantly better in the organisation of labour and production activities.

After having outlined the framework of the SFB 1070 as well as the initial objectives of the project about Iberian Late Prehistory, several topics with which researchers are inevitably confronted when investigating Late Neolithic and Chalcolithic societies were explained. The terms and theories discussed here will be an issue throughout the subsequent chapters. It already became clear that the impression of the Central Iberian Chalcolithic society is far from being a static one and ongoing research keeps changing models and hypotheses based on the current state of the archaeological record. Chapter 3 will emphasise this by stating important stages of the history of investigation, the chronological division of the southern Meseta and neighbouring regions and by providing insight into one of the currently most discussed site types of the Iberian Peninsula, the ditched enclosures.

3 A Short Note on Iberian Late Prehistory

After having outlined the theoretical framework of the case study in the previous chapter, this chapter will focus on the prehistoric background, more specifically the Late Neolithic and Chalcolithic research. Besides the presentation of the archaeological record of the Late Neolithic and Chalcolithic, the overview also includes the site types (burial types, settlements etc.) as well as the embedding of the site of Azután into this context. The discussion of the research history will enable the reader to get an impression of the current archaeological record and the differences in the dispersion of prehistoric burial and settlement sites. The geographic focus will be on the situation of the southern half of the Iberian Peninsula – from the Spanish Central System to the Mediterranean and Atlantic coasts.

Whereas archaeological investigations in the southwest of the Iberian Peninsula have been increasing during the past years, the interior of the peninsula continues to be neglected by many researchers, as its general appearance apparently did not promise many or any late prehistoric finds. This painted the picture of a deserted interior that people only used to make their way from coast A to coast B. Why and how this idea arose and if it is still a reliable statement will be discussed in the following subchapters. First, a general introduction to the current state of available prehistoric data on the Iberian Peninsula will be given before discussing the state of archaeological investigations regarding the 4th and 3rd mill. BC. As this period is characterised by a certain type of sites, the ditched enclosures, these will be addressed before concluding with the circumstances in Azután and its surroundings.

3.1 The 4th and 3rd Millennium BC of the Iberian Peninsula

Similar to other parts of Europe, the beginnings of a general interest in historical monuments and antiquities on the Iberian Peninsula can be observed during the Renaissance. At the beginning of the 19th cent. AD, the first archaeological excavations were carried out, although the first professional education in archaeological disciplines did not exist before 1856 and was made possible by the 'Escuela Superior de Diplomática'. Eleven years later, in 1867, the first institute for archaeology was founded in Madrid: the 'Museo Arqueológico Nacional'. Nonetheless, archaeological studies and investigations were dominated by associations as well as self-educated persons until the beginning of the 20th cent. Many of the early investigators came from related fields of work such as the geologist Juan Vilanova y Piera. Especially investigators of other European countries played an important role in the research concerning Iberian pre- and protohistory during that time, such as the Belgian brothers and mining engineers Henri and Louis Siret, the French Hellenistic researcher Pierre Paris or the German Hugo Obermaier with his focus on the Palaeolithic period. Eventually, in 1916, an exclusively prehistoric course of study was established by Pere Bosch-Gimpera with the foundation of a professorship at the University of Barcelona. People interested in prehistoric research were now able to receive appropriate education in Spain. French (Casa de Velázquez, founded in 1928) and German (Deutsches Archäologisches Institut, Abteilung Madrid, founded in 1943) institutions kept influencing the archaeological research of the Iberian Peninsula to a certain extent and are still collaborating with Iberian archaeologists today (Sasse 2005, 286 f.). Like in every other country, its historical background strongly influences theoretical approaches in sciences. For example, the assumption of *ex oriente lux* dominated large parts of the initial phase of formation of an archaeological theory and in the form of trans-cultural diffusion it is sometimes still applied today. During the dictatorships in Spain (Francisco Franco) and Portugal (António de Oliveira Salazar), the Marxist approach dominated the research until at least the end of the 1970s, when processual and later post-processual ideas also started to affect the prehistoric research of the Iberian Peninsula.

This study focuses on the Final Neolithic and the Chalcolithic periods of the Iberian Peninsula. The terms 'Neolithic' (gr. 'neo' = new, 'lithos' = stone), as well as 'Chalcolithic', which is less commonly used in prehistoric research, derive from Greek origins. 'Chalcolithic' is composed of the terms 'chalkos' (copper) and 'lithos' (stone). Synonyms can be 'Copper Age', 'Copper Stone Age' or 'Eneolithic', depending on the research history of the European region the respective investigator is working in. In relation to the use of the term Chalcolithic or Copper Age on the Iberian Peninsula, it can be stressed that other than for example in Germany, the description Chalcolithic Period is frequently used for the time between the end of the Neolithic and the beginning of the Bronze Age. The recognition of the Chalcolithic as an autonomous period has been discussed, as the beginnings of metallurgy started out with the copper objects and not with artefacts made of bronze. Often the period is referred to as a transitional phase between the Late Neolithic and the Early Bronze Age, a phase when metal ores were used but metallurgy was not as well-developed as in the 'real' metal ages (meaning Bronze and Iron Age). Sometimes the Chalcolithic is regarded as a completely separate period, an addition to the three-age system of Thomsen. But obviously, the term is unequally used throughout Europe and its application in general is often questioned. For the Iberian Peninsula, the term of a Chalcolithic period was introduced and established by Vilanova y Piera (1884) and Estació da Veiga (1887). In general, nowadays, it is roughly covering the 3rd mill. BC on the Iberian Peninsula. Compared to Central Europe, the Iberian Chalcolithic period is approximately contemporaneous to the Late and Final Neolithic periods. Even though it is debateable whether copper use was a driving force for the developments visible during the 4th and 3rd mill. BC, its existence cannot be denied. Hence, the term Chalcolithic is controversial, but nonetheless helpful as a technical term (Bartelheim/Kraußß 2012, 85 f., 94; Kunst 2013, 181 f.; Sasse 2005, 290).

Discoveries in archaeology always affect the development of theories, methods and interpretations. Especially sites detected during the early days of prehistoric research had a strong impact on the ideas about Late Neolithic and Chalcolithic societies because of their outstanding structures or finds. For the Prehistoric research of the Iberian Peninsula, these important sites were predominantly situated in the south of Spain and Portugal. Four of them are the dolmen of La Cueva de la Pastora (Valencina de la Concepción, Sevilla), the walled enclosure of Leceia (Oeiras, Lisboa), the tholos and megalithic burial necropolis of Alcalar (Portimão, Faro) and the walled enclosure of Los Millares including the surrounding *fortines* (forts) as well as the related tholos necropolis (Santa Fé de Mondújar, Almería). They were all studied and published during the second half of the 19th cent. AD (Tubino 1868; Ribeiro 1878; da Veiga 1886–1891; Siret/Siret 1887) and are to some extent still anchor points for the formation of archaeological theories to this day (e. g. concerning the emergence of strongly hierarchical societies: Nocete 2001; Morán/Parreira 2009 etc.). During the 19th cent., the Belgian Siret brothers – who operated mainly in the Almería region – were pioneers in the research of Late Prehistory from the Neolithic to the Bronze Age. As they published their results in French, which gave them a wider impact across the Spanish borders, and due to their very active research, the south and southeast of Spain became the most intensively researched area for this period, whereas the other sites fell into oblivion for a long time. It was not until the discovery of Vila Nova de São Pedro (União das Freguesias de Manique do Intendente, Vila Nova de São Pedro e Maçussa, Azambuja) and the excavations of Zambujal (Torres Vedras, Torres Vedras) around the middle of the 20th cent. that a scientific balance to the south of Spain was created and the other sites of the 19th cent. came back to mind (do Paço/Sangmeister 1956; Sangmeister/Schubart 1965). Especially the walled Chalcolithic site of Zambujal provided a long temporal sequence because it had been inhabited for a long time, which allowed a division of the Copper Age into distinct phases. Further investigations of several Chalcolithic sites showed that Bell Beaker material appeared simultaneously to copper, which demonstrated a settlement continuity. As a result, the Bell Beaker period was classified to be part of the Chalcolithic period and divided into an older maritime and a younger Ciempozuelos type (Kunst 2001, 73–77). The eponymous site for the latter decoration

type is the necropolis of Ciempozuelos in Madrid (Blasco 1994). The discovery of four artificial caves (*cuevas artificiales*) used as burial sites in the town of Quinta do Anjo (Palmela, Setúbal), which was published in 1908, provided further important diagnostic finds for the earlier Bell Beaker phase. Besides the typical Palmela arrowhead and Palmela bowl, the sites added another type of burial to the already known dolmen and tholoi (Leisner et al. 1961; Kunst 2001, 74).

The research of the couple Georg and Vera Leisner with their collection and investigations regarding the megalithic burials had a huge impact on the archaeology of the 4th and 3rd mill. BC (Leisner/Leisner 1943; 1956; 1959; Leisner 1965). Although they did outstanding work in the field of megalithic research in general, information on megaliths in the centre of the peninsula can hardly be found in their works. During the middle of the 1970s and the beginning of the 1980s, a different type of site caught the eye of the Spanish archaeologists. Due to industrialisation processes and a tourism boom, extensive soil movements took place, which opened large surfaces and allowed the gradual discovery of Chalcolithic sites surrounded by ditches. Almost simultaneously, sites like Valencina de la Concepción, Papa Uvas and La Pijotilla in the south were excavated and published. In the 1990s, more ditched sites could be discovered, especially by aerial archaeology. Particularly the south of Portugal soon regularly applied aerial imagery to detect this specific site type, leading to Peridgões being the best investigated site among them (Lago et al. 1998). These so-called ditched enclosures are often accompanied by numerous pits and other kinds of structures dug in the ground (Márquez/Jiménez 2010, 17 f.). Further information on the topic of ditched enclosures will be given in chapter 3.2.

Another type of site, not less impressive than ditched enclosures, are the variscite mines of Can Tintorer at Gavà (Barcelona). They have been excavated since 1991 and show complex mining activities mainly for the first half of the 4th mill. BC. Shafts, tunnels and galleries were dug into the ground, reaching a depth of up to 15m and covering an area of several hectares. Twelve sections of the mining complex have been excavated completely or in parts, while 90 sectors remained untouched for future research. Two burial sites within the complex reveal information on the people involved in the mining-related processes (e. g. Bosch et al. 1996, 60; Borrell et al. 2015, 74–79).

These high impact discoveries in Iberian Late Prehistory up to the end of the 1990s created the impression that Central Iberia was not or only sporadically inhabited. Theories developed on the basis of the coastal sites consolidated this impression by assuming that Mediterranean copper prospectors arrived at the coasts where their knowledge and the contact to the indigenous people encouraged a faster development. The sparsely populated centre was thought to have remained at a low level of development and social organisation until at a later point, around the end of the Bronze Age and the beginning Iron Age, the knowledge supposed to slowly diffuse from the coast into the centre. While the prehistoric archaeology of the south of Spain and Portugal was known for the impressive ditched and walled enclosures as well as megalithic burials, the prehistoric archaeological record of the Mesetas mainly consisted of pits and surface finds until the end of the 1980s. The number of investigations increased during the last decades, demonstrating that both the northern and the southern Meseta were more densely populated during the 4th and 3rd mill. BC than indicated by former finds and sites.

Both Mesetas revealed some very interesting sites, especially since the 1980s and during the first two decades of the 21st cent. Although the sites date to the 6th and 5th mill. BC, the topic of mining should be addressed again, as such activity has taken place in the centre of Iberia as well. The mining area of Casa Montero (Vicálvaro, Madrid) has been investigated during a rescue excavation in 2004 and more than 2500 shafts for the extraction of silex were documented and 126 of them excavated. During prehistory, pits of different types and maximum depths between 2.5 and 7.35m were dug to exploit the silex-bearing layers. This activity can be traced back to 5500–4700 calBC, confirming complex extraction processes almost 2000 years before the variscite mining at Can Tintorer started (Consuegra et al. 2004).

Sites of the centre, such as Los Castillos (Las Herencias, Toledo) at the southern bank of the middle Tagus Basin reaching back to the 4th and

3rd mill. BC, have been studied and test trenches have been opened in the 1980s. The presumed hilltop settlement overlooking the valley revealed pit structures and became known as the first site of the southern Meseta where painted pottery has been detected. Other types of pottery decoration are present at this site as well, although painted pottery forms the largest group. In some cases, the surface of the vessel has been prepared with a slip or engobe before it has been decorated. Short lines, curves or triangular motives in predominantly red and ochre-colour, but also in orange or white, were applied either before or after the firing process of the pottery. The motives were organised in groups, often covering the whole exterior surface, but can also be found on the inside of the vessels (de Álvaro et al. 1988, 182; de Álvaro/Piñón 1995). At the time of the discovery of Los Castillos – and unfortunately for much longer – the painted sherds were dismissed as a genuine development of the centre and their existence was interpreted as cultural influence of the developed Mediterranean South where similar treatment of pottery had been observed before (de Alvaro/Piñón 1995, 282; Kunst 2001, 96).

Significant contributions to the research on the megalithic burials of the southern Meseta were made since the 1980s up until today by Bueno and her colleagues. With their work in Cáceres and Toledo (e. g. Bueno 1988; 1990; 1991; Bueno et al. 2005a; 2016a; 2016b), they demonstrated that megaliths were equally distributed in the centre of Iberia, revealing similarities to the southwestern representatives of the collective burial monuments as well as similarities in the material culture. The archaeological record of the central plateaus continued to grow with the research of Delibes and his team – starting in the 1980s – who investigated many megalithic monuments on the northern Meseta (e. g. Delibes et al. 1987). Further interesting insights into the burial ritual of the centre was given around the end of the 20th and the beginning of the 21st cent. by the archaeological research conducted in Valle de Ambrona (Soria). Three monumental burial mounds with a chronological focus on the first half of the 4th mill. BC were investigated (Rojo et al. 2005). During the first decade of this century, another interdisciplinary project located within the middle Tagus Basin was carried out in Huecas (Toledo). Burial sites as well as foundations of dwellings were excavated. Besides burial mounds, the researchers detected burials in at least eight artificial caves; a collective burial type that was new in the centre. These constructions again show parallels to the burials of Quinta do Anjo in Portugal mentioned above (Bueno et al. 2005b; 2009; 2012a; 2012b). For the past 30 years, Central Spain kept revealing more and more of its prehistoric potential. Already more than 400 Neolithic and Chalcolithic burial mounds[9] and megalithic burials have been detected along the Duero and the Tagus Rivers. Due to ongoing research and an increasing interest in Late Prehistory, it has been possible to demonstrate that megalithic structures are not exclusively a phenomenon of the coastal areas and their hinterland but that they are equally distributed from the Ebro River over the Mesetas and the Extremadura to the Atlantic and Mediterranean region (Bueno et al. 2016a, 158 f.).

Another type of sites expanded its known distribution to the central regions of Iberia as well due the additional research: Ditched enclosures similar to those known from the south have been detected in Madrid and especially numerous in the autonomous community of Castilla y León since about the beginning of the 21st cent. (Díaz-del-Río 2003; Delibes et al. 2014). Some examples of Iberian ditched enclosures like Senhora da Alegria in Coimbra (e. g. Valera 2013b), Mas d'Is in Alicante (e. g. Bernabeu et al. 2002) and La Revilla del Campo (Rojo et al. 2008a; 2008b), discovered in the Valle de Ambrona where impressive burials came to light, were dated to the turn of the 6th to the 5th mill. BC. The overwhelming majority of sites with ditches is concentrated in the second half of the 4th and the 3rd mill. BC (Late Neolithic and Chalcolithic period, see chapter 9.1). For a long time, ditched enclosures were a phenomenon of the south but the discoveries especially of Delibes and his team in Castilla y León with the help of aerial archaeology indicate that the ditched enclosures – as it has been demonstrated with megalithic structures already – were equally

9 Burial mounds may include stone architecture but are lacking the larger stones typical for megalithic structures.

distributed throughout the Iberian Peninsula from the Ebro River over the Mesetas and the Extremadura into the Atlantic and Mediterranean region. So far, the large ditched enclosures have continued to be a phenomenon of the southwest. The enclosures of the centre only rarely cover an area of 3ha or more and usually range from 0.5 to 1.5ha in size, as can be seen in the sites of Las Pozas in Zamora or Las Matillas in Madrid (García 2013; Díaz-del-Río 2003).

Following this insight into the earlier years of prehistoric archaeology, the explanation of the terminology and the presentation of archaeological discoveries that have the most impact on the results of this study as excellent comparisons, a compilation of the chronologies of the Late Neolithic and Chalcolithic periods of the southern Meseta and neighbouring regions will serve as a contextual transition and help to understand the complex situation of the available data for these periods (chapter 3.1.2).

3.1.1 The Chronological Background

The area considered here is limited to the southern half of the Iberian Peninsula from the Gredos Mountains to the Mediterranean and Atlantic coasts. Within this area alone, five different chronological systems for the Late Neolithic and Chalcolithic are applied that differ slightly or extremely in their classification as well as their designation. The five regions, on whose archaeological record the chronological systems are based on, are southern Portugal, western Andalucía, the southeast of Spain, Valencia and the southern Meseta. As the modern political division does not represent ancient borders and as the prehistoric material culture does not indicate significant differences between southwestern Spain and the south of Portugal, they are addressed together. This is done especially due to Portugal's rich prehistory and its parallels to the middle Tagus Basin, which have been mentioned above and will be referred to later in the new results of this PhD-thesis (chapter 6). Starting with the southern part of Portugal, the chronological comparison will make its way along the Mediterranean coast, including the autonomous community of Valencia, and conclude with the southern Meseta, where the case study is located.

Southern Portugal

In recent years, R. Boaventura and R. Mataloto published two papers dealing with the chronological division of the 4th and 3rd mill. BC of the Algarve and Alentejo regions (Mataloto/Boaventura 2009; Boaventura/Mataloto 2013). They excluded the Portuguese Estremadura from their research, as its geomorphological situation and material culture differs from the other two regions. They included sites and material culture (pottery) as well as the latest radiocarbon dates (2-sigma) in their study, distinguishing between a chronological classification for settlements and burials. As these divisions differ slightly, the focus will be on the chronological phases for the settlement sites because burials are not the central topic of the results of this PhD-study. The chronology for the settlements is divided into four phases, three of which overlap with the chronologies of the other areas that will be discussed here and are therefore presented in detail (*tab. 1*). The dates derive from the published radiocarbon curve and should be considered to be rough indications, as further details on exact dates are not given in the articles. Phase 2 of Boaventura and Mataloto's (2013) chronological system covers the last third of the 4th mill. BC. It is also known as Final Neolithic and coincides with parts of J. M. Arnaud's Neolithic III. This period is characterised by predominantly undecorated pottery and the emergence of the ditched enclosures. The subsequent phase 3 contains the largest number of radiocarbon samples and covers the first half of the 3rd mill. BC. Pottery of this phase are often defined by thickened rims. The use of ditched enclosures continues and walled enclosures start to appear. So far, there are no indications that would allow to subdivide this long period. Synonymously, this phase is often referred to as Early and Middle Chalcolithic. The final phase, phase 4, dates to the third quarter of the 3rd mill. BC and is characterised by the appearance of pottery with Bell Beaker decoration. Around 2200 BC, walled and ditched enclosures seem to have been abandoned and slowly disappear (Boaventura/Mataloto 2013, 84–89; Rodrigues 2015, 46).

Western Andalucía

The chronology of western Andalucía – including every province from Huelva to Córdoba and further to western Granada – differs significantly from the one of southern Portugal in its designation of phases. The phases were based on sites of the western foothills of the Sierra Morena. Later, it was extended to cover western and southern Andalucía as well, although it remains questionable whether a chronology should be applied to an area that was not included in the development of the phases, but mainly based on one area in the north of the autonomous community (Sierra Morena). Especially the west and centre of Andalucía predominantly ties in with the general chronology of South Portugal and is fully assigned to the term Copper Age/Chalcolithic. It is divided into three phases (*tab. 1*), beginning with the Initial Copper Age in the last quarter of the 4th mill. BC, which is followed by the Full Copper Age that almost completely covers the first half of the 3rd mill. and concludes with the Recent Copper Age of the first quarter of the 3rd mill. BC (Castro et al. 1996, 91; Chapman 2008, 236). The reasons for this classification remain unclear, as they were not elaborated.

Southeastern Spain

Southeastern Spain is defined by the coastal parts of Almeria and Murcia but also encompasses the mountainous hinterland and the eastern mountain valleys of Granada. The spread of material culture assigned to the Chalcolithic period is said to take place simultaneously to the emergence of walled enclosures as well as the formation of more stratified social systems. The phasing of the Copper Age is highly debated, but in general the radiocarbon dates point to a duration of the Chalcolithic period from approx. 3200/3100 to 2250 BC (Castro et al. 1996; Molina et al. 2004; Chapman 2008, 198). While P. V. Castro and his team divide the period into four phases (Ia, Ib, II, III), F. Molina and his colleagues define four to five phases, depending on the geographical location of the sites where it is applied (*tab. 1*). Both research groups use 1-sigma radiocarbon dates. In order to not make matters too complicated, only the latest division of the Copper Age by Molina et al. 2004 will be presented, which is based on calibrated radiocarbon dates of 24 sites. The first phase – in most of southeastern Spain referred to as Final Neolithic – includes in certain areas the development of an Earliest Copper Age during the third quarter of the 4th mill. BC. The sites are characterised by pit structures, 'fortifications' like ditches and palisades and megalithic burials. The following Early Copper Age at the end of the 4th mill. BC and the turn of the millennium is defined by the emergence of walled enclosures (called fortifications by Molina and colleagues) and apparently the formation of a stratification of society, resulting in a centralised state-like system with a stronger organisation of the landscape and a hierarchisation of settlements (Nocete 2001) during the Middle Copper Age (first half of the 3rd mill. BC). The Late Copper Age in the middle of the 3rd mill. BC is characterised by the maximum development of the Chalcolithic 'fortifications' and the appearance of the maritime Bell Beaker pottery. The last phase, the Final Copper Age, during the third and the beginning of the fourth quarter of the 3rd mill. BC, seems to end in a crisis among the centralised systems of the southeast, eventually leading to the decline of the large walled enclosures (Molina et al. 2004, 153–156).

Valencia

Especially with the example of southeastern Spain, the differences in the chronological systems as well as the available archaeological record and the huge differences in its interpretation are clearly visible. Against this backdrop, it is not surprising that archaeological research in the autonomous community of Valencia lead to a different periodisation and designation of the time between the end of the 4th and the 3rd mill. BC. In general, the time between 5500 and 2200 BC is referred to as Neolithic I and II. Those two phases are subdivided into six phases. Neolithic IA, IB and IC cover the period between the middle of the 6th and the middle of the 5th mill. BC. Neolithic IIA mainly includes the third quarter of the 5th mill. BC and is followed by a gap of 300 years without any archaeological information. The phases Neolithic IIB (almost the whole 4th mill. BC, including the beginning of the 3rd) and Neolithic IIC or Transitional Bell Beaker Horizon, as it is locally known (beginning till end of the 3rd mill. BC), partially correlate with the aforementioned chronologies, classifying the late 4th and the

3rd mill. BC (*tab. 1*). The phases are mainly defined based on changes in the material culture, most often through decoration or non-decoration and vessel shapes of pottery (Neolithic IIB: plain pottery; IIC: predominantly Bell Beaker), but also based on differences in the use and size of ditched enclosures. The monumental causewayed ditches were constructed in the Serpis Valley until 3800 BC and located close to settlements, however not used as enclosed, inhabited spaces. The first apparently inhabited enclosures appear around 3200 BC (still Neolithic IIB). Enclosed sites reveal later dates and point to the end of the Bell Beaker phase (around 2300 BC). It seems that enclosed sites were not continuously constructed and that the enclosed spaces became smaller in size during the end of Neolithic IIB and the end of IIC as well (Bernabeu et al. 2006, 100–103; Chapman 2008, 211).

Southern Meseta

A look at the chronological system of the southern Meseta, which is also the area of the case study, will conclude with the comparison of the chronological systems of the southern half of the Iberian Peninsula. The southern Meseta is the southern part of the large central plateau and is crossed by the two large rivers Tagus and Guadiana that both drain into the Atlantic. Surrounded by mountain ranges, the southern Meseta is clearly separated from the adjoining regions of Andalucía, Valencia and the northern Meseta, but not from those in western direction. R. Chapman's chronological system for the southern Meseta exclusively refers to the area south of the Tagus that includes Badajoz, Cáceres, the west of Toledo – which is the focus of this case study – as well as Ciudad Real, Albacete and Cuenca. Considering the size of this area, it is not surprising that the archaeological record varies strongly, in amount as well as in the focus on certain periods. Thus, investigations concerning the 5th to 3rd mill. BC have been conducted more intensively in the west of the southern Meseta than in the east. Therefore, the periodisation of the Copper Age is based on a sequence from the western part of the plateau (the Extremadura), which complicates an adaption of the sequence to Albacete and Cuenca and others. V. Hurtado and M. Hunt (1999) divided the Copper Age into four phases, starting with the Initial Copper Age at the second half of the 4th and the first quarter of the 3rd mill. BC. It is followed by the Full Copper Age in the middle of the 3rd mill. BC. and the Beaker Copper Age, which encompasses parts of the third and fourth quarter of the 3rd mill. BC. The Bronze Age transition coincides with the end of the 3rd mill. BC. It represents the end of the Chalcolithic period as well as the unclear beginning of the Bronze Age (Chapman 2008, 223; Hurtado/Hunt 1999).

Hurtado and Hunt base their division of the Copper Age into four phases (*tab. 1*) on radiocarbon dates and observations within the material culture and the development of sites. The first phase (Initial Copper Age) is characterised by a low number of irregularly distributed sites of small size without any indications of artificial or natural defence. Settlements were preferably situated in the lowlands on the fertile soils of the alluvial fans of rivers and streams. During the second phase, the Full Copper Age, and especially around the middle of the 3rd mill. BC, carinated pots and plates with almond-shaped rims (*borde almendrado*) are predominant. An expansion of human occupation can be observed, as areas were settled that formerly showed hardly any or no human activity at all. Throughout the Extremadura, the number of sites increased. Researchers consider it to be a result of the Secondary Products Revolution (Sherrat 1981), when new economic strategies (e. g. *policultivo ganadero*) enable the settlement of former marginal spaces or less fertile areas. The exchange of goods made from secondary animal products for agricultural products secured the survival of a larger number of people, hence more sites were developed. The highest density of sites is still found on the fertile soils, which favour an agricultural use. Apparently a hierarchisation of the territory can be observed based on different settlement/site types. The third and last phase of the Chalcolithic period – the Beaker Copper Age – is characterised by Bell Beaker material and decorations being added to the already existing material culture. Further changes concern a clear increase in metal production. For example, at Cerro de la Horca, some indicators of a new economic strategy can be found, pointing to a focus on the exploitation of metalliferous veins. In other areas of the Extremadura, like in

Time BC	South Portugal	Western Andalucía	Southeastern Spain	Valencia	Southern Meseta
2000					
2050					Bronze Age Transition: 2300/2200–2000 BC
2100					
2150					
2200			Final Copper Age: 2500/2400–2200/2150 BC		
2250	Phase 4: 2500–ca. 2200 BC	Recent Copper Age: 2700/2600–2300/2200 BC		Neolithic IIC/Transitional Beaker Horizon: 2800–2200 BC	Beaker Copper Age: 2400–2200 BC
2300					
2350					
2400			Late Copper Age: 2700/2600–2500/2400 BC		
2450					Full Copper Age: 2800–2400 BC
2500					
2550	Phase 3: 3050–2500 BC				
2600					
2650		Full Copper Age: 3000/2900–2700/2600 BC	Middle Copper Age: 3000/2900–2700/2600 BC		
2700					
2750					
2800					
2850					
2900					
2950					
3000		Initial Copper Age: 3200–3000/2900 BC	Early Copper Age: 3300/3200–3000/2900 BC		Initial Copper Age: 3500–2800 BC
3050					
3100	Phase 2: 3350–3050 BC				
3150					
3200					
3250					
3300			Final Neolithic/Earliest Copper Age: 3500–3300/3200 BC	Neolithic IIB: 3900–2800 BC	
3350					
3400					
3450					
3500					
3550					
3600					
3650					
3700					
3750					
3800					
3850					
3900					
3950					
4000					

Tab. 1. Comparative overview of the 4th and 3rd mill. BC chronologies with their absolute dates demonstrating the differences in phasing finds and sites in the southern part of Iberia (from left to right based on: Boaventura/Mataloto 2013, 85–87; Castro et al. 1996, 91; Molina et al. 2004, 153–156; Bernabeu et al. 2006, 100; Hurtado/Hunt 1999, 251).

Badajoz, the majority of Bell Beaker sites has been detected through surface surveys, which makes it hard to tell if they had any former stratigraphy, whether they were rather new foundations and if they dedicated themselves to the metal economy as well. Finally phase 4, the transition from Copper to Bronze Age, is characterised by the absence of former diagnostic pieces such as plates with almond-shaped rims or the Bell Beaker decorations. Carinated bowls with thin walls indicate transformations. A change in settlement strategies seems to take place, showing a tendency to focus settlement activities on elevated grounds and hills instead of the lowlands. Elevated and walled sites have been built during the Full Copper Age as well, but the fertile soil close to watercourses was the preferred choice for the settlement sites (Hurtado/Hunt 1999, 251–256).

Due to similarities among the detected material and sites as well as the proximity to the area of the case study right next to and east of the province of Extremadura, the periodisation by Hurtado

and Hunt (1999) will be applied to the new data (chapter 5 and 6). Although there are considerable differences in the classification of the 4th and 3rd mill. BC even between neighbouring areas (*tab. 1*), these differences can be explained by a closer look at the available data (chapter 3.1.2) of this area, which illustrates the frequently occurring time gaps in Late Prehistory.

3.1.2 Available Data for the Late Neolithic and Chalcolithic

The available data on the Late Neolithic and Chalcolithic periods of the southern Meseta in form of finds, sites and absolute dates has already been described and discussed in an exemplary manner by Chapman (2008) and V. Balsera and her colleagues (2015). Their papers serve as a foundation for this chapter, spanning the time from 5600 to about 2200 BC. To obtain an impression of the developments and transformations taking place in this region of central Spain, the periods before the Late Neolithic will be included as well. Only a few details will be added, as both papers treat the whole range of primary archaeological information and the research situation to date does not differ significantly from the one presented by the researchers. The overview will begin with the description of the irregular distribution and availability of data on Iberian Late Prehistory for the southern half of Spain, from Madrid to Valencia and the border with Portugal.

As stressed above (chapter 3.1), prehistoric research in the centre of the Iberian Peninsula was marginalised for a long time, which promoted the idea that the interior was a vast, deserted space and unsuitable for living. It was not until the 1980s that the number of investigations and new projects increased (Bueno et al. 2009, 37–42; 2006, 57) due to excavations of research institutes or rescue excavations caused by massive construction work (infrastructure, tourism etc.). Several factors influenced this imbalance in the state of research on the Iberian Peninsula. The biggest impact was provided by the detailed fieldwork of the Siret brothers during the late 19th cent. in the south and southeast of the Spanish Levant. Because of the richness and the good preservation of late prehistoric structures and finds in this area, the interest and focus on Iberian Late Prehistory was put on the Mediterranean region. It became the key region for the exploration of Iberian Late Prehistory. At first, the wealth of the Early Bronze Age burials of the coastal areas and the hinterland was interpreted as the result of diffusion processes deriving from the civilisation of the eastern Levant. Decades later, under Marxist influence, this 'cultural heyday' was considered an indigenous development. To this day, discoveries of the Siret brothers influence the research on Iberian Late Prehistory; a focus of projects on the southern coast of Spain cannot be denied (Chapman 2008, 196, 211).

At the eastern coast of the peninsula, prehistoric archaeology strongly focuses on Valencia and especially the northern part of its province Alicante. This is partly connected to the founding of the Alcoi museum in 1945, which became the municipal museum for archaeology (Museo Camilo Visedo Moltó) in 1958. This facilitated an early start of archaeological research in this region. With the increasing amount of archaeological information concerning other parts of Spain and Portugal – be it due to rescue excavations or research projects – the southern focus is shifting; albeit slowly. Especially since the 1990s and the beginning of the 21st cent., it has to be admitted that earlier assumptions on the expansion of Neolithic settlements or the uniqueness of southwestern burials and settlements has to be reconsidered to include the new archaeological information (spread of ditched enclosures, presence of wheat cultivation since the beginning of the Neolithic etc., see chapter 3.1). The vacuum that existed before the 1970s – referring to the deserted, empty Iberian interior – has been replaced and suddenly the centre does not seem that empty or underdeveloped anymore (Chapman 2008, 196, 211).

Radiocarbon Data

The recent work on southern Spain's radiocarbon chronology (Balsera et al. 2015) points out the irregular distribution and huge differences of the current set of radiocarbon dates. Two main decisive factors of that situation were determined by the researchers. On the one hand, research groups that focus on certain periods and regions

Quantitative evolution of dated sites and radiocarbon dates: 1996 and 2012

Area	Province	km²	# dates 1996	# dates 2012	# dated sites 1996	# dated sites 2012
SO	Badajoz	21,766	1	23	1	7
	Huelva	10,128	8	80	3	13
	Córdoba	13,771	19	16	3	3
	Sevilla	14,036	14	65	5	15
	Cádiz	7436	7	23	2	8
SE	Valencia	10,806	17	55	6	18
	Alicante	5817	16	138	8	31
	Murcia	11,313	35	96	17	39
	Jaén	13,489	17	67	6	12
	Granada	12,647	49	131	15	16
	Almería	8775	146	191	14	20
	Málaga	7308	25	54	6	14
Centre	Cáceres	19,868	0	14	0	9
	Toledo	15,370	5	28	2	6
	Ciudad Real	19,813	36	37	6	7
	Madrid	8022	9	146	3	28
	Guadalajara	12,167	8	16	1	3
	Cuenca	17,141	12	26	5	7
	Albacete	14,918	34	51	2	5
Total		244,591	486	1257	105	261

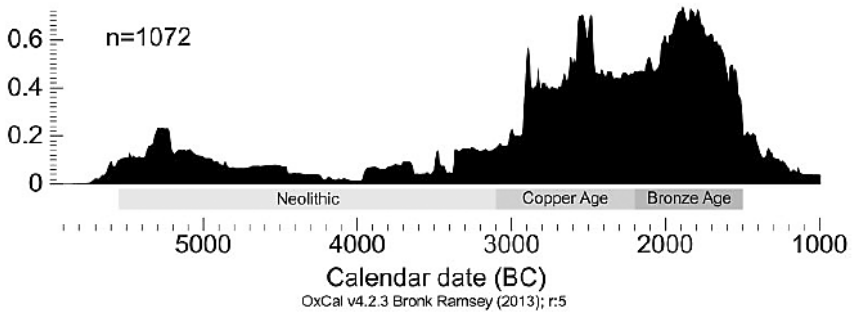


Fig. 6. Radiocarbon dates available for the southern provinces of Spain from 1996 and 2012 showing the total number (top) as well as highlighting the probability of a date belonging to certain periods (bottom) (Balsera et al. 2015, 143, fig. 3).

and especially investigate socio-cultural processes exist (Neolithisation of the Spanish Levant, complex societies of the Southeast). On the other hand, Spain's autonomous communities and heritage policies have different objectives that strongly varied since the late 1980s. Consequently, construction activities particularly affected the surroundings of the Spanish capital and the areas of interest for the tourism sector. Due to construction work that has been accompanied by rescue excavations, large datasets were collected in the provinces of Alicante, Valencia, Murcia and the region of Madrid. The largest growth by far in archaeological sites within the last two decades has been documented in Alicante and Madrid due to these activities. Radiocarbon dates are far from being distributed equally. Half of the absolute dates from the autonomous community of Madrid derive from three of a total of 28 sites. The provinces paint a similar picture: Four of the 19 provinces investigated by Balsera and her colleagues accumulate 46% of the carbon dates considered here. These provinces (Alicante, Almería, Granada and Madrid) cover only 14% of the surface of the research area. For other areas, predominantly the central tableland and the middle basin of the Guadalquivir, there are hardly any dates. This biased database makes supraregional interpretations or

comparative analyses very difficult. A further insight gained from the study of the distribution of radiocarbon dates is the fact that the southeast of the research area shows disproportionately more dates from the Chalcolithic than other periods, while the southern Meseta and other regions present almost identical percentages per period. Noticeable is the low number of samples dating to the periods designated as Middle and Late Neolithic throughout all regions, while the number increases from the beginning of the Copper Age onwards (*fig. 6*; Balsera et al. 2015, 141–143).

Thus, it can be stated that although the archaeological record for the southern half of Spain impressively increased during the last decades, the quality of the data (radiocarbon dates, sites and finds) as well as the distribution of available information varies a lot.

Sites and Excavations

These variations are also reflected in the mentioned differences within the chronological systems of the southern half of Iberia (chapter 3.1). This casts doubt on the stability and reliability of the established systems and ideas of Iberian Late Prehistory, as they might change when additional radiocarbon dates from more sites become available.

Although Chapman underlines the increasing number of data and knowledge about prehistoric sites on the southern Meseta, he emphasises that, in comparison to the east of this area, more research on the 5th to 3rd mill. BC has been undertaken in the western part (mainly in the provinces of Badajoz, Cáceres and Toledo; Chapman 2008, 195 f., 223). But at least from the mid-6th mill. BC onwards, agricultural populations existed in central Spain. Research in Cáceres revealed 28 caves and open-air sites dating to the Early Neolithic. These 28 sites cluster in the south and northeast of the province, which might either represent operating ranges of different investigators or reflect the actual settlement centres. El Conejar – a cave site – also contained layers dating to the 8th mill. BC and has been reused during the Early Neolithic after a hiatus of 2000 years. For the 5th mill. BC, Los Barruecos – an open-air site – revealed evidence for barley, while El Conejar provided proof for wheat cultivation. Although the samples of faunal remains are rather small, domesticated species appear within both Los Barruecos and El Conejar (pigs, ovicaprids, cattle). Pollen diagrams indicate the clearance of the forest to only a small extent, probably because small populations and few domesticated animals do not need a lot of space to feed both humans and animals. Clay for the production of pottery was available in the vicinity of both sites, while silex seems to have been imported from further away. The presence of silex foreign to this location and marine shells at El Conejar are proof of the interaction of groups and the mobility of people and objects. Being one of the few settlements excavated for the period of the Middle Neolithic (end of the 4th to middle of the 3rd mill. BC), Los Barruecos can attest to an intensification of agriculture and animal husbandry from the 5th to the 4th mill. BC. A stronger anthropogenic effect on the environment with a clear shift to an open, savannah-like landscape (*dehesa*) as described in detail in chapter 2.3.2 were proven (Chapman 2008, 224; López et al. 2007a).

Megalithic tombs clearly dominate the archaeological record of this region and period. They were scattered all over the western part of the southern Meseta, the most eastern ones known so far are the four dolmen in the west of the province of Toledo. Surveys and excavations revealed settlement areas both underneath and close to the megalithic monuments. Both the dolmen of Azután and the burial mound of Castillejos (Huecas) situated in Toledo revealed what was interpreted as hut foundations. Additionally, the two sites reinforce the idea of a *dehesa* vegetation and the breeding of domesticated animals; altogether an agroforestal and -pastoral exploitation of the environment (see chapter 2.3.1 and 2.3.2). These new insights into Neolithic settlements on the southern Meseta contradict the idea of a subsistence based on long-distance transhumance, although even sedentary communities living close to the burial sites obtained a certain level of mobility to exploit resources beyond their settlement radius. Construction material for the tombs as well as the raw materials for the polished stone artefacts like the ones from Alcántara in the province of Cáceres (Bueno 1988) originated from local

sources. Evidence of contact and networks indicating an interchange of ideas between the megalithic communities is inherent in certain construction types and objects. Striking similarities are visible in the construction of the dolmen and the engravings and paintings inside the chambers, but also on stelae or rock faces in the Neolithic landscape. Portable objects like schist plaques or made of other raw materials such as variscite, seashells or amber likewise prove interactions between distant regions (e. g. Bueno 2000; Bueno et al. 2004; 2016a; Chapman 2008, 224–226). Considering the distribution of Neolithic sites, a widely spread Neolithic society can no longer be dismissed.

Excavations and surveys have been conducted to an extremely varying extent for the the Chalcolithic period of the late 4th and the 3rd mill. BC. Fieldwork remained concentrated in certain regions, for example Mérida and Tierra de Barros in the provinces of Badajoz and Cáceres, because of construction work that turned into research projects. The Copper Age division of the southern tableland (chapter 3.1.1) was based on the sites of La Pijotilla and San Blas in the middle basin of the Guadiana in the province of Badajoz. These sites are also the focal points of an approach which tries to prove that the societies of the Chalcolithic were socially and politically organised (chapter 2.3.3). Two areas in the centre and the northeast of the province of Cáceres revealed around 100 prehistoric settlement sites, but they did not allow the establishment of a chronological sequence as easily as Badajoz. Sites like the aforementioned Cerro de la Horca (chapter 3.1.1, southern Meseta) are first settled in the Final Neolithic or – in the case of the walled enclosure of El Canchal (Jaraíz de la Vera, Cáceres) with its connected burial ground – in the transition from the Final Neolithic to the Chalcolithic (Bueno et al. 2000). A huge amount of knowledge about this period in Toledo and Ciudad Real is based on survey material. It demonstrates without doubt the existence of a pre-Beaker Chalcolithic in both provinces, but cannot serve to establish a detailed stratified chronology.

For the middle basin of the Guadiana, an increase in site size and number of sites during the Chalcolithic compared to the previous period is detectable in the archaeological record. La Pijotilla, for example, which has been investigated with a combination of surveys, aerial images and excavations, could be defined as an 80ha large ditched enclosure with two ditches crossing the eponymous Pijotilla Brook. At least the larger ditch formed a complete circle and was present on the western as well as the eastern bank of the brook. The enclosed space does not only contain habitational areas (approx. 20ha) and storage pits but also tombs. Southwestwards, along the Guadiana River, the site of San Blas is located. It is approx. 30ha large and enclosed by a stone wall that is accompanied by an outer ditch except on its eastern side. The site has been used throughout the 3rd mill. BC. The citadel, covering an area of 1ha, was surrounded by an inner wall and an outer ditch, being constructed on older occupational sequences. Unlike in La Pijotilla, the burials were situated outside the enclosed space. Plant and animal remains as well as the presence of tools connected to agriculture and food production confirm intensive farming activities and animal husbandry. Due to the presence and the amount of both storage jars and pits, the excavator assumes that the population was able to produce a surplus (e. g. Hurtado 1995; 2004; Chapman 2008, 226–230).

The Manchegan part of the southern Meseta shows a hiatus in occupation during the 3rd mill. BC and for the provinces of the Extremadura the 2nd mill. BC remains mainly undetected (Chapman 2008, 246). Research conducted during the last years as well as new studies on the prehistoric Mesetas reveal the large potential of the region for further Neolithic and Chalcolithic discoveries (Barroso et al. 2014; Bueno et al. 2016a; 2013; 2011; 2010; 2005b; Delibes et al. 2014). The establishment of further large-scale projects might even lead to the recovery of a higher number of settlements, changes in the chronological systems and the discovery of site types so far unknown for the Spanish central plateaus. The relations between the Atlantic regions and the centre of Iberia from the Palaeolithic up to the Iron Age have been stressed already (chapter 3.1). Sites like the artificial caves of the Valle de las Higueras, the burial mound of Castillejo or the dolmen of Azután, which are all situated in the province of Toledo, have counterparts in the southwest of the

peninsula (Bueno et al. 2016a, 157 f.). Additionally, the Valle de las Higueras shows the largest number of 3rd mill. BC sites of the interior accumulated in one area so far and the dolmen of Azután provided several dates from the 5th until the end of the 3rd mill. BC. This indicates long chronologies, sedentarism as well as the aforementioned legitimation of social influence with reference to ancestral lineages (chapter 2.3.3). The detection of other sites with a ritual- or settlement-character belonging to the 4th and 3rd mill. BC (especially ditched enclosures) emphasises the socioeconomic development of the prehistoric communities. As mentioned, megalithic structures can serve as visual markers for the identification of such sites, as the sphere of the living predominantly existed close to the funerary areas (Bueno et al. 2005b; 2011; 2012b).

With project A 02 'Many Ores and Little Water. Socio-Cultural Change in Connection with the Use of Resources in the Later Prehistory of the Iberian Peninsula', the chance for new investigations concerning the 4th and mainly the 3rd mill. BC was provided, focusing on detection of settlements areas, enclosures and others. Research in the centre increased during recent decades, although huge differences between the south coast of the Iberian Peninsula and the interior seem to have been proven. While several sites fortified with stone walls and wooden or ditched enclosures with sizes up to 400ha (Zambujal: Kunst 2013b; Perdigões: Valera 2012a; Valencina de la Concepción: García et al. 2013; Los Millares: Gusi I Jener 1991; etc.) are known from the southern coastline, the size of the enclosed sites detected on the Mesetas is only up to 2 or 3ha (Díaz-del-Río 2003; García 2013). Common explanations for this contrast in dimensions are a different economic basis, lower cultural development or differences in the stratification of the respective societies (see chapter 2.3.3). Still, these explanations will be ignored when outlining the history of the investigation and the constructional characteristic of Iberian ditched enclosures in the following chapter, as the absence of huge enclosed sites in the centre of the Iberian Peninsula could be debunked by the research conducted for this study (chapter 5). Hence, those statements are no longer sustainable.

3.2 Origin of Symmetry – Ditched Enclosures of Iberia

The phenomenon of ditched enclosures on the Iberian Peninsula has already been broached in chapter 3.1 and will be presented in more detail in this chapter, as enclosures emerged to be the key topic of the conducted fieldwork (chapter 5 and 6).

Ditched enclosures are sites characteristic for the Final Neolithic and the Chalcolithic of the Iberian Peninsula. Some exceptions date back to the turn of the 6th to the 5th mill. BC (Senhora da Alegria in Coimbra, Mas d'Is in Alicante, La Revilla del Campo in Soria). Radiocarbon dating of bone and charcoal samples from the excavations in Azután in 2015 indicate a Chalcolithic age of the site. Thus, the following chapter will focus on the sites dating to the end of the 4th or to the 3rd mill. BC. A complete collection of the published ditched and walled enclosures of central and northern Spain will be presented in the conclusion within the context of the Iberian Peninsula as a whole (chapter 9).

3.2.1 History of Investigation – In a Nutshell

For a long time, the most visible and thus most researched part of the Neolithic and almost all of the Chalcolithic period (4th and 3rd mill. BC) on the Iberian Peninsula were the large megalithic burials. Another type of the prehistoric site is even lager, but less visible and better hidden in the ground. The so-called ditched enclosures are large surfaces full of circular pits that are accompanied by ditches (Márquez/Jiménez 2010, 5). Megaliths (burials, stelae, cromlechs) and ditched enclosures can often be found located closely to each other.

The so-called *campos de hoyos* (pit fields) had been known on the Iberian Peninsula ever since the end of the 19th cent., but apparently, they were not associated with ditches. Nowadays it can be questioned whether those pit fields were not surrounded indeed by a ditch or whether they were part of enclosures, but their ditch had not been detected. A common interpretation of the pits, already published by Estácio da Veiga by the end of the 19th cent., was their use as subterranean

dwellings. Another hypothesis about the pit sites was that all above-ground testimonies of the dwellings vanished or were relocated to the negative structures due to erosion and natural processes such as sedimentation. As a result, only the subterranean structures of the 'settlement' survived – the storage pits of the dwellings. The interpretation of the pits as waste deposits has been discussed as well as an assignment to the funerary ritual because human remains were repeatedly detected in the filling (Márquez/Jiménez 2010, 17–21). Instead of accepting the heterogenous character of the filling and the fact that many of them certainly did not fulfil one purpose only during their usage, unfortunately their interpretation as subterranean dwellings became one of the most prominent.

While the phenomena of megalithism and the pit fields had been known for decades, it was not until the mid-1970s that the first ditched enclosures were discovered on the Iberian Peninsula. By that time, they had already been known and investigated in other European regions, especially in Middle and Northern Europe. During the mid-1970s, the south of Spain and Portugal, in particular Andalucía, went through a late process of industrialisation due to the end of the dictatorships. The touristic boom accelerated the development of urban infrastructure and the traffic system, causing massive construction works, which were the reason for the detection of the first ditched enclosures. The sites of Valencina de la Concepción, Papa Uvas and La Pijotilla were detected more or less contemporaneously in 1975 and 1976 (published ten years later) and in the following decades the amount of known ditched enclosures increased enormously (Márquez/Jiménez 2010, 5, 17). The sites were quickly associated with the pit fields, as the ditches were accompanied by large numbers of pits in densities similar to the pit fields. The backfill material of the pits resembled the one of the pits from the pit fields as well. Almost immediately the ditched enclosures were interpreted as villages with ditches (*poblados de fosos*), later even as political centres and territorial markers (Márquez/Jiménez 2010, 24, 27–29).

In Portugal, the first ditched enclosure was detected a decade later than in Spain, in 1985, and excavated in 1986; the site of Santa Vitória in the municipality of Campo Maior close to the Spanish border. Unfortunately, the results were never published. Rescue excavations and smaller research investigations revealed further Final Neolithic and Chalcolithic sites. The fifth ditched enclosure discovered in Portugal in 1996 was Perdigões (Reguengos de Monsaraz). During the following 15 years, the amount of ditched enclosures increased rapidly. Amongst others the construction of the Alqueva dam facilitated the discovery of four sites with ditches. With the application of geomagnetic survey methods, further enclosures were detected. Eventually, in 2008, the site of Xancra (Cuba) represented the first ditched enclosure identified with the use of Google Earth (Valera 2013a, 95–97; 2008). In 2010, the number of ditched enclosures in Portugal reached 25 sites, within the following two years this number would more than double. A project tested the possibilities of the identification of ditched enclosures through the analysis of satellite imagery and geophysical survey in order to study their spatial distribution and orientation. Within a short time, 17 sites so far unknown were detected. Simultaneously, rescue excavations due to large construction sites enabled the excavation of twelve further sites with ditches. In 2013, a total amount of 54 ditched enclosures had been detected in Portugal, 29 of them within a time span of less than three years. Their geographic distribution is limited almost exclusively to the Alentejo region (Valera 2013a, 95–98).

In both Spain and Portugal, the first ditched enclosures were not detected by aerial images but by rescue excavations in the southwest and south of the countries. They represent the tip of the iceberg of a phenomenon that was rapidly recognised in the Guadalquivir and Alentejo areas and nowadays also in other regions of Iberia. In the autonomous communities of Valencia (Niuet, Jovades, Arenal de la Costa: Bernabeu 1993; Bernabeu et al. 1994) and Madrid (Las Matillas, Camino de las Yeseras: Díaz-del-Río 2003; Liesau et al. 2008), sites with ditches were detected by rescue excavations due to infrastructural building projects. Eventually, ditched enclosures were found almost all over the Iberian Peninsula with clear accumulations in certain regions due to territories of investigators, research projects, construction work but also the settlement conditions (geology, water sources,

fertile soil etc.). The search for ditched enclosures via aerial imagery started with the work of J. del Olmo (1999) who took the first aerial images of ditched enclosures in Castilla y León in 1994. G. Delibes and his colleagues used aerial imagery to identify 18 ditched enclosures in the centre of the northern Meseta. Fifteen of the sites that Delibes and his colleagues published were discovered by del Olmo in the 1990s (Delibes et al. 2014, 10–17).

The clear clusters and high amounts of sites that are known in the south of Portugal along the Gudadalquivir River – where the study of ditched enclosures started – as well as recently on the central northern Meseta are a result of systematic research projects or increased construction activity. In general, ditched enclosures have been detected by rescue excavations, surveys and geomagnetic surveys, aerial as well as based on satellite imagery during the last decades and certainly further sites will be discovered in the future, especially with the application of LiDAR. Still, up to now, the highest amount of site discovery resulted from the search in aerial images and rescue excavations. Besides the systematic search in aerial images, survey projects in the vicinity of megalithic burials (chapter 5) or stelae indicating Neolithic and Chalcolithic activities can be used to locate ditched enclosures in areas where they are not found or assumed yet.

3.2.2 The Nature of Ditched Enclosures

In the short note on the history of detection and investigation of the ditched enclosures of the Iberian Peninsula, the prominent features of those sites already became apparent: ditches and pits. In the following chapter, the characteristics of the ditches and pits as well as the topography of the sites as such will be outlined.

In general, ditched enclosures tend to show a circular form, but ellipsoidal, oval or irregular ditched enclosures exist as well. The circular or sometimes semi-circular ditches often surrounded spaces of several hectares. The sizes of the enclosed spaces are highly variable and vary between several 10m² only up to several hectares. Often more than just one concentric ditch is present at the sites. This does not have to indicate that the ditches were contemporaneous. Not even all parts of one ditch were inevitably constructed at once. Usually, ditched enclosures are located on layers of tertiary marl. Occasionally this kind of site is also situated on other soils and rocks (Márquez/Jiménez 2010, 5 f.; Valera 2013a, 94).

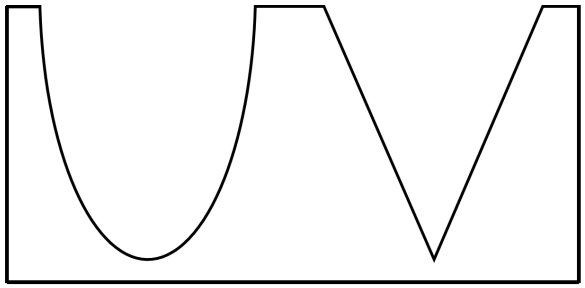


Fig. 7. Schematic profiles of U- and V-shaped ditches.

Besides the size of the enclosed area the dimensions of the ditches differ a lot as well. The ditches were dug into the bedrock and show a U- or V-shaped profile (*fig. 7*), which can change within the course of a ditch. The depth and width are very variable: Depths of up to 7m and also of less than 1m have been documented in different sites. The most common depths range between 2 and 3m. The regular width of a ditch ranges between 2 and 4m, some of the ditches show a width of less than 1m while others exceed 20m. It remains unclear if the excavated ditches have been deeper or wider in prehistoric times because parts of them are eroded. Occasionally ditches are accompanied by palisades or banks, although the latter could not be documented and proven without doubt for sites on the Iberian Peninsula. During their time of use, most of the ditches are thought to have been kept open. Their backfill occurred throughout time by human activities as well as natural processes of erosion and sedimentation (Márquez/Jiménez 2010, 5; Valera 2013a, 94).

A special case of the ditched enclosures of the Iberian Southwest are ditches with a wavy or sinuous course that do not only appear isolated but also on sites with both linear and sinuous ditch courses. The wavy and sinuous ditches show a considerable concentration along the lower and middle Guadiana River in Portugal. Examples can also be found in the Algarve and the lower basin of the Guadalquivir River. Notably, sinuous ditches are rare or absent in the rest of Europe. So far sites

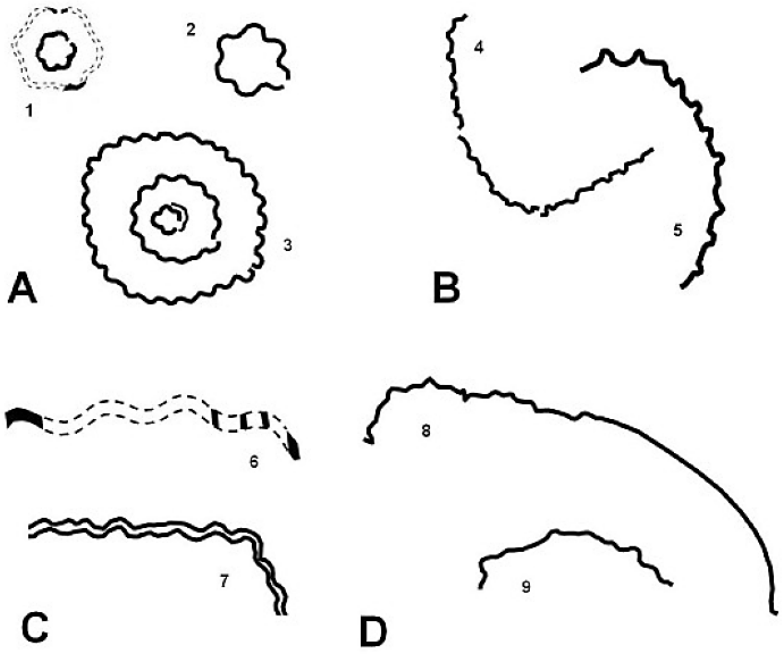


Fig. 8. Types of sinuous ditches defined and categorised by Valera (2012b, 32 f., fig. 7). A: regular and clearly defined semicircles (Santa Vitória, 2. Outeiro Alto, 3. Xancra); B: accentuated, spaceous waves (4. Moreiros, 5. Águas Frias); C: regular, less steep, serpentine waves (6. Juromenha 1, 7. Perdigoes); D: highly irregular and variable waves (8. Águas Frias, 9. Perdigões).

with wavy ditches are a phenomenon limited to the south of the Iberian Peninsula with a concentration in the Southwest and the highest number of sites in the south of Portugal (Valera 2012b, 27). Looking at the plans of sites with sinuous ditches, a diversity in their construction becomes obvious: Ditches with gentle waves are contrasted by others with clearly defined waves and ditches with regularly appearing waves are contrasted by highly irregular ones (*fig. 8*). On the basis of the Portuguese sites A. Valera defined four different types of sinuous ditches:

A: regular and clearly defined semicircles or cloud-like waves, appearing in the same distance (*fig. 8 A*),

B: accentuated waves that use more space, semicircles are less similar and sometimes interrupted by linear parts (*fig. 8 B*),

C: regular waves, a continuous wavy course but not such steep waves as in type A and B; the form of the waves is more individual (*fig. 8 C*),

D: a sinuous character of the ditch is marked by high proportion of irregularity, the form of the waves is highly variable and often interrupted by long, linear sections (*fig. 8 D*; Valera 2012b, 32 f.).

This construction phenomenon of the Iberian Southwest will be addressed again later (chapter 5.3.2).

The predominantly concentric ditched enclosures are accompanied – as mentioned before – by numerous pits, which are distributed inside as well as outside the enclosed space. Investigations showed that these pits were used for short as well as long amounts of time (from several decades up to a millennium and more; Valera 2013a, 94). On the basis of their form, two main types of pits can be distinguished. One of those are the shafts: deep pits generally known as silos (*fig. 9 right*). Normally these pits are deeper than they are wide, with diameters of less than 2m and depths of 1 to 2m. Their profile can be considered to be bell-shaped. The second type is called basin (*cubetas*, *fig. 9 left*) and is traditionally referred to as foundations of dwellings. These pits are characterised by a concentric shape and diameters between 2 and 3m. Except for some pits with depths of up to 5m, their depth generally does not surpass 1m.

Pits and ditches are both backfilled with huge amounts of archaeological deposits, predominantly sediment followed by potsherds. Especially the pits contain very similar kinds and compositions

of cultural and organic material. Human remains are frequently present, both as complete and articulated skeletons and as incomplete, disarticulated ones without clearly associated burial objects. Disarticulated remains of animals are also very often part of the deposits. Sometimes, articulated ones are found. Animal species to be recorded in the pits are pigs, dogs, cattle, deer and sheep or goats and – occasionally – horses. Besides the bones of humans and animals the pits contain an abundance of small and middle-sized stones. Many of them are simple pebbles, but some are fragments of grinding stones. Idols, barely burned adobe, ashes, carbon and molluscs appear in the backfill of the pits and ditches (Márquez/Jiménez 2010, 7 f.). The features of the ditched enclosures and the huge amounts of deposited finds they include contain a great deal of information on the builders and users of the enclosures. Their high variability also indicates that not each of the ditched enclosures served the same purpose, but were certainly assigned to different purposes.

Regarding the location of ditched enclosures this variability continues. While enclosures with stone walls (walled enclosures) are exclusively situated on mountains and rocks with natural defences, ditched enclosures can be located everywhere else: on hills, gentle or steeper slopes and in vast valleys. When situated along rivers and brooks, the ditches sometimes even cross the streams. Besides the location on flat terrain, ditched enclosures also adapt their construction to natural amphitheatres formed by terrain undulations; basically, they can be found in almost every topographical situation (Valera 2013a, 94, 102).

As already indicated, not only the plan, size and topography of ditched enclosures vary immensely, but also the interpretive approaches on their use. These will be addressed more extensively in chapter 8 and 9. In order to offer an impression of existing interpretations of ditched enclosures, ranging from very ordinary use to extremely complex purposes, some are briefly presented here. Ditched enclosures are mainly referred to as simple villages with ditches, fortified settlements or as centres of power. Additionally, some of them are said to have served as market places, distributional centres or gathering places.

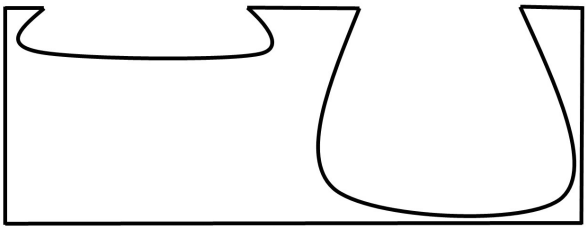


Fig. 9. Schematic profile of pits of the 'basin' (left) and the 'silo' (right) type.

Other approaches consider them to have been astronomical calendars, ritual places or cattle kraals. Although the ditched enclosures share common elements, each of the sites has its own biography. Undoubtedly not every ditched enclosure has been constructed for the same reasons and therefore each of them has to be considered as an individual site in addition to the common element of being a ditched enclosure. This individuality might also be represented in the sites' former purpose, or purposes. By using this broad approach, different types of ditched enclosures can be defined and, if applicable, certain activities and functions can be assigned to the different types.

3.3 Late Prehistory in the Micro Region of Azután

The micro region defined for further research within this study focussed on an area of approx. 200km² on both banks of the Tagus River[10] (predominantly El Puente del Arzobispo, Alcolea de Tajo and Azután) and the foothills of the Montes de Toledo (Navalmoralejo, La Estrella and Aldeanueva de San Bartolomé), including parts of the rural districts of La Jara and La Campana de Oropesa (*fig. 10*). A difference in altitude of approx. 350m characterises the topography of the study area which comprises of fertile soils in the valley and areas for *dehesa* and pastoralist economies in the more mountainous region (Sierra de

10 The size of the area was first defined on the basis of the archive and publication study (chapter 5.1) and was later strongly reduced in size due to experiences made during the field survey (chapter 5.2).

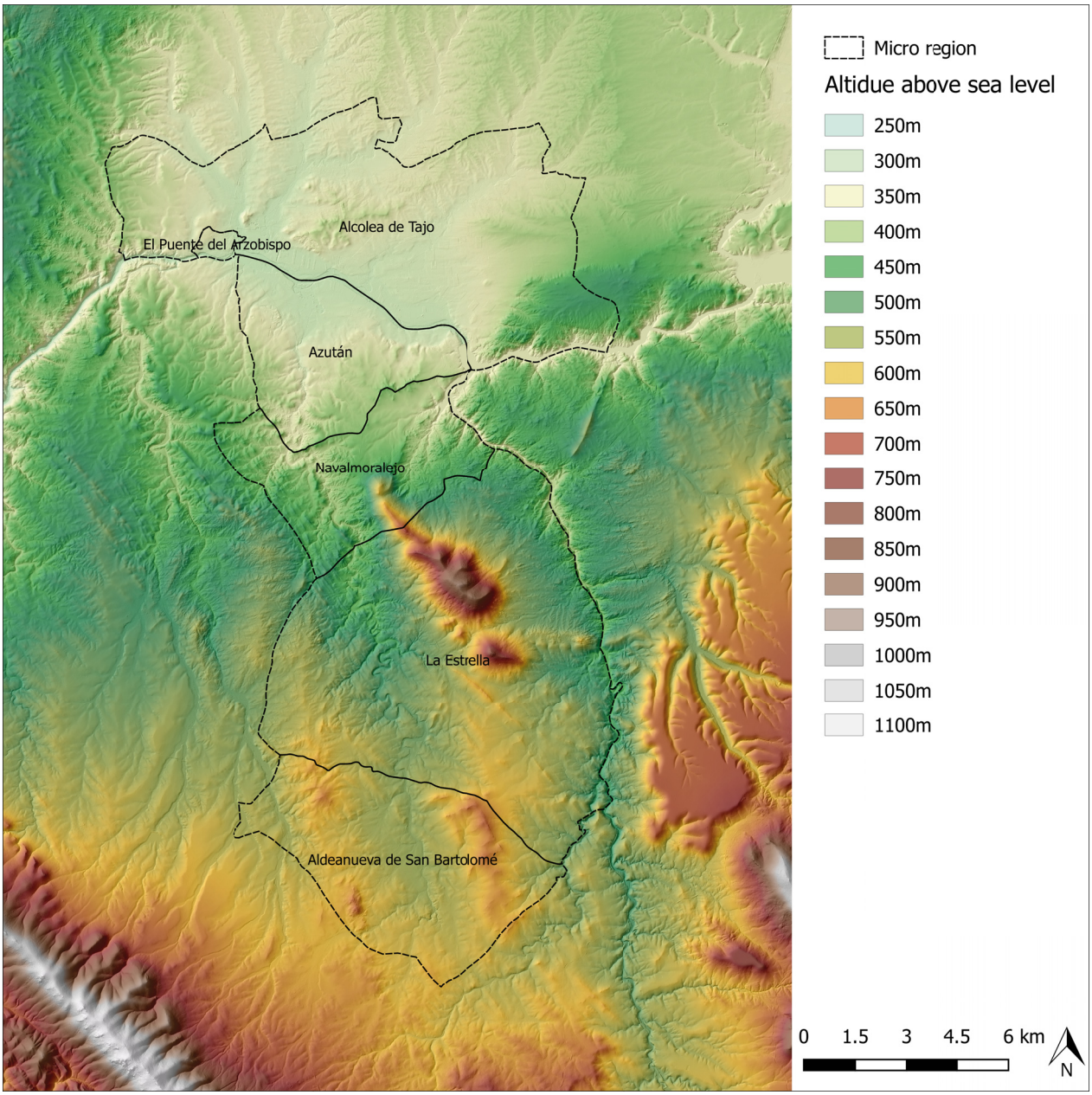


Fig. 10. Map of the study area, indicating elevations and a variety of geological units.

la Estrella, El Castrejón). Besides the Tagus River and several smaller brooks, the Anguilucha Brook and the Uso River – both southern tributaries of the Tagus – form the most important fresh water sources. Although these conditions seemed to have been suitable for agriculture and other economies, the study area showed little evidence of late prehistoric human activities (for further detail see chapter 7 and *8*).

As the project focussed on the search for settlement indicators of the late 4th and the 3rd mill. BC, only Late Neolithic and Chalcolithic sites will be presented. Azután – which emerged to become the main area for the fieldwork – was chosen as an ideal starting point for the case study's research due to its favourable location on the fertile terraces of the Tagus River, in a valley between the foothills of the Montes de Toledo and the Gredos Mountains. The megalithic burial mound of Azután, dating back to approx. 3800–2600 BC, and the Neolithic dwelling detected below the chamber of the dolmen have been investigated during several

excavation campaigns (Bueno 1991; Bueno et al. 2005a; 2016a). Given that a collective burial usually does not stand separately but is accompanied by indications of settlement activities (already mentioned by Bueno et al. 2005b; 2011; 2012b; 2016a), one of the project's objectives was to track the scarcely-known settlement patterns in both the area around the dolmen and – on a larger scale – in the province of Toledo for the 4th to 3rd mill. BC (for more details see chapter 5).

Including the dolmen of Azután, a total of only four published sites of project-relevant chronology could be determined in the defined area in the west of the province of Toledo. The sites – two hilltop settlements (El Castrejón and La Cabeza del Conde) and two megalithic burial mounds (La Estrellla and Azután) – are situated in Aldeanueva de San Bartolomé, La Estrella and Azután. Only two of the sites were excavated and securely dated: The dolmen of Azután has been excavated in several campaigns in 1981, 1983, 1991 and 2001. In 1983, another dolmen in the foothills of the Montes de Toledo in La Estrella has been investigated as well (Bueno 1991; Bueno et al. 2005a, 13, 37–100). Both megalithic burials are very similar in their construction and the periods of usage. According to the categories of Bueno, they are defined as round chamber tombs with a long corridor (Bueno 1991, 18), constructed with large stones (orthostates) of local granite. The mounds consisted of small and medium size stones, soil and – in the case of Azután – flat lying stones bordering the mound (Bueno et al. 2005a, 117–131).[11] Two further dolmens of the same type have been detected in the municipality of Navalcán north of the study area: La Cumbre and one that is nowadays located in the water reservoir of Navalcán (Bueno et al. 1999b). All known Toledean dolmen show paintings on the orthostates. Their main usage phases date back to the 5th and 4th mill. BC with a younger use during the Bell Beaker period in the second half of the 3rd mill. (Bueno et al. 2005a, 117–131). The dolmens are situated in the valley or the foothills of mountains, along the *cañada real leonesa*, which leads northwards to the province of Ávila, connecting the Mesetas, and southwards via Puerto de San Vicente and through the provinces of Cáceres and Badajoz to Huelva (Bueno 1991, 18; 2005a, 21 f.).

The sites of El Castrejón and Cabeza del Conde are both hilltop settlements with walls surrounding a round-oval interior, so-called walled enclosures. El Castrejón is situated on the top of a hill of the same name in the west of the village of Aldeanueva de San Bartolomé (see chapter 5.2.2). It is also located along the *cañada real leonesa*, which leads to the valley of Azután in the north and to Puerto de San Vicente in the south. The plateau is bordered by a stone wall of medium and large size granites, which can be found all over the hill and its surroundings. Dwelling structures found in the interior belong to a younger phase of usage (medieval). The survey material mainly consists of pottery and allows a chronological differentiation into a first occupation phase during the Chalcolithic period to which the enclosing stone wall is supposed to belong and a second phase dating to medieval times, including the mentioned dwelling structures as well as possibly parts of the stone wall (Carrobles/Méndez-Cabeza 1991, 7 f.).

Cabeza del Conde, also situated on an elevation of granite nature belonging to the Sierra de La Estrella, dominates the valley of the Uso River. The plateau offered a natural defence line of large granites, which only had to be complemented by additional stone walls out of small and middle size stones to enclose the plateau. Inside the enclosure – as known from El Castrejón – several structures interpreted as dwellings could be documented. The survey material consists of a small number of diagnostic potsherds and some quartzite artefacts. At least two periods of occupation can be differentiated: The first one probably dates back to the Chalcolithic and includes the construction of the walls closing the gaps between the natural enclosure and the majority of the mentioned dwellings. The second period cannot clearly be pinpointed chronologically and may be the result of pastoral activities as herdsmen who often tended to use foundations of already existing structures and natural formations for the construction of their huts or shelters (Carrobles/Méndez-Cabeza 1991, 8 f.). A similar walled enclosure was documented by survey activities in Alcaudete de la Jara named Alcaudete de la

11 For detailed description of the history of investigation, construction, material and dating see especially Bueno 1991; Bueno et al. 2005a; 2016a.

Jara I (Carrobles/Méndez-Cabeza 1991, 10 f.) in the east of the study region (see chapter 5.1). Another hilltop site – Los Castillos de las Herencias – was partly excavated (de Álvaro et al. 1988; de Álvaro/Piñón 1995), but besides a natural defence of steep slopes to the Tagus River no walls or ditches existed or at least were detected so far (chapter 3.1 and 5.1). Unfortunately, no proper excavation or survey plan exists for those hilltop sites, which complicates a comparison of the sites with other contemporaneous chalcolithic sites.

A detailed compilation of the published as well as the unpublished sites of the province of Toledo during the 4th and 3rd mill. BC is presented in chapter 5.1 and the catalogue (see online appendix), completed by new field surveys in the defined micro region (chapter 5.2). The inclusion of the data of unpublished surveys from the archives leads to a shift in the picture of prehistoric settlements in that area, indicating a lot more prehistoric human activity in the centre of the Iberian Peninsula.

4 Environment

To understand the settlement conditions of a site or a micro region, an outline of the geographical as well as the climatic settings is essential. After a brief outline of the general geological and geographical situation of the Iberian Peninsula the focus will be on the southern Meseta, especially on the area in the west of the province of Toledo. After having considered its modern environment and climate conditions, the focus will be on the available data for the reconstruction of its palaeoenvironment during the 4th and 3rd mill. BC. Especially palynological studies will be addressed to gain a better insight into the former prehistoric landscape of the province of Toledo.

Parts of this chapter have already been discussed in a paper presented at a conference in Kiel (Schmitt et al. 2019) but are essential for the understanding of the big picture and will be presented in greater detail in this chapter.

4.1 Modern Conditions – Geology, Geography, Climate

Besides its long coastline, another characteristic of the Iberian Peninsula are its vast plateaus. The northern and southern Mesetas are the largest and best known of these plateaus. The English term – Spanish Central Plateau – as well as the general designation *Meseta central* indicate the position of the Mesetas in the centre of the Iberian Peninsula. They are separated by the Central System (Gibbons/Moreno 2002, 1). Both tablelands slope towards the Atlantic Ocean but are blocked from the coast by mountain ranges. In the north this barrier is formed by the Cantabrian Mountains (highest elevation: 2648m). The foothills of the Iberian Ranges and the Baetic System impede the access to the east coast. The southern Meseta forms the lower part of the high plateau and its barrier to the Mediterranean is the Sierra Morena with the highest peak at 1323m (Breuer 2008, 50). It separates the southern tablelands from Andalucía, the Baetic System and the Iberian Range separate it from Valencia and the Mediterranean coasts in the east (Chapman 2008, 222 f.), while the western coast is rather readily accessible. The geology of the Iberian Peninsula is remarkably diverse and contains nearly all the Palaeozoic sediments, which makes it one of the most complete sediment successions in Europe. During the Quaternary period major changes took place and modelled the topography as we know it today (Gibbons/Moreno 2002, 1).

Almost 70% of the rivers of the Iberian Peninsula drain into the Atlantic Ocean whereas the remaining ones drain into the Mediterranean. This is a result of the relief situation as the mountain ranges determine the main watershed situated in the eastern third of the peninsula. The Ebro River is the only Mediterranean inflow comparable to the Atlantic inflows in length and flow conditions. The large rivers draining into the Atlantic are about 1000km in length and originate in the Iberian Range in relatively low altitudes, therefore their gradient is rather moderate. On their way to the Atlantic Ocean they are fed by several tributaries and have calm and balanced flow conditions. The Tagus River is one of these watercourses. It is a perennial river of calm and balanced flow condition (Breuer 2008, 52 f.; Gibbons/Moreno 2002, 354).

The case study focusses on parts of the plain areas of the Tagus middle basin that reaches from Toledo until Alcántara (almost the Portuguese border), restricted to the province of Toledo it includes the southern part of the rivers' upper basin as well. This region once comprised a Cenozoic depocenter but when the Sierra de Altomira lifted, it divided the area into three parts: the Madrid basin, the Manchegan plain and the Júcar basin in the west. Thus, the Tagus Basin, which is also referred to as the southern Meseta, is surrounded by geological units of different ages and composition. Precambrian and Palaeozoic mountains form the margin of the basin to the north and the west. The south and east are marked by Mesozoic carbonates. This reflects not only topographic contrasts but also lithological ones that had a strong impact on the Quaternary sedimentation processes. Characteristic sedimentary deposits of the Quaternary on the southern Meseta are

Aeolian deposits, fluvial terraces, travertine and tufa (Gibbons/Moreno 2002, 354).

Azután is located in the Tagus middle basin on the southern terraces of the river in the province of Toledo which is part of the autonomous community of Castilla-La Mancha on the southern Meseta (chapter 2.2). In the north this area in the western part of the province of Toledo is bordered by the Gredos Mountains of the Iberian Central System, and in the south by the western foothills of the Montes de Toledo. Azután itself is situated in the lowlands between the mountains in the rural district of La Campana de Oropesa. South of Azután the steep mountains of the Sierra Ancha rise, which places the study area at the transition between mountainous regions and lowlands. The parent material of the soil in the middle basin of the Tagus is granite, which facilitated the accumulation of fertile ground on both sides of the river and lead to a favourable situation for agricultural purposes. The lowlands of the river are filled with tertiary sediment whereas the hilltops of the nearby Montes de Toledo are rich in slate of the Cambrian age. In the valley of Azután and El Puente del Arzobispo quartz, quartzite and clay layers dominate the soil composition and closer to the riverbank the clay layers are more massive (ENADISMA 1972, 5–7). All river terraces in this area were formed during the Quaternary and are therefore similar in their sediment composition: reddish clay and marl with quartzite pebbles. The alluvial land is formed by so-called *rañas* (alluvial fans) and consists of arenaceous, silty soil with strongly rounded pebbles. The Alluvion shows a layer with clay of excellent consistency for pottery. Until today the western part of Toledo is famous for its pottery from Talavera and El Puente del Arzobispo (ENADISMA 1972, 11).

Besides geological processes the climate is another major influence on the landscape. The micro region of Azután and in general the southern Meseta is characterised by rather warm and periodical very dry conditions often accompanied by insufficient amounts of rain. Besides the seasonal changes of temperatures, the daily changes of temperature can be extreme as well (Chapman 2008, 223; ENADISMA 1972, 3). In the region of Talavera de la Reina, which includes the western part of the province of Toledo, the maximum temperatures range between 35 and 40°C while the lowest average temperatures are between 0 and -5°C. The amount of average annual precipitation ranges between 400mm in the east and 500mm in the west of the Meseta (ENADISMA 1972, 3); rain-fed agriculture without additional irrigation is still possible in the defined micro region of Azután (Andreae 1977, 42).

Geology and geomorphological processes as well as the climate have formed the relief of the peninsula. At least since the first farmers and settlers populated the area, humans changed and influenced their environment, too. This does not only find its expression in the erection of megalithic monuments and enclosures but is also reflected in the gradual deforestation and clearance of the landscape as a result of the agricultural strategies (chapter 2.3.2). Archaeobotanical, archaeozoological and geomorphological studies help to understand these formation processes.

4.2 Late Prehistoric Conditions – Palaeoenvironment and Diet

Without doubt archaeobotany is the discipline that, to a certain degree, can recreate the prehistoric environment and illustrate the influence of humans on the landscapes. Furthermore, it not only investigates macroscopic archaeobotanical remains from archaeological sites, but also extracts pollen profiles from lakes, swamps and peat bogs, which can add to the information derived from excavations. Pollen profiles can offer insights into human impact in showing periods of deforestation and cultivation of certain plants for example (López et al. 2009, 92).

Compared to today's conditions for late prehistory on the Iberian Peninsula, a similar climate may be imagined but with a different density of vegetation and composition of plants. Research that investigates the palaeoflora unfortunately makes it clear that huge areas of the peninsula only allow limited insight into the archive of the palaeoenvironment during the Holocene, as studies do not cover the entire peninsula with its differing climatic zones. To make matters even more complicated, a lot of these archives are fragmentary or questionable in their chronological

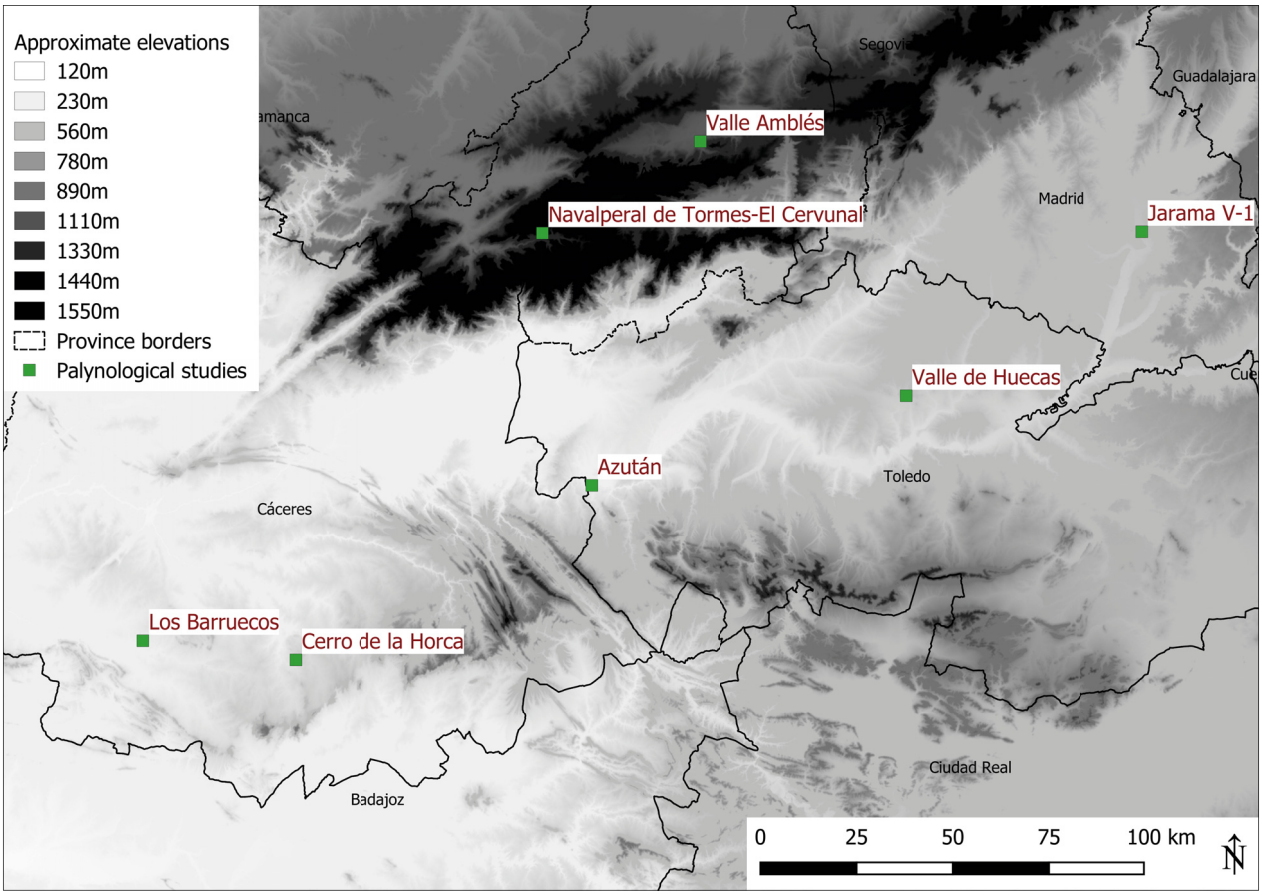


Fig. 11. Approximate location of the sites taken into account for the reconstruction of the palaeoenvironment and -diet (map based on SRTM 90m; <https://cgiarcsi.community/>; province borders © Instituto Geográfico Nacional).

assignment (López et al. 2009, 91). The impressive summary of all palaeoenvironmental analyses of the Iberian Peninsula coordinated by Carrión (2012) shows not only the low number of sites in the centre of the peninsula but also the difficulty to locate places that have a sequence that dates to the end of the 4th and the 3rd mill. BC. For a reliable reconstruction of the palaeo-climate and vegetation, a higher number of investigated sites closing the gaps on the map and deriving from different types of environments would be required. Further palynological samples of Chalcolithic sites on the Mesetas should be taken and analysed whenever possible to improve and confirm the current picture of the Chalcolithic landscape.

Fortunately, part of the reconstruction of the environment on the southern Meseta in late prehistory is based on the analysis of samples derived from the chamber of the dolmen of Azután and the dwelling below (López/López 2000; 2005; López 2012e), providing data from the heart of the case study area. Six more sites form the region can also be consulted, as they are of a similar or only slightly younger/older date. None of them is located in the vicinity of the micro region of the case study, being at distances of more than 100km (*fig. 11*). Although the sites are not in the direct vicinity of Azután but spread all over the southern Meseta, the Gredos Mountains and the south of the northern Meseta, they add helpful pieces to the puzzle of the reconstruction of the palaeoenvironment. Their application is debatable, although they still give an idea of the natural and cultural landscape between 4000 and 2000 BC and earlier. They also stress the necessity of receiving more information directly from Azután and the southern Meseta in general. The results from Navalperal de Tormes (Ávila) and Jarama (Madrid) are based on exclusively natural deposits, while Valle Amblés represents an archaeological landscape with associated peat bog samples. Cerro de la Horca (Cáceres), Los Barruecos (Cáceres) and

the Valle de Huecas (Toledo) contribute insight deriving from archaeological contexts (*tab. 2*). Whenever it was possible, the palynological and archaeobotanical results were supplemented with information about faunal remains of the archaeological sites. As Los Barruecos and Cerro de la Horca have already been discussed in detail in chapter 2.3.2, only the information on their meat diet during the Neolithic and Chalcolithic period will be added here.

4.2.1 Valle Amblés (Ávila)

As already mentioned, the archaeological sites in the area of the Valle Amblés were studied in detail and allow an excellent insight in the palaeoenvironment. Their timeframe covers the Neolithic to the Bronze Age. The chronological emphasis here is on the Chalcolithic samples, spanning a period from the second half of the 4th to the end of the 3rd mill. BC. As the samples were taken in ten archaeological sites as well as from two natural deposits (drill cores taken in peat bogs), they provide a solid base for the reconstruction (López 2012a, 429). The presence of nitrophile plants as well as the pollen of coprophilic fungi in the samples demonstrates that during the Chalcolithic pastures clearly dominated the landscape, whereas the forest only held a testimonial position. Both the archaeological and the natural samples contained percentages of less than 20% for oaks, which can be interpreted as an indicator for an open oak forest. The results of the palynological studies point to a population of farmers and pastoralists in an agricultural landscape very similar to the current one in the Valle Amblés. Agriculture was practiced preferably on the fertile alluvial fans in the valley and the mixed open forests of ash and oak trees. The foothills of the mountains were probably used as pasture for cattle. The gathering of wild fruits, especially of acorns, must have been a major concern, as pollen of holm oaks (*Quercus ilex*) dominate the record and also the few studies on macro remains emphasise the fundamental role of acorn in the nutrition of the cattle (López et al. 2003, 134–138; López 2012a, 429 f.).

Faunal remains of the 3rd mill. BC of the Valle Amblés have been studied from four sites that were also palynologically investigated: Aldeagordillo, La Cantera de las Hálagas, Fuente Lirio and Los Itueros. At all sites, the amount of ovicaprids dominates; from 31.6% at Aldeagordillo up to 50.3% at Hálagas, followed by *bos* and *sus*. At Aldeagordillo, the amount of horse remains discovered has to be stressed (24.6%). In general, wild animals represent an insignificantly low number of the total number of fragments and mainly include fragments of small animals like rabbits and not big mammals like deer or boar. The total percentage of domesticated animals varies between 86 and 95% of the weight in the samples from the different sites (Fabián 2006, 453–457). This leads to the conclusion that animal husbandry clearly was the dominating source of primary and secondary animal products, whereas hunting played a subordinate role.

4.2.2 Los Barruecos and Cerro de la Horca (Cáceres)

As the sites of Los Barruecos and Cerro de la Horca have been discussed in detail in the chapter on *dehesa* economy (chapter 2.3.2), only the composition of the faunal remains from the sites will be presented here. The studied faunal remains of Los Barruecos derive from four stratigraphic units dating to the Early, Middle and Final Neolithic that were excavated in 2001 (Morales 2006). Unfortunately, the number of unidentified fragments is twice as large as the number of the identified ones and the number of identified fragments for each unit also varies strongly[12], which may explain the higher variability in species identified for the Final Neolithic. Looking at the Minimum number of individuals (MNI), the sample from the Early Neolithic unit contains 25% cattle, 25% ovicaprid and 50% pig. The Middle Neolithic sample contain 22% cattle, 22% ovicaprid, 33% pig, 11% rabbit, 11% hare. The Final Neolithic sample is divided

12 Early Neolithic 9, Middle Neolithic 35, Final Neolithic 147 identified fragments at Los Barruecos.

up in 8.5% cattle, 8.5% sheep, 13% ovicaprid, 8.5% goat, 22% pig, 26% rabbit, 4% hare and 8.5% deer (Morales 2006, 114).[13] A. Morales concludes that the following tendencies can be observed in the small sample: The Early Neolithic population hunted rather than breeding their own animals because the faunal remains mainly belong to wild species. The Middle Neolithic remains point to a preference of domesticated species, as their bones are smaller compared to the contemporaneous wild conspecifics. Sheep as well as domesticated pigs can be clearly identified. The hunting strategy of the Early Neolithic seems to have been replaced by animal husbandry. For the Final Neolithic, the same observations can be made as for the Middle Neolithic, but the hunt seems to have regained importance. The latter may be an indication for a stronger exploitation of the territory or an increase of the population, which makes a use of all available resources necessary (Morales 2006, 129 f.).

At Cerro de la Horca, the faunal remains all seem to belong to the Late Chalcolithic occupation of the site. The material derives from the excavations of 1984 to 1989 (Castaños 1992). P. Castaños was able to identify a total of 853 animal remains belonging to a minimum number of 77 individuals, representing 13 mammal species and one bird. The distribution of the material in the different excavation sectors is very uneven, also due to erosive processes. The sample of Cerro de la Horca shows a clear dominance of animal husbandry over hunting, though also wild animals are present at the site. The domesticated animals show an even distribution, unlike other Chalcolithic sites, where ovicaprids dominated the archaeological record of the period. Wild animals are presented with 33.78% at the site, including aurochs, deer, rabbit, hare, fox and various birds. MNI only exist for domesticated ungulates at Cerro de la Horca. Apart from the mentioned 32.8% wild species, the record of domesticated animals comprises of 21.31% pigs, 19.67% ovicaprids, 16.39% horses and 9.83% cattle (Castaños 1992, 130; *tab. 2*).

13 The percentages for pigs, cattle and ovicaprids all include their wild counterparts like boar and aurochs.

4.2.3 Valle de Huecas (Toledo)

The Valle the Huecas in the north of the province of Toledo is a complex of sites that can serve as an excellent example for the reconstruction of the palaeoenvironment. Combined with the results from the palynological investigations in the dolmen of Azután (López/López 2000; 2005; Bueno et al. 2005a), both sides allow the outlining of a possible environment for the 4th and 3rd mill. BC in Azután. Archaeology, geography, palynology, archaeobotany, archaeozoology and geophysics worked together to paint a picture of the 4th and 3rd mill. BC society living in Huecas and its surroundings (Benítez et al. 2009). Most of the samples for archaeobotany and palynology derived from the archaeological structures (López et al. 2009) but also drill cores from the wetlands were taken and examined (Uribelarrea et al. 2009). Even some coprolites of animals have offered insight into the vegetation, as they show what the animals ate during their lifetime. The animal bones were studied as well (Liesau 2009) and completed the picture of the environment and its inhabitants.

Luckily, the archaeological record from the Valle de Huecas covers the 4th and the 3rd mill. BC. The site of the tumulus El Castillejo offered data from the Late Neolithic and the Late Chalcolithic phase from the dwelling structure underneath the round barrow as well as the burial mound (López et al. 2009, 93, 101). The data for the Chalcolithic phase derived from the settlement site of Los Picos-Fontarrón (López et al. 2009, 97). The analyses of the pollen from 4000–3500 BC show obvious symptoms of deforestation. The natural holm oak (*Quercus ilex*) forest seems to transform into a rather *dehesa*-like landscape, where the tree cover with oaks ranges at about 15% of all vegetation. Usually, juniper (*Juniperus oxycedrus*) is quite common for a landscape like this, but it could not be traced here. Instead, the typical forest cover of river banks consisting of alder (*Alnus*), poplar (*Populus*) and ash (*Fraxinus*) was detected in the samples. Pine (*Pinus pinaster*) also seems to have played a significant role within the vegetation of the Iberian Peninsula in the middle of the Holocene because it was widely-spread (in detail and

in connection with *policultivo ganadero* see chapter 2.3.2). Still, calculations of the percentage of pine trees have to be considered with caution, as pines produce huge amounts of pollen. The holm oaks mentioned above are characteristic for the tree species of the Valle de Huecas. The bush-like cover up to hedges and the typically thermophile olive (*Olea europaea*) have to be taken into account. Cereal (*Cerealia*) was also traced in sufficient percentages to verify its cultivation and even beans with an amount of 2% of all pollen were detected (López et al. 2009, 94 f.).

During the Chalcolithic between 3000–2500 BC, obvious changes in the pollen profiles occur: The samples from Los Picos-El Fontarrón prove a change in environment due to a growing human impact. A decrease of the holm oak population during the first half of the 3rd mill. BC points to a preference of the *dehesa* agriculture. The percentage of pine remains at 20%. Poplar and ash seem to disappear completely from the river banks, but bush-like plants like the rockrose (*Cistus ladanifer*) and labiate plants (*Lamiaceae*) are still existent (López et al. 2009, 97). The palynological and archaeozoological studies reveal a dominant role of pasture land with oak, pine and olive population as well as a high proportion of pigs, sheep and goats (López et al. 2009, 103; Liesau 2009, 112; Bueno et al. 2005c, 85 f.).

The habitational structures of the first half of the 3rd mill. BC in the Valle de Huecas produced a series of data on faunal remains. The study of the faunal remains shows that both domesticated and wild animals were consumed and used, though domesticated species clearly dominate. According to the number of fragments (MNI is not published), pigs (over 35% including boar as well) were most important, followed by sheep/goat (over 20%) and cattle (over 15%). Two fragments of dogs have been found as well. The wild animals detected in the samples were mainly rabbits and hares (over 10%), followed by deer (over 3%) (Liesau 2009, 112–114).[14] Compared to other Chalcolithic sites, pigs seem to have played a more important role in the Valle de Huecas than sheep and goats, which usually represent the highest amount of animal remains during that period.

4.2.4 Azután (Toledo)

For Azután itself, the investigations of 2005 in the chamber of the dolmen and the Neolithic dwelling below point to a similar reconstruction of the environment already during the 4th mill. (4000–3900 BC). The dolmen surely does not represent the complete diversity of the pollen spectrum (López et al. 2009, 96 f.; Bueno et al. 2009, 54 f.; López/López 2000; 2005). Still, the discovery of wheat in the archaeological record within the hut structure of Azután shows that its cultivation was not limited to the coastal areas as supposed for many years, but was also cultivated in the interior of the Iberian Peninsula. Because of the small amount of palynological studies conducted in the centre, it is most likely that cereals were just not detected but actually not absent in the archaeological record due to a lower cultural level as often has been discussed in connection with the people of the Mesetas (Bueno et al. 2005c, 86). The majority of the extremely fragmented animal bones excavated and analysed belong to ovicaprids followed by rabbits. Some fragments could be determined as cattle and a small number of bones belong to horses (Bueno 1991, 57; Sánchez 2005).[15] Although it is a rather small sample of faunal remains, the dominance of ovicaprids in the archaeofaunal record of the dolmen and the dwelling is consistent with the data from other sites of the Neolithic and Chalcolithic in Central Iberia.

An anthropogenic impact on the landscape is already noticeable during the Neolithic period. All pollen analyses dating to Neolithic and Chalcolithic times from the centre of the Iberian Peninsula indicate an increase in the cultivation of the landscape. Cereal pollen and spurs of coprophilic fungi show that large grasslands for cattle and

14 Percentages in the table are equivocal and not broken down in the text of the paper (Liesau 2009, 113). Therefore, the numbers mentioned here are approximations and not exact.

15 Exact percentages cannot be given as they were not published.

Name	Province/CA	Context	Dating calBC	Reference
Valle Amblés	Ávila	archaeological and natural	3326–2000	Ruiz et al. 1990; López et al. 2003; López 2012a ; Fabián 2006
Navalperal de Tormes-El Cervunal	Ávila	natural	3330–2870	Maldonado et al. 2005; Gómez-Manzaneque 2012
Jarama V-1	Madrid	natural	5977–5626 and 3712–3375	Alonso et al. 1998; García 2012
Valle de Huecas	Toledo	archaeological	4936–2041	Bueno et al. 2005c; López et al. 2009; López 2012d; Liesau 2009
Azután	Toledo	archaeological	4560–3270	López/López 2000; 2005; López 2012e; Sánchez 2005
Cerro de la Horca	Cáceres	archaeological	5200–4800 and 2916–2459	González et al. 1988; 1991; López et al. 2007; López 2012b; Castaños 1992
Los Barruecos	Cáceres	archaeological	5206–3141	Cerrillo et al. 2002; Cerrillo 2006; Lopez et al. 2007; López 2012c; Morales 2006

Tab. 2. Compilation of the discussed sites, their context and dating, with references for the reconstruction of the palaeoenvironment and diet.

cultivable land used for cereal production was available (López et al. 2009, 95–97). An analysis of the pollen dating to the 4th and 3rd mill. BC shows obvious indications of an increase in deforestation. During this period, the dense natural holm oak (*Quercus ilex*) forest is apparently slowly replaced by a rather *dehesa*-like landscape. The oak tree cover averages 15% of all vegetation (López et al. 2009, 94 f.). The discovery of acorns in archaeological contexts, amongst others also in the dolmen of Azután, is a sign for the beginning of the *dehesa* economy (Bueno et al. 2005c, 86–88). The proof of leguminous plants at the Tumulus of Castillejo (Huecas, Toledo) indicates a seasonal rotation – meaning the use of different available plant and animal sources dependant of the seasonal availability at one location – in the agriculture of the Neolithic period. This reinforces the idea of stable settlements and a sedentary lifestyle in the centre of the Iberian Peninsula, rather than the semi-sedentary communities traditionally assumed (Bueno et al. 2005c, 84). The increase of the pollen of bushes and hedges as well as domesticated animals like cattle and pigs strengthen this position.

4.2.5 Navalperal-El Cervunal (Ávila) and Jarama V-1 (Madrid)

Apart from archaeological deposits, geological/natural deposits can also carry information on the palaeoenvironment and aid in its reconstruction, given that the studied deposits and stratigraphic layers date to the period of interest. For the chronological context of the study area two natural deposits, Navalperal-El Cervunal (Ávila) and Jarama V-1 (Madrid), revealed information, which dates to Neolithic and Chalcolithic times and which was included in the reconstruction of the environment. Both were extracted using drill cores, one deriving from a peat bog in the Gredos Mountains, the other from a gravel deposit at the banks of the Jarama River (*tab. 2*).

F. Maldonado and his colleagues (Maldonado et al. 2005) investigated fossil tree trunks of pines to obtain information on the evolution of the vegetation in the Central Gredos Mountains in the province of Ávila. They found historic and prehistoric evidence for the presences of pine (*Pinus sylvestris*) in altitudes between 1300 and 1900m above sea level, where they are absent today.

Evidence of pines in those altitudes dates back to 6500 years ago. A date deriving from Navalperal-El Cervunal delivered results characterising the vegetation of this micro region around the end of the 4th and the beginning of the 3rd mill. BC: *Pinus sylvestris* as well as *Pinus nigra* and occasionally oaks and poplars existed in a regular distribution at the upper courses of the Alberche and Tormes Rivers in the Central Gredos Mountains. The massive deforestation of this part of the Gredos occurred during the last 2000 years, especially during the last millennium (Maldonado et al. 2005; Gómez-Manzaneque 2012). The study shows that the vegetation in late prehistoric times can also differ massively from the present vegetation, depending on the micro-region studied.

The Jarama River originates in the Spanish Central System and flows into the Tagus River only some kilometres west of Aranjuez (Madrid). The investigated samples derive from two gravel pits, deposits just above the palaeo-soil, from the terraces of the Jarama middle basin. Thus, the results obtained here all refer to the riverside and the closer surroundings. The Sample Jarama V-1 belongs to the outcrop at Velilla de San Antonio and reveals dates from the first half of the 6th mill. and the middle of the 4th mill. BC. Analysed macro remains as well as pollen – all in good state of preservation – show evidence for alder and elm that indicate a forest vegetation along the river. On the river banks, gallery forests of alder, elm, ash and willow dominate the record. It becomes obvious that further away from the river terraces pine trees are the most common species, accompanied by oaks, and that they were less densely distributed here than along the riverside. During the 6th mill., tree pollen dominate the pollen record with amounts of 90% of all pollen: a high amount of pine, followed by deciduous oak, evergreen oak, alder and birch at Velilla de San Antonio. The species were complemented by ash, elm and beech closer to the river and at the river banks. During the 4th mill. the tree cover became less dense but the composition in the vicinity of the river stayed the same. Especially in sample V-2, taken from the same deposit as V-1, the percentage of trees in the sample decreased to approx. 40% accompanied by scrubland, indicators of the riverside opening up. The second sample at Velilla dates to the 1st mill. BC (770–231 calBC; Iron Age) and younger times, and thus is not relevant to the reconstruction of the environment during the Chalcolithic (Alonso et al. 1998; García 2012).

Geomorphological studies like they have been conducted in other parts of the Tagus River (Wolf/Faust 2015) can also contribute to the completion of the prehistoric environment, helping to reconstruct models of the landscape by studying former river courses and wetlands as well as colluvial deposits. So far, it has already become obvious that Azután has a favourable settlement location compared to its southern hinterland (clay, fertile soil etc.). As the palynological studies revealed, the southern Meseta probably has been dominated by a *dehesa*-like landscape (López/López 2000; 2005; López et al. 2009). Because of these preconditions, Azután's environment, the favourable location and the presence of other late prehistoric sites – especially of the dolmen – the region was very promising for interesting new results on Iberian Late Prehistory settlement sites in Central Spain that the case study aimed for.

5 New Investigations and Results of the Case Study – Territorial Survey

The description of the investigation history, of the modern and ancient environment as well as the presentation of the initial project ideas prepared the ground and increased the awareness of what to expect and what not to expect in the vicinity of the megalithic burial of Azután. As the intention was to achieve new results, it was necessary to not only study published and unpublished site information of the province of Toledo but also to conduct additional campaigns of fieldwork. Besides the usual archaeological work, geophysics and natural science were applied on-site and after the fieldwork in different laboratories. Based on the research in the archives of the 'Junta de Comunidades de Castilla-La Mancha' in Toledo potential Neolithic and Chalcolithic sites could be mapped, which indicated the areas for the first campaign and the archaeological survey in the surroundings of Azután. During the second campaign, promising areas were surveyed with the help of geophysics. The third and last campaign focussed on the verification of one of the geomagnetically investigated sites by opening two small archaeological trenches. Material for dating and for further scientific analyses was extracted, which allowed the typological characterisation of Azután's new sites to a predominantly 4th and 3rd mill. BC context in Iberian Late Prehistory. The theoretical and practical work undertaken in central Spain, like the results of the different analyses, will be presented and discussed in detail in chapter 6. For a better understanding of the collected data, the applied methodology will be explained first, followed by the results of each campaign. The method is based on the common basics of practical archaeology (see amongst others Ellis 2000; Trachsel 2008, 139–152; Sählhof et al. 2012).

Before explaining the method of the excavation work as well as its results (chapter 6), the impressive results of the research in the archives and the subsequent survey work (archaeological and geophysical) are presented in the following. These initial investigations to prepare the territorial survey already shed new light on the interior of the Iberian Peninsula often dismissed as 'deserted'.

5.1 Theoretical Groundwork – Literature and Archive Research

At the beginning of archaeological research stands the probing of the published and unpublished data from the period of interest to gain a first overview of the current state of investigation as well as the site types and finds to be expected. Because of that, literature as well as archive studies had to be carried out in order to get an idea of the archaeological situation in the area of interest. For the case study, the focus was initially put on Chalcolithic sites in the province of Toledo (Castilla-La Mancha). The objective was the collection of all information available and the mapping of the sites to visualise clusters of prehistoric sites. This allowed first ideas about favoured site locations. Information on favoured areas of certain researchers, a higher level of construction activity or dense vegetation covers were included in the interpretation of the presence or absence of prehistory as well. Before describing the results of the literature and the archive studies, the method of the data collection will be stated briefly to offer a higher transparency of the presented work.

5.1.1 Method

While literature research took place throughout most of project's time and the development of the thesis, a detailed study of material published on the Chalcolithic period of the area was required at the beginning of the project. To achieve this, a library research at the German Archaeological Institute (DAI) section of Madrid was combined with a visit to the archives of the 'Consejería de Educación, Cultura y Deportes of the Junta de Comunidades de Castilla-La Mancha' (JCCM) and a closer look at the database called 'carta arqueológica' between November 7th and December 17th 2013. Four weeks were spent with the investigation of published late prehistoric sites at the library of the DAI Madrid, and the remaining one and a half weeks were used for the study of predominantly

unpublished survey information kept at the JCCM in Toledo.

The literature research in Madrid was necessary, as a lot of the published information on the Chalcolithic of Central Iberia are either not available in German libraries or spread over different institutions in Germany. The aim of the research was to achieve the most complete information base possible on published Chalcolithic sites of the province of Toledo. Apart from collecting the site information of this province, information on resources, their exploitation, use and exchange all over the Iberian Peninsula was gathered as well (focussing on the data not or scarcely available in Germany). For the recording of the Chalcolithic sites and the resources that were used or may have been used in the late prehistoric province of Toledo, a table containing basic relevant information was created. This allowed the mapping of the sites later on. The majority of the sites date to the Chalcolithic period, but a few date to the Late Neolithic or Early Bronze Age as well. The information entered in this database contained the name of the site, the autonomous community and province it is located in (in this case always Castilla-La Mancha and Toledo), the municipality and the rural district as well as the periodic dates mentioned in the papers and the most important literature on the site.

Research in the archives of the heritage office of the JCCM in Toledo focussed on the largely unpublished survey works that the 'carta arqueológica' of the province contains. Only occasionally already published sites were listed as well, like the dolmen of Azután and the prehistoric sites of Huecas (Bueno 1991; Bueno et al. 2005a; Benítez et al. 2009 etc.). Most of the prehistoric sites collected from the archives of the JCCM have not been published. The data resulting from the archive research therefore is almost exclusively based on surface finds and a valuable supplement to the published information. Due to the development of the 'carta arqueológica', 148 of the 204 municipalities of Toledo were surveyed and reported to the JCCM until December 2013. Each of the municipalities was listed either with an entry or even with a detailed report about the survey and its results in the archives. The information was mostly given in electronic form as a Word, Excel, AutoCAD or PDF file. Within the tables or reports, the sites were listed according to the periods documented on-site. Because of the decontextualised situation of the surface finds, only a general periodisation could be applied, for example Palaeolithic, Bronze Age, Medieval. Almost every documented municipality provided a detailed report containing photos of the sites' topographic situation, information on its dimension and its dating. Unfortunately, the information on the size of a site was not subdivided per periods and information on the quantity of material for each period is lacking. Some of the municipalities stood out because they provided evidence of multiple prehistoric places, whereas others contained no or only a few prehistoric sites but many historic ones. This absence of prehistoric material might originate from thick layers of colluvial or fluvial deposits covering the sites. It may also reflect the personal interest and knowledge of the different investigators who were conducting the survey.

The existing information on the 148 municipalities of Toledo was browsed and the data relevant to the project was gathered. The main condition for recording the site and its information for further processing was an indication of the site belonging to the Neolithic, Chalcolithic or at least Prehistoric period. In a separate table to the published ones, the sites were listed with their names given in the survey (mostly the one of the associated districts), the municipality, and all the archaeological periods present in the investigated area. As the researchers working on the 'carta arqueológica' measured all the surveyed areas with handheld GPS (with few exceptions), it was possible to include geographical information in the form of X- and Y-coordinates. This enabled the exact mapping of the archaeological information and further calculations with QGIS later on. In addition to this information, all the remaining municipalities, which showed no entries containing Neolithic, Chalcolithic or Prehistoric periods, were listed in a simple Word-document showing the periods detected there. With an impressive 72.5% of the municipalities of Toledo surveyed until December 2013, a remarkable quantity of sites became visible.

Via this investigation of literature and archive documents, a sound impression of the current state of research on the late prehistoric province of Toledo was gained.

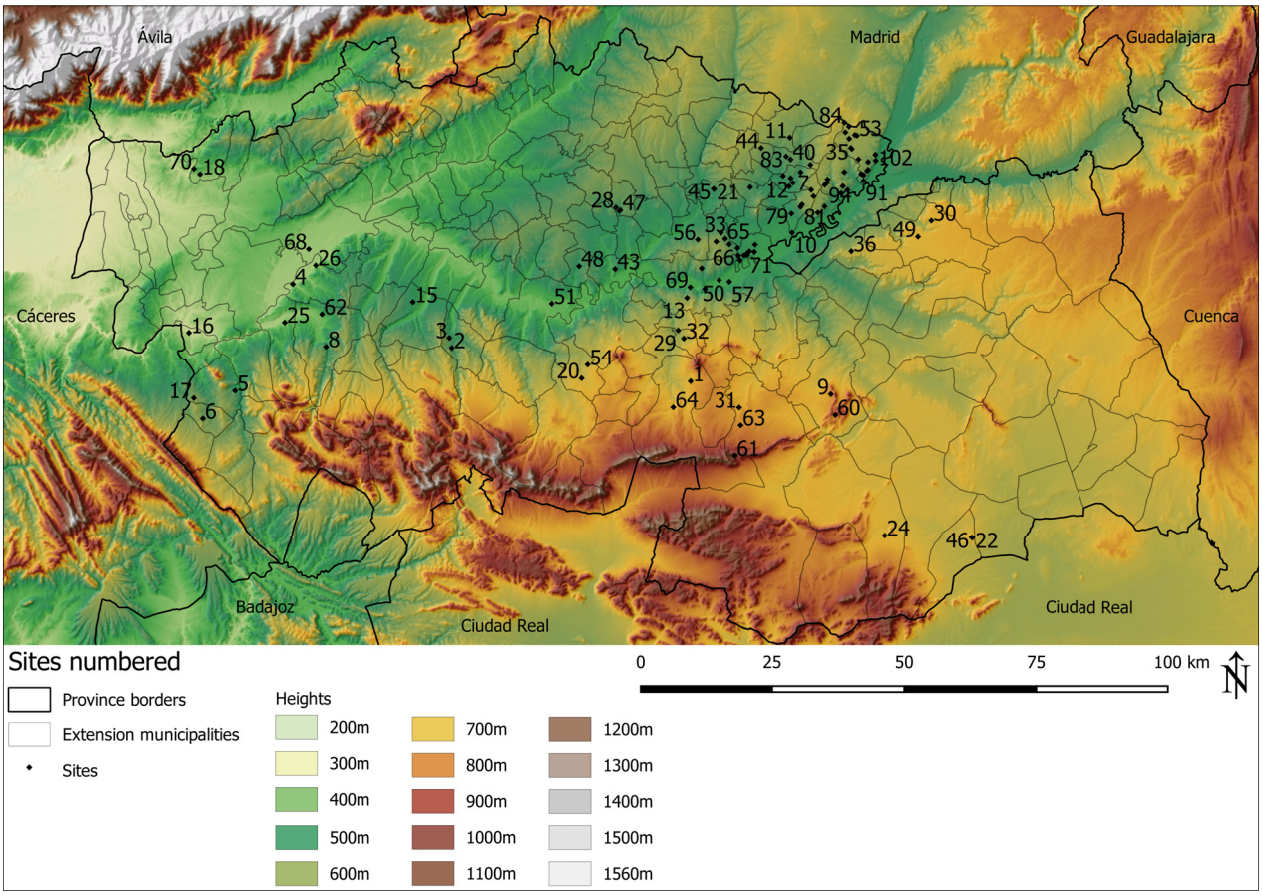


Fig. 12. The distribution of published Chalcolithic sites within the province of Toledo (sites listed in **tab. 16* in the online appendix; map based on the modified MDT200-TOLEDO © Instituto Geográfico Nacional).

5.1.2 Results

The published information on Chalcolithic sites in the province of Toledo revealed only slightly more than a hundred sites. Every type of archaeological remain was listed: burials, settlements, rock art, stelae and stray finds. Unfortunately, most of the information for the 103 sites (**tab. 16* in the online appendix) derived from survey activity and not from excavations. Excavated sites are predominantly represented by burials like the dolmen of Azután (Bueno 1991, Bueno et al. 2005a) or the artificial caves of the Valle de las Higueras (Bueno et al. 2005b). Other sites were excavated due to construction activities like Valladares I (García et al. 2008). Except for the works of Bueno and her team, none of the sites were excavated for research purposes.

All the sites are mapped in fig. 12. Their distribution seems to be concentrated in the municipalities of Toledo, which are located close to the autonomous community of Madrid. As mentioned by Chapman 2008 and Balsera et al. 2015, this can be explained by an intensive construction activity close to the capital of Spain (chapter 3.1.2). A heatmap of the data in QGIS confirms this impression by showing the objective hotspots of the sites (*fig. 13*). With only 103 sites in a province with an extension of 15.370km², a 10km radius was put around each site for the analysis, calculating how many sites cluster within this catchment area. A larger radius would not have changed the results considerably and a smaller radius would have been close to a count by hand. Especially in the west of the province of Toledo, a maximum of two sites are located within a 10km radius, but often it is just one. In the east of the province, the Mancha shows a number close to zero sites. Clusters of seven up to eleven sites are exclusively situated in the northeast close to the border to Madrid and the rather central part in the surroundings of the provincial capital Toledo.

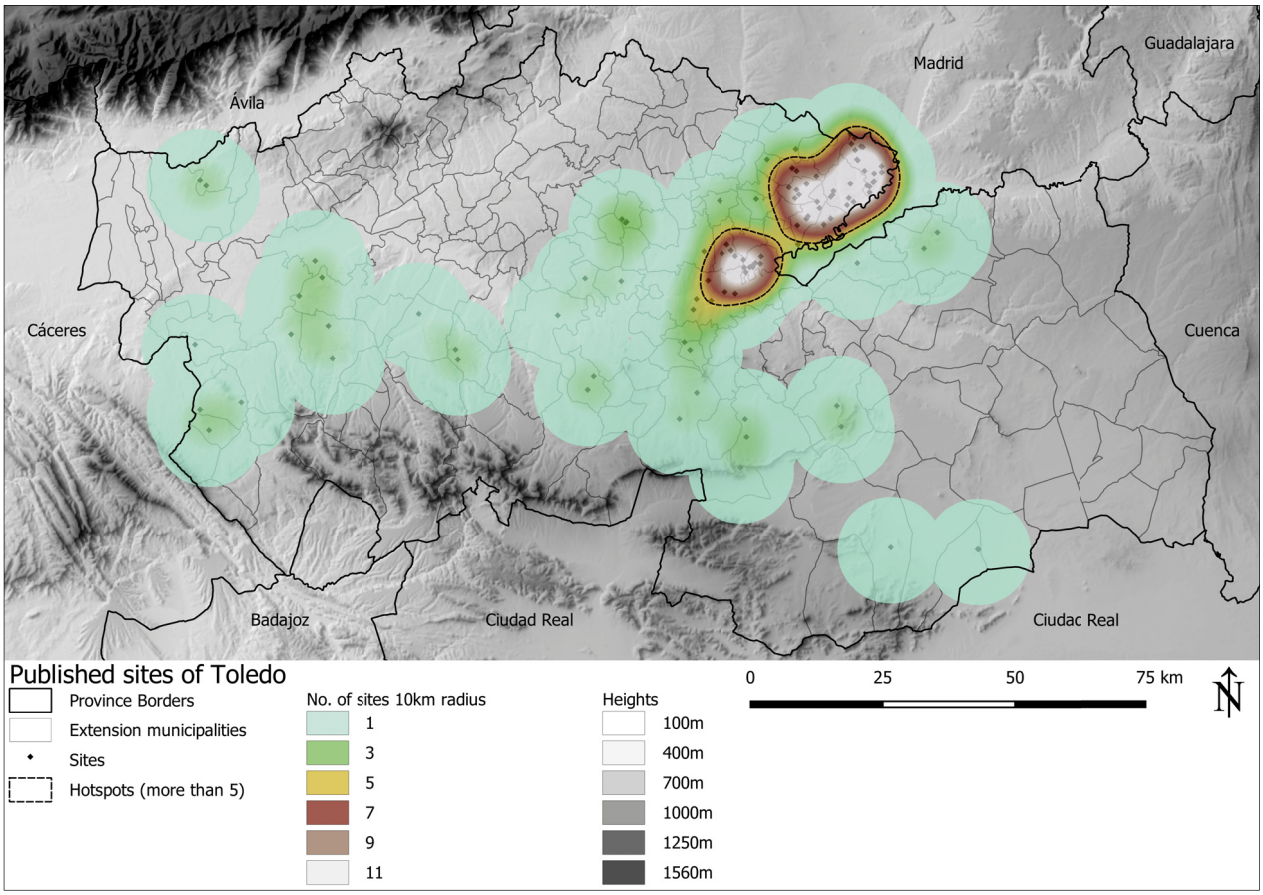


Fig. 13. Hotspot-Map of the published chalcolithic sites of the province of Toledo based on a 10km radius around the sites (map based on the modified MDT200-TOLEDO © Instituto Geográfico Nacional).

The largest agglomerations of nine to eleven sites can be found in Seseña, Borox and their neighbouring municipalities – mostly due to the detailed PhD-thesis of J. Muñoz (1998) – as well as in the triangle of Toledo, Olías del Rey and Mocejón, where rescue excavations increased the number of sites. A small cluster of three sites is formed by the excavations in Huecas close to the border to Barcience. Reviewing the chronology of the published sites, it seems as if the majority of the Chalcolithic sites did not only exist within one certain period like the Bell Beaker or Full Copper Age, but was settled rather permanently and often used several times throughout the Neolithic and Chalcolithic period. This points to a longer settlement continuity that less sedentary people would probably have had, as has already been stressed several years ago by Bueno and her team (e. g. 2005a).

Research carried out at the JCCM added a new dimension to the late prehistoric settlement history of the province of Toledo: An area of Central Spain with a territory of best accessibility because of the vast landscape dominated by the Tagus middle basin. The archive work at the JCCM revealed an unexpected quantity of already surveyed areas and added lots of sites so far unknown to the list of late prehistoric sites, filling gaps on the map. A total of 509 sites (**tab. 17* in the online appendix) were mentioned in the survey reports of the 148 municipalities investigated for the 'carta arqueológica'. No Neolithic or Chalcolithic sites were recorded in 61 of the 148 municipalities. A very high number of sites are mentioned in the report about the survey activities in Seseña in the northeast of the province: 18.5% of the recorded sites are located there. Calculating the site hotspots with QGIS – this time for the surveyed and almost exclusively unpublished sites of the province of Toledo – shows a similar distribution of sites as the map of the published sites (*fig. 14* in comparison to *fig. 13*); the west of the province as well as the southeast (La Mancha) are underrepresented

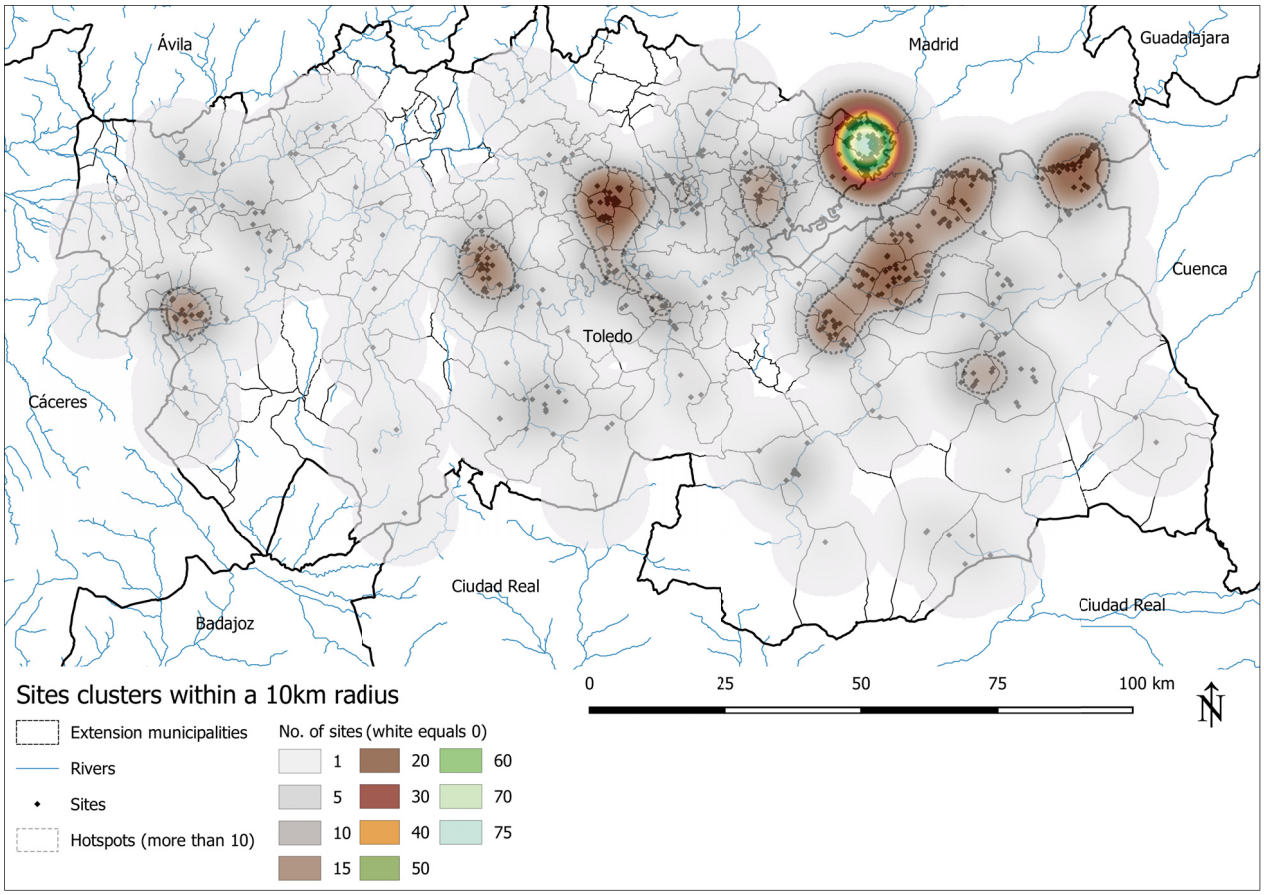


Fig. 14. Map showing both the distribution and the accumulations of the sites from the JCCM (sites listed in **tab. 17* in the online appendix, map based on the modified MDT200-TOLEDO © Instituto Geográfico Nacional).

in the database, although referring to the unpublished data a cluster of approx. 15 sites in the surroundings of Azután can be observed as well as a high number in the northern part of Toledo's Mancha. This cluster surrounding Yepes contains approx. 23 sites (21 more than known from the published ones). Because of the research activities in the surroundings of the excavations of the Valle de las Higueras, another agglomeration of sites can be detected around Huecas. The last small accumulation westwards is located in El Carpio de Tajo. Between El Carpio and Azután, little prehistoric settlement activity can be detected. Eventually, the areas with the largest amount of prehistoric sites are almost the same for the published and the unpublished sites (*fig. 13* and *fig. 14*).

Looking at the combination of the information on published and unpublished sites of the province of Toledo, more than 600 most likely late prehistoric sites could be revealed, an impressive number for the supposedly deserted centre of the Iberian Peninsula. Although the surroundings of the burial of Azután were already chosen as the focus of research at the beginning of the project, the literature and archive studies also revealed the need for further detailed studies in the western part of the province of Toledo.

5.2 Archaeological Surveys in 2014

The preliminary work in the libraries as well as in the archives of the JCCM created a reliable basis for further investigations. As the research area for the case study was supposed to be in the surroundings of the dolmen of Azután, the archaeological information of the municipalities was used as an initial point for new and detailed survey activity. The west of the province of Toledo is one of the smaller hotspots in the map (*fig. 14*) and due to the existing geographical information, the sites were easy to locate. The additional archaeological

survey activities were supposed to verify or falsify the data from the JCCM and also to detect new and definitely prehistoric sites with the objective to obtain a better impression of the perception of the environment as well as additional information about the use of resources and the integration of sites into the surrounding landscape by prehistoric communities. After describing the survey method the results, which pointed to sites of unexpected extension in this part of the Iberian Peninsula, will be outlined.

5.2.1 Method

The theoretical groundwork of investigating published and unpublished data and documents led to a high quantity of chalcolithic sites. Detailed survey activity was planned and regarded as necessary for a review of the information and to achieve a more detailed chronology. The excellent initial situation with the dolmen of Azután, dating back to the 4th and 3rd mill. BC, was decisive for the selection of the surroundings of the municipality of Azután as the location for a new survey campaign. Due to the unpublished data gained from the JCCM for the area in the western part of the province of Toledo, sites with a similar chronology and therefore of interest for the project goals could be assumed.

The main objective of the survey in the west of the province of Toledo was the verification or falsification of prehistoric sites known from previous surveys reported to the JCCM for the 'carta arqueológica'. It had the additional aim to achieve a next to complete database of information, especially about the quantity of material of certain periods. At present neither the amount of finds nor the extension of a site during a certain period had been stated in the reports even though this information is crucial for the valuation of the size and possible use of the sites. It makes a huge difference if a time is represented with ten or 1000 finds and how much time is covered, for the interpretation whether it was used as a seasonal camp, whether it was a regularly frequented place or a settlement populated over the time of several decades. The reports of the former surveys only mentioned the general periods present in the investigated areas (e. g. Palaeolithic, Bronze Age, Roman), which makes it impossible to determine the scientific impact of each site. In addition to the quantity of finds the size of the area they are scattered in is also crucial to the interpretation of the size, duration and density of a site.

In preparation for the first campaign of fieldwork a proposal with the description of the intended research, the area of interest and the chronological focus was submitted to the 'Consejería de Educación, Cultura y Deportes' of the JCCM. In February 2014 the approval was given, and an archaeological survey took place in spring (21st of April to 22nd of May 2014). Some missing parcels of land were investigated in autumn 2014, when the geomagnetic survey was carried out as well. The survey was based on the archive information and included all areas that had provided finds belonging to the Neolithic, Chalcolithic or Prehistoric periods. Also the Bronze Age sites were included in the fieldwork as they were often assigned to the Bronze Age because of handmade pottery and may have been frequented by people in earlier times too. In the municipalities of Alcolea de Tajo, Aldeanueva de San Bartolomé, Azután, La Estrella, Navalmoralejo and El Puente del Arzobispo 33 sites have been known previous to the project's fieldwork (see *tab. 3* and for their distribution *fig. 15*). The first field campaign aimed to verify or falsify the information on these sites and – in a second step – to extend them to the areas next to the sites known from the JCCM.

Prior to the actual beginning of the survey the police and local authorities of El Puente del Arzobispo and Azután were informed about the archaeological activities in their administrative area. In a next step the owners or tenants were asked for the permission to enter their predominantly cultivated farmland.

The survey was planned to take place at the potential sites recorded in the literature or the archives of the JCCM, the adjacent arable land and as many accessible areas as possible within the limited time. Although surface finds in ploughed areas indicate that part of the prehistoric site is already destroyed they are highly accessible, have a good visibility and the survey is not disturbed by

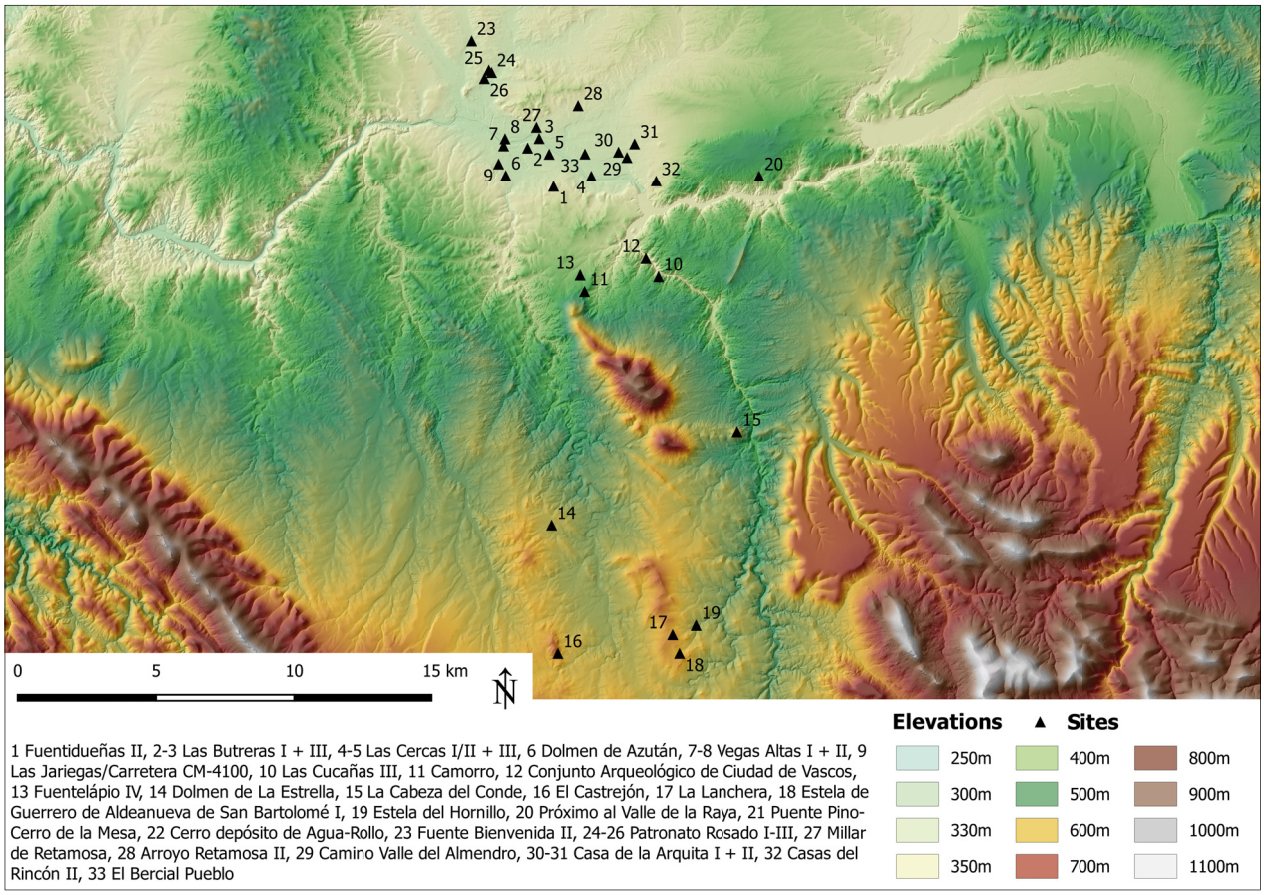


Fig. 15. The Neolithic, Chalcolithic and Bronze Age sites from the JCCM and their location in the area of the case study; the micro region of Azután (based on modified MDT05 hojas 0625, 0626, 0627, 0653, 0654, 0655, 0681, 0682, 0683 © Instituto Geográfico Nacional).

vegetation. The visibility and possibility of locating sites are reduced when the seeds start growing but can still be considered good if the plants are less than 30cm tall (in the case of alfalfa). Fallow land, pasture and low hedges offer a rather mediocre visibility for surface finds and structures and therefore a lower possibility for locating archaeological sites. The most difficult areas for surface surveys would be areas with a very dense vegetation including forest. The potential to discover archaeological finds in these areas can be considered close to zero, barring the occasional molehill, trees collapsed during a storm or burrowing animals (such as boars) which allow finds to surface.

The regions of the study area provide a wide range of different accessibility. The arable land was either ploughed, recently seeded or covered with already growing agricultural plants (especially alfalfa, corn, pumpkin and wheat). *Dehesa* economies with either pasture among the oaks or dense wheat fields could be found also. Meadows, fallow land under uncontrolled growth, dense hedges or private hunting grounds were present in many of the areas of interest. Quickly it became obvious that because of the good accessibility, good visibility and the quantity of finds, the main focus of the survey would be on the municipality of Azután in the valley of the Tagus.

The survey focussed exclusively on surface material. Depending on the number of helpers available the previously defined fields or parcels were walked up and down in parallel lines of two to six people, following ploughing or sowing lines whenever they were visible. A distance of two or three meters was maintained between the different rows/persons. Expected finds were mainly potsherds, silex and other stones (flakes, tools, raw material etc.), polished stone axes, grinding stones

Municipality and Name of site		Polygon	Parcel(s)	Chronology (Age)
Azután	Vegas Altas I	501	105	Bronze, Late Roman
	Vegas Altas II	501	95a	Bronze, Late Roman
	Las Butreras I	502	187, 200, 304	Chalcolithic, Bronze, Roman
	Las Butreras III	502	218, 219, 220, 221	Bronze, Late Roman, Medieval
	Las Cercas III	502	10193, 20193	Chalcolithic, Bronze
	Las Cercas I/II	503	254	Bronze, Late Roman
	Fuentidueñas II	504	262a	Chalcolithic, Bronze
	Las Jariegas/Carretera CM-4100	501 y 507	59, 60, 61, 111, 119, 293, 294, 295, 296, 297,	Chalcolithic, Al-Andalus
	Dolmen de Azután	507	297	Neolithic, Chalcolithic
Alcolea de Tajo	Próximo al Valle de la Raya	17	944	Chalcolithic, Bronze, Iron
	Puente Pino - Cerro de la Mesa	16	940	Chalcolithic, Bronze, Iron
	Cerro depósito de Agua, Rollo	2	173, 190, 191, 192, 194, 196	Chalcolithic, Bronze
	Fuente Bienvenida II	1	65, 66	Chalcolithic until Roman
	Patronato Rosado I	3	324, 325	Chalcolithic, Bronze, Iron
	Patronato Rosado II	3	322, 323	Chalcolithic, Bronze, Iron
	Patronato Rosado III	3	318	Chalcolithic, Bronze
	Millar de Retamosa	7	694, 695, 696	Chalcolithic, Bronze, Roman
	Arroyo Retamosa II	8	722	Chalcolithic, Bronze, Iron
	Camino Valle del Almendro	15	901, 902, 906	Chalcolithic, Bronze, Iron
	Casa de la Arquita I	102	404	Chalcolithic, Bronze, Iron
	Casa de la Arquita II	102	406	Chalcolithic, Bronze, Iron
	Casas del Rincón II	15	928	Chalcolithic, Bronze
	El Bercial Pueblo	102	400	Chalcolithic, Bronze
La Estrella	Dolmen La Aldehuela – Dolmen of La Esrella	10	145	Neolithic, Chalcolithic
	La Cabeza del Conde	5	25	Chalcolithic
Navalmoralejo	Las Cucañas III	4	3	Bronze
	Camorro	3	44, 45	Bronze
	Conjunto Arqueológico de Ciudad de Vascos	4	3, 9002	Bronze, Late Roman, Al-Andalus
	Fuentelápio IV	3	5	Chalcolithic, Bronze
Aldeanueva de San Bartolomé	El Castrejón	7	331, 332, 333, 334, 335, 336, 337, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355	Chalcolithic, Medieval
	La Lanchera	2 y 4	15 y 13	Bronze
	Estela de Guerrero (Bartolomé I)			Late Bronze – Isolated find in the area of La Lanchera
	Estela del Hornillo (Bartolomé II)			Late Bronze – Isolated find in the area of La Lanchera
El Puente del Arzobispo		No prehistoric sites, maybe because of the small area of the municipality		

Tab. 3. Compilation of all sites in the micro region of Azután with finds dating to the time periods relevant for the new investigation (Neolithic, Chalcolithic, Bronze Age). Almost all of them are unpublished and only known from surveys.

and net weights. Using a handheld GPS, the size of each surveyed area was measured at the beginning of the survey by recording the coordinates of the corner points. During the survey each prehistoric find – even non-diagnostic ones – was given an individual measurement or measured as an agglomeration of several finds. In the latter case the quantity was recorded next to the number of the measured point. All diagnostic parts (rim, bottom, decoration, stone tools etc.) were collected and samples of body sherds were taken as well since they contain information on types of temper, paste and fire temperature. For the other non-diagnostic prehistoric body sherds GPS-points were recorded and the sherds were left on the fields.

Material deriving from periods clearly younger than the end of the Chalcolithic (post Bell Beaker) was treated and recorded slightly different. Only the diagnostic finds were measured individually with the GPS, non-diagnostic finds were simply counted, and their quantity noted as a total number for each surveyed area. As the interest was on the prehistoric periods this was done to strike a balance between taking the epochs until modern times into account and not producing too much project-irrelevant data.

In the surveyed region prehistoric structures are hardly visible; stone architecture is rare. Only in the case of the supposed walled enclosure El Castrejón (Aldeanueva de San Bartolomé) the possibility of recording stone features was given. In this case the course of the wall and the extensions of the collapsed parts were recorded as structures. Back in the office the finds were processed, numbered and information on the collected finds was entered into a database. A total number of 1827 collected, and mainly prehistoric finds were processed and typologically categorised whenever possible.

5.2.2 Results

The survey of 2014 was supposed to investigate as many areas containing recorded Chalcolithic finds as possible in the municipalities of El Puente del Arzobispo, Alcolea de Tajo, Azután, Navalmoralejo, La Estrella and Aldeanueva de San Bartolomé (*fig. 16*). The aim was to get access to the sites already mentioned in the JCCM to evaluate the given information. The prevailing majority of these sites was located in the valley of the Tagus River in the municipalities of Alcolea and Azután (see below).

Additionally, it had been intended to survey larger areas along the foothills of the Montes de Toledo, but this part of the survey was stopped after some time. Dense vegetation cover and inaccessible private hunting grounds complicated or completely ruled out the detection of new sites and the area covered by Navalmoralejo, La Estrella and Aldeanueva de San Bartolomé would have gone beyond the scope of the manageable extent of a project focussing not exclusively on surveys. Consequently, after several – mostly fruitless – attempts the research was focussed on the agriculturally used areas of the valley and on the municipalities of Alcolea de Tajo, Azután and El Puente del Arzobispo. Visibility and accessibility during the surveys of these areas were predominantly good or even very good. This is most likely one of the reasons for the higher number of sites recorded for Azután and Alcolea de Tajo in the archives of the JCCM also. The preference during Late Prehistory for settling in the valley, on the terrain undulations of the foothills or on top of the hills already exclude large parts of the hilly hinterland, too. Eventually neither La Estrella nor Navalmoralejo provided new results.

In Aldeanueva de San Bartolomé at least the published site of El Castrejón (Carrobles/Méndez-Cabeza 1991), which is defined as a Chalcolithic and medieval site, could be investigated. The archaeologically significant area comprises of two terraces attached at the south of the central 'platform': the top (*fig. 17*). Walls and collapsed walls are present although their chronology is not ensured as they could date back to the Chalcolithic period, might have been constructed in medieval ages or, in the case of the smaller walls, they possibly are still in use as markers of properties (*fig. 18*). Approximately 1ha of this area was surveyed. Finds were predominately concentrated on the terraces and the southern part of the top, probably because the northern part within the surrounding walls was covered with small trees and hedges and therefore offered little visibility. Occasionally, finds could also be detected outside

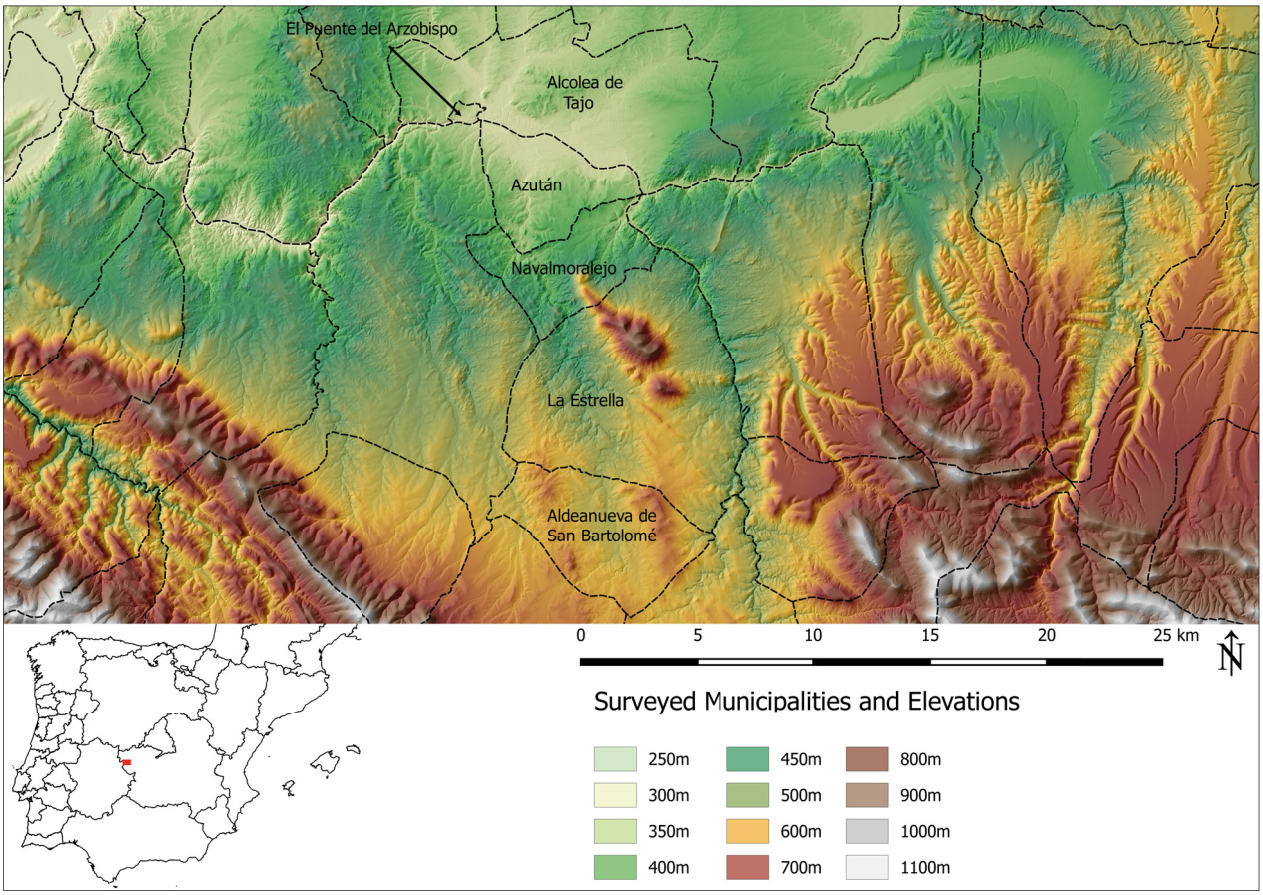


Fig. 16. Surveyed municipalities (based on modified MDT05 hojas 0625, 0626, 0627, 0653, 0654, 0655, 0681, 0682, 0683 © Instituto Geográfico Nacional).

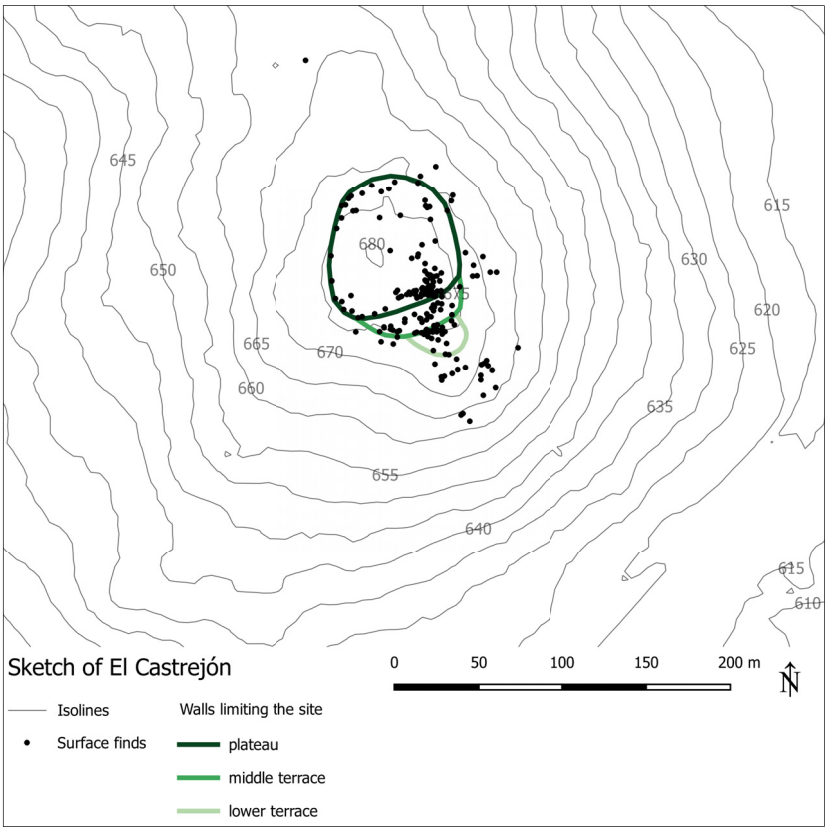


Fig. 17. The site of El Castrejón and the location of the recorded material as well as the indication of the elevations (isolines based on the MDT05 © Instituto Geográfico Nacional).

Fig. 18. Walls and collapsed walls at the site of El Castrejón.

the walls including mainly potsherds but also a rounded sandstone with a hollow in its middle (possibly used as a mortar). As El Castrejón is barely covered with soil, the finds were mainly lying on the bare rock. It can be assumed that the finds eroded to the surface, which would explain the bad conservation and the abraded edges of the sherds. Approx. 249 prehistoric potsherds (including nine rims), 19 wheel-made sherds and approx. 33 pieces of slag were recorded. Next to the slags, shallow ditches dug in the ground and granite rocks with cut marks were found. Both the ditches and the cut marks seem to follow the ore bearing quartz veins. Together, the slags, the possible mortar (*fig. 19*), the extraction marks and the geological ground strengthen the interpretation of J. Carrobles and M. Méndez-Cabeza (1991) that the site of El Castrejón has been an extraction and (pre-)processing site for copper ores. Unfortunately, the Chalcolithic chronology cannot be supported by the finds of the survey of 2014: The handmade pottery found only indicate a prehistoric use without allowing for further distinctions.

The focus of the following subchapters of chapter 5 as well as chapter 6 will be on the municipality of Azután because of the outstanding

Fig. 19. The potential mortar found east of the plateau outside the walls of the site El Castrejón.

results of the archaeological survey. Before discussing the surface finds of Azután – indicating a massive prehistoric settlement activity – the remaining surveyed municipalities of the valley will be briefly presented.

Considering that El Puente del Arzobispo covers an area of approx. 1km² along the northern bank of the Tagus, only few possibilities to survey outside the town were given. Eventually a field of 3.7ha was investigated. It showed predominantly modern results and nothing of any importance for prehistory.

The municipality of Alcolea de Tajo shares the Tagus with Azután and is located on the northern river terraces. In its east it covers an additional approx. 4km of the river's course. An area of 61.5km² is part of the administrative district of Alcolea de Tajo and approx. 87.5ha of these were surveyed. Unfortunately, the supposedly Chalcolithic sites according to the archive studies could not be verified. Small quantities of surface finds and their majority mainly consisting of modern, wheel-made and rarely handmade pottery were not able to support a Neolithic or Chalcolithic settlement activity. The sherds may indicate a Bronze Age settlement activity but do not allow a further distinction. Although other fields would have been accessible in spring 2014 the activities in Alcolea were stopped and research was concentrated on the most promising areas located in Azután.

In the municipality of Azután, which covers a surface of 21.6km², an area of 208.8ha has been investigated. This makes Azután the most intensively studied district of the survey campaign in 2014. Due to the good accessibility of the fields as well as very promising results the area became the focus of the project. An almost continuously investigated area of 64.5ha in the west of the modern village Azután on the terraces of the Tagus revealed the best results for the objectives of the project. Almost all the surveyed areas offer information on the settlement continuity and site preferences throughout the prehistoric periods and until the Early Middle Ages.

At the beginning the focus was on the parcel in the vicinity of the dolmen. This area is characterised by the transition from the foothills of the Montes de Toledo in the southwest to the valley of the Tagus in the northeast with the dolmen marking the lowest area of the foothills. To the southwest shallow terrain undulations dominate the surrounding. Further south and closer to Navalmoralejo and La Estrella the slopes of the undulating territory become steeper. Not only because of the fact that the area surrounding the dolmen has been the most intensively investigated area of Azután since its excavations, but also because of the geomorphological situation barely any new surface finds could be recorded. Due to the slope-situation, the erosion increases from south to east, probably covering finds and features underneath a massive layer of colluvial deposits. Still this is just an assumption and has not been investigated yet by pedologists. Either way, the conditions of this area resulted in only a few finds of lithic artefacts and some handmade pottery, which did not allow for further chronological distinction.

Finds of tiles and bricks, pottery slag and sherds of wheel-made pottery 1.2km to the southwest of the modern village of Azutan indicate a Roman settlement or workshops. The density of the finds points to the use of an area of at least 3ha during this period. Palaeolithic activity could be documented 200–300m south of Azután with an Acheulean biface and a Levallois core. Impressive results derive from the terraces of the Tagus both east and west of the village. The late prehistoric finds in the East predominantly point to the Bronze Age as well as the Iron Age and according to the density of finds covered at least an area of 10ha, whereas the artefacts recorded on the terraces of the Tagus in the west of the village of Azután mainly are classified as Neolithic and Chalcolithic. This area between the Anguilucha Brook, the Tagus River, Azután and the road to Belvís de la Jara is characterised by a difference of only a few meters elevation over the entire area. Here an area of 64.5ha surface could be investigated and due to the collected material as well as the massive amount of finds the focus of the following campaigns was set on said area. A number of 1473 artefacts were collected (for full list of Azután see **tab. 18* in the online appendix) and 4783 pieces recorded in total of which 25.36% were wheel-made and post-prehistoric finds. Of the recorded material 74.64% date to the prehistoric periods this study focusses on. Via a typological comparison of the rims of and decoration on the sherds with the archaeological material found in the megalithic burials of Toledo and on other sites, it was possible to classify the finds to the 4th and 3rd mill. BC (*fig. 20*). A compilation of the rims can be found in the catalogue (chapter 10.4 in the online appendix) arranged according to the parcel they were found in. According to the density of the recorded material – often more than 300 finds within a radius of 100m – at least 30ha were settled during Late Prehistory. The expansion of the material and the density clouds indicate

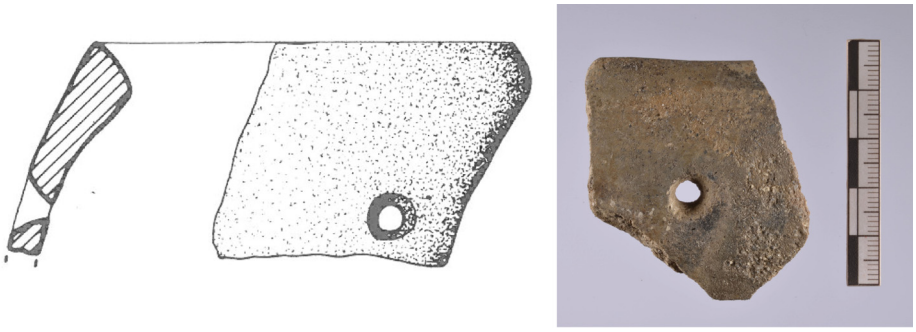


Fig. 20. One example for the similarity of the finds of the dolmen (left; Bueno 1991, fig. 56) and the survey material (right).

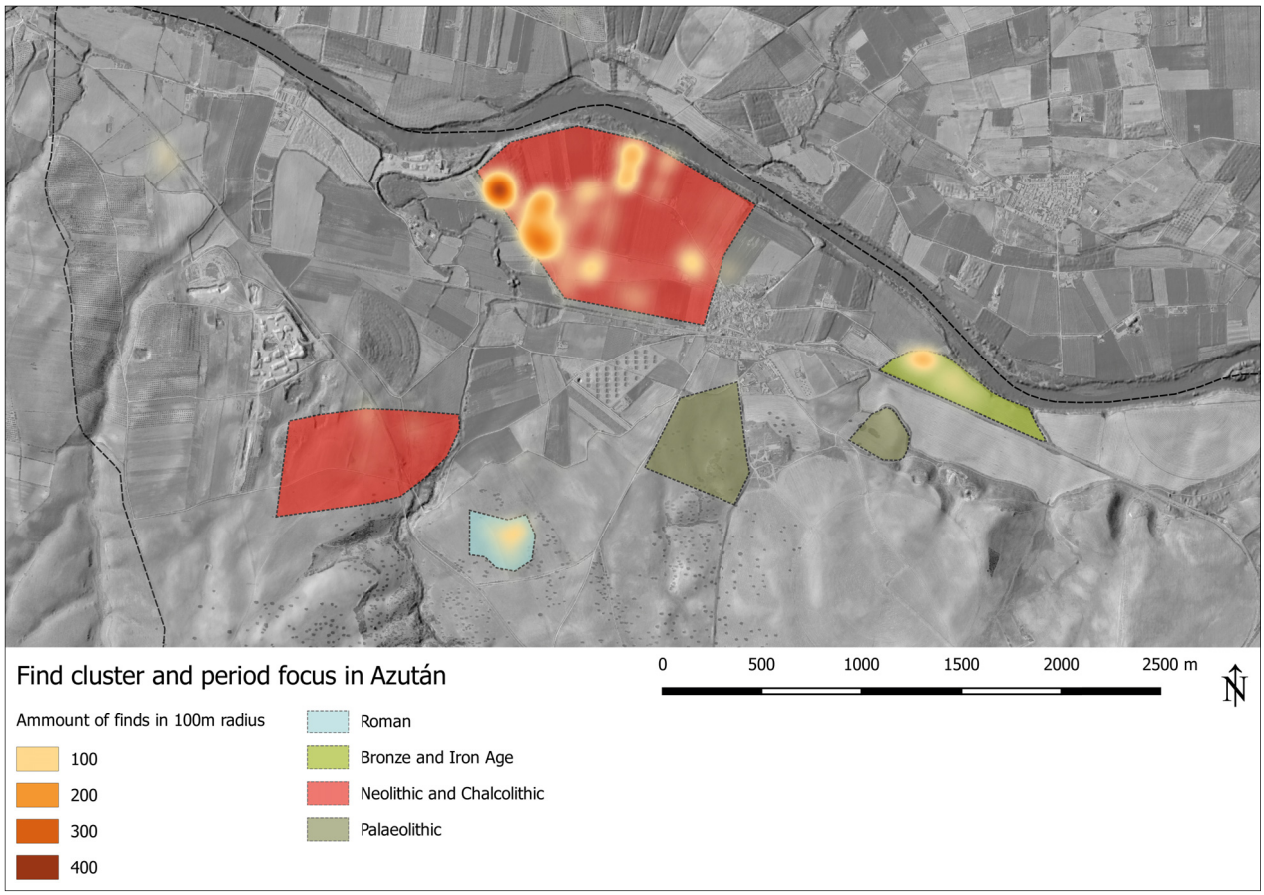


Fig. 21. Visualisation of the settlement preference throughout several millennia in Azután, showing the highest accumulations of finds as well (based on modified MDT05 and PNOA 2013 hoja 0654 © Instituto Geográfico Nacional).

that probably the whole area between Anguilucha Brook, the Tagus River and the village Azután, approx. 90ha, was populated in prehistoric times.

The new survey did not only allow for an estimate of the amount of 4th and 3rd mill. sites in the western edge of the province of Toledo but also offered the opportunity to reconstruct the use of the territory and the settlement preferences in different areas of Azután from the Palaeolithic period up to Roman times. Based on its results the Palaeolithic hunters and gatherers seem to have preferred the terrain undulations in the south and southeast of the modern village probably also due to a then still different shape of the landscape and course of the river. During the Neolithic and Chalcolithic the transition zone from the foothills to the valley (dolmen and sites detected through aerial images, see chapter 5.3) as well as the terraces of the Tagus east of Azután were regarded as favourable locations for settling. In the Bronze and Iron

Age the slightly higher terraces of the Tagus in the west of Azután as well as hills (Cerro de la Mesa in Alcolea de Tajo) were used to found settlements, whereas during Roman times the foothills of the Montes de Toledo seem to have been in the focus of interest (*fig. 21*).

Both archive and literature studies as well as the additional survey conducted in 2014 stress the vital importance of further detailed studies in the centre of Spain and in particular in Azután. Geomagnetic surveys and precise excavations based on the geomagnetic results can help to record the prehistory of the southern Mesetas before it is destroyed. Unfortunately, in heavily used agricultural landscapes or areas affected by a high level of construction activity this is merely a matter of time. Therefore, the immense amount of surface finds in Azután demanded further investigations to achieve a good documentation and insight into the new archaeological sites in the west of the province of Toledo.

5.3 Geomagnetic Survey in 2014

Before, during and after the survey campaign in spring 2014 aerial and satellite images were used to detect crop marks that might indicate prehistoric sites. Besides using Google and Bing maps especially the images and Digital Elevation Models (DEM), provided by the Spanish State, facilitated a remote investigation of this area (PNOA maxima actualidad, Ortofotos historicas del PNOA, SPOT 5, MDT05). Additionally, older black and white pictures of the 20th cent. allowed the study of the area over several decades (Vuelo Americano Serie A 1945–1946 and B 1956–1957, Interministerial 1973–1986, Nacional 1980–1986). The LiDAR data that the DEM are based on, was recalculated for the areas where either aerial images or the amount of surface finds indicated promising results in the expectation that noteworthy anomalies would show up.

In two areas crop marks seemed to show enclosures in the vicinity of the dolmen of Azután (*fig. 26*). These anomalies were also partly visible in the LiDAR images. Based on the images they could have been geological formations (erosion and former meander of the Anguilucha Brook, *fig. 22*). The survey finds verified a prehistoric origin of the later visualised structures (chapter 5.3.2).

The other areas remained without results, either due to massive layers of eroded material covering the archaeological strata, a lack of organic filling or the surrounding geology. The latter was the presumable cause for the lack of the detection of more site indications. Especially in the case of the area on the southern bank of the Tagus to the west of the modern village of Azután no structures could be detected by satellite and aerial images or DEM and LiDAR-information (*fig. 23*). While the huge amount of prehistoric surface finds (*fig. 21*) pointed to a large settlement area – and therefore various kinds of structures were expected – nothing else indicated or strengthened the presence of a prehistoric site here.

Eventually, geophysical methods were consulted as a second non-intrusive method in three locations. Two of the locations were selected because of the circular and ellipsoidal crop marks visible in the aerial images close to the dolmen at the foothills of the Montes de Toledo and another one on the terraces of the Tagus where the accumulation of finds was detected during the archaeological survey. Predominantly structures that were dug into the ground and later backfilled with organic material – either by human activity or natural processes – can be expected to show up applying this method. Therefore, the geomagnetic method was chosen to visualise the structures below the ground. Besides being the appropriate method to investigate remains that were not build of stone it also allows to examine large areas in a comparatively short period of time.

5.3.1 Method

The geophysical survey is an addition to the variety of non-destructive and repeatable methods in archaeology. It enlarges the spectrum of reliable techniques as aerial archaeology, survey, analysis of literature and maybe earlier excavations as well as geomorphological mapping. Within the wide range of geophysical possibilities, the geomagnetic method is part of the passive approaches, which means that the earth's physical characteristics

Fig. 22. DEM based on LiDAR-data recalculated by E. Cerrillo in the area of Los Pedazos and Los Viñones were crop marks indicated possible archaeological structures.

(e. g. gravitation or magnetic field) are scanned but not influenced by the applied technique, whereas methods like sonar or electrical resistivity tomography (ERT) induce an echo or another kind of reaction. They actively influence the ground in its physical characteristics and the reactions are being measured. As none of the methods produce a complete image of the subsoil on their own, their application depends on the archaeological question, the geological ground and the expected structures. The resolution depends on the measurement accuracy as well as on the configuration of the instruments (Neubauer 2001, 19).

A range of archaeological structures cause smallest changes in the earth's magnetic field and the measured data can be transformed into a sometimes clearly visible digital image of the archaeological site (Neubauer 2001, 20). A necessary precondition for the adaption of geomagnetics is a magnetic contrast between the archaeological structure and the surrounding ground. Wood, for example is non-magnetic and also the backfill of a pit with similar soil or waste initially shows hardly any or no differences at all to the surrounding material. Still magnetics facilitate the visualisation of backfilled ditches, pits, palisades or even

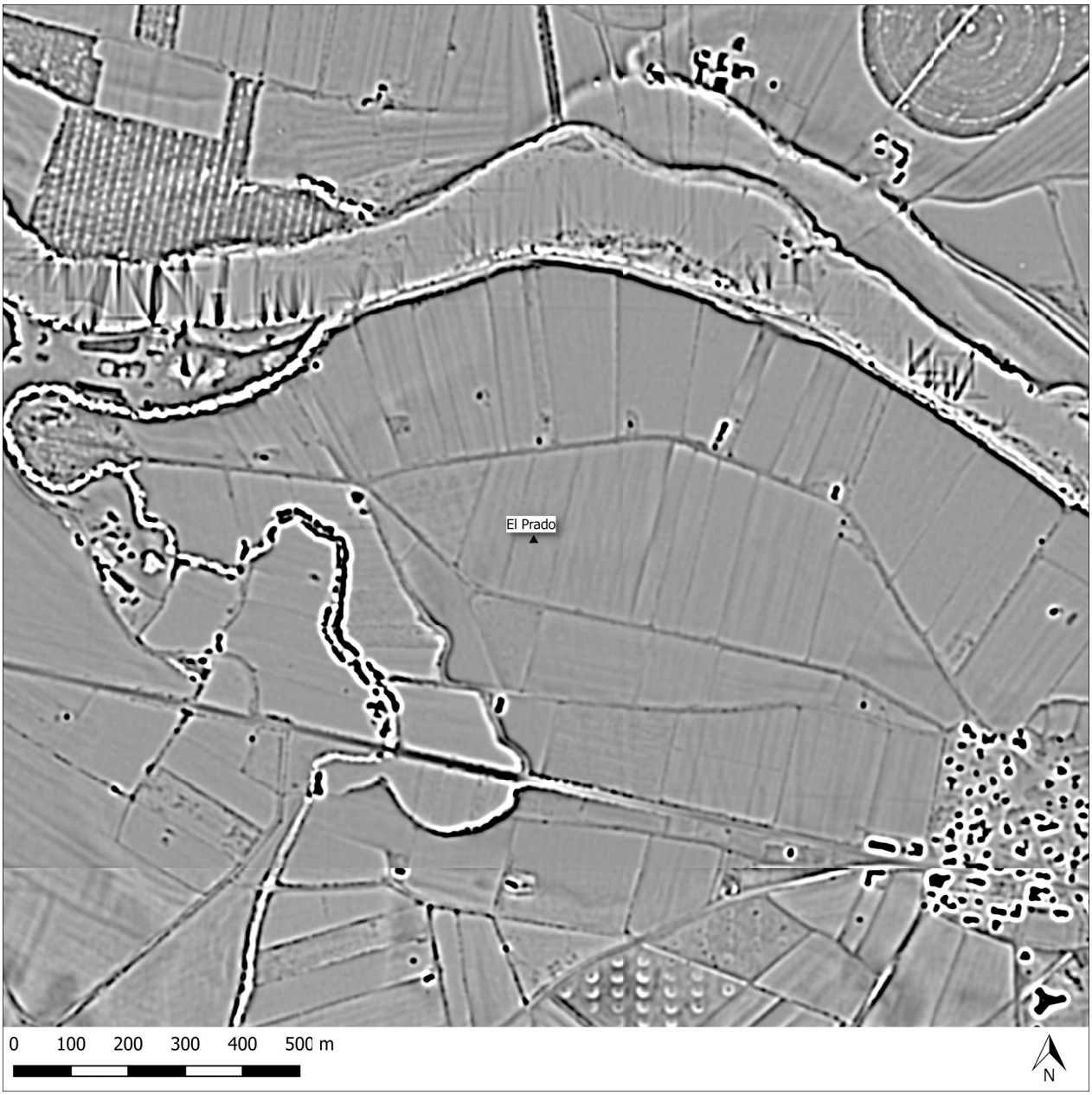


Fig. 23. DEM based on LiDAR-data recalculated by E. Cerrillo in the area of El Prado were surface finds indicated archaeological structures, but nothing was visible on aerial images.

postholes. Even remains of fireplaces, ovens, hearths, walls (adobe better than stone) are detectable as a disturbance of the natural magnetic field in the ground. This is explained by a remanent magnetisation of burnt layers: Burned clay is slightly magnetic. Clay, as well as ovens, floors and stone structures, contain iron oxides that transform into maghemite or hematite through chemical processes during the heating. The magnetisation is impressed in the ceramic material while it cools off inside the magnetic field of the earth (Becker 1995, 217; Neubauer 2001, 21; Fassbinder 2007, 53 f.).

Not only fired and burnt material but pits backfilled with soil also become visible through the magnetisation process during cooling. How can this be explained in the cases where the content of the pits consists of wood or waste, is not magnetic and the surrounding ground maybe only slightly magnetic? Induced magnetics is the

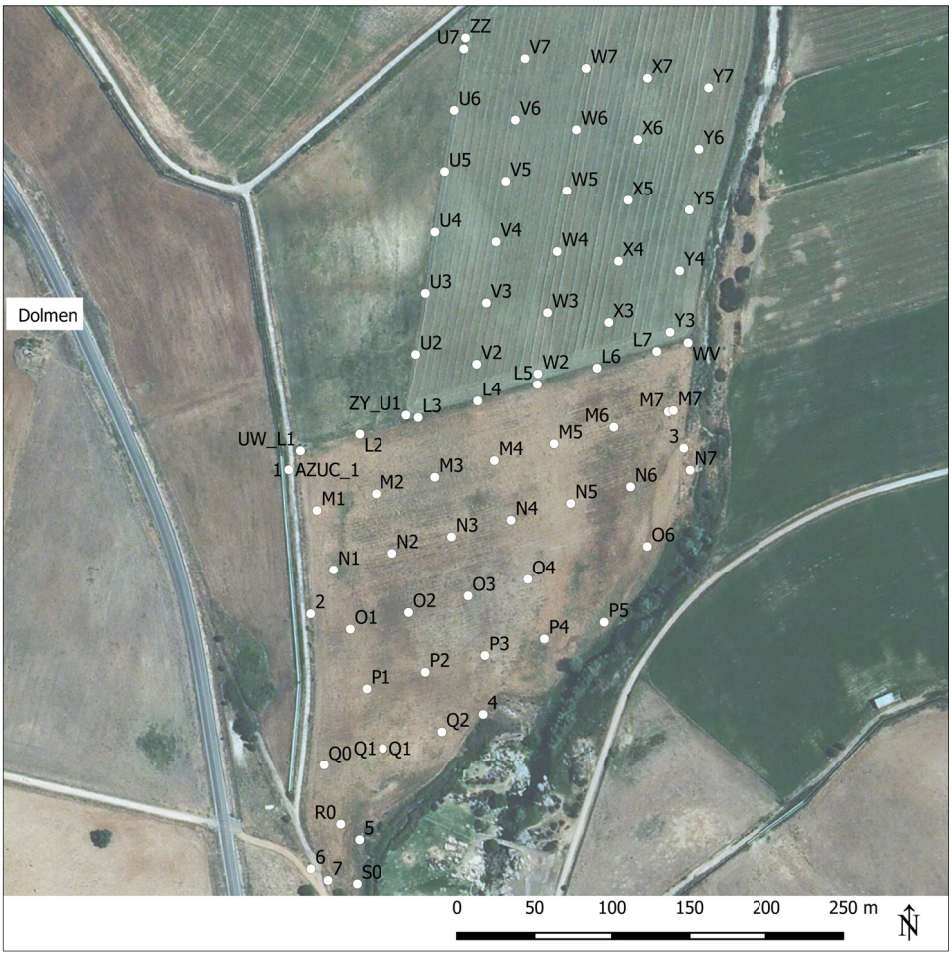


Fig. 24. Example of Los Viñones for the 40 x 40m raster measured for geomagnetic analysis always following the plough or sowing marks (based on modified PNOA 2013 hoja 0654 © Instituto Geográfico Nacional).

reason for a visibility of actually non-magnetic material. Bacteria play the essential role in the process of magnetisation. Within the backfill of postholes pure magnetite has been discovered, although from a geochemical point of view it could not be formed there. Using the electron microscope a strikingly small range in the size of the magnetite crystals of 40–100nm was revealed. Those were predominantly identical with the crystals of certain magnetic bacteria that align themselves along the earth's magnetic field by developing magnetite crystals. To them the magnetic field serves as a help for orientation because the bacteria move within the water of the soil and due to their magnetisation find the direct way to the nutrient layers of the topsoil. Therefore, the bacteria accumulate amongst others in pits, ditches as well as postholes and palisade trenches where they die, leaving behind fossil magnetite (Fassbinder 2007, 54). This allows the physical visualisation of various archaeological structures.

Often, when trying to investigate large areas within a short period of time, geomagnetic analysis is the method of choice. In comparison to large scale LiDAR scans, geomagnetic measurements allow an insight into the subsurface. Besides speed, the spatial resolution and the sensitivity are of significance and can be achieved by high resolution caesium magnetometry, which was applied during the geomagnetic survey in Azután in autumn 2014 (October 3rd to 27th). A serious disadvantage of this measurement configuration is due to one of its main advantages: the high sensitivity. Brief disturbances of the terrestrial magnetic field, caused by magnetic storms, traffic and fixed steel constructions like power lines, can interfere with the measurements even over long distances (Fassbinder 2007, 61).

The magnetic survey in the municipality of Azután was done in a grid of 40 x 40m squares which were positioned using a total station and marked with wooden stakes (*fig. 24*). The local

Fig. 25. The practical work. Measuring in the area of El Prado with the non-magnetic vehicle, the four sensors horizontally aligned.

farmers affected by the fieldwork were asked for their permission to enter the areas of interest without interfering in their agricultural activity or damaging the cultivated plants. The majority of the fields were planted with alfalfa of varying heights. In the case of the district Los Viñones the southern part was a recently harvested wheat field and in the district of Los Pedazos the survey was strongly affected by ploughed ground, disturbed by pebbles and sometimes waist-high thistles, which explains the incomplete image (chapter 5.3.2).

Two caesium magnetometers (Geometrics G 858-G), mainly in quad-configuration, were used during the survey. This was accomplished by arranging all four sensors parallelly with a distance of 0.5m on a non-magnetic measuring vehicle. Using this arrangement, the sensors were not working as a gradiometer (for which sensors would be arranged vertically and one above the other), but as a total field component, moving all four sensors over the surface, aligned horizontally in the same distance to each other (*fig. 25*). By measuring the total field-component of the geomagnetic field, the highest precision was achieved. The sensitivity of the Geometrics G 858-G at a measuring cycle of 10Hz (10 measurements per second with 10–12cm distance between measuring points) was 20–30 picotesla. It corresponds to the 50,000,000th part of the strength of the earth's magnetic field. The spatial point density of the measurement with walking speed was located at approx. 10*50cm. By means of this procedure, archaeologically relevant structures up to a depth of 5m could be measured (Becker/Flade-Becker 2015, 2 f.). All magnetograms refer to the geomagnetic total field, which is illustrated with a dynamic of ± 10 nanotesla (256 grayscales from white [negative] to black [positive]) and a measurement sensitivity of 20 picotesla (Becker/Flade-Becker 2015, 5). The measured values then were transferred into ASCI-formats and images in TIF, JPEG, PNG can be obtained in other programs later when needed (e. g. in QGIS or SAGA-GIS). In GIS the relative image data had to be transformed in absolute national coordinates. Later, archaeological information could be added (e. g. surface finds, excavation trenches) with additional thematic maps, such as parcel information, geology or DEM.

Summarising, it can be stated that specific structures and elements together with surface finds often allow a first chronological and cultural classification without really touching or destroying the archaeological site. Nonetheless, magnetometer maps cannot replace excavations. Still geophysical surveys should be consulted during the process of the preparation of research excavations whenever possible to increase their efficiency (Fassbinder 2007, 71).

5.3.2 Results

As already mentioned, three areas within the municipality of Azután were selected for further geomagnetic investigations. In two areas – both within less than 500m distance from the dolmen – the study of aerial images revealed crop marks indicating a circular structure and an ellipsoidal structure apparently consisting of several parts (*fig. 26*). Yet this part of Azután did not stand out in the quantity of surface finds made in 2014 (chapter 5.2.2). The vicinity to the dolmen and the fact that the form of both structures might point to sites known as ditched enclosures qualified this area for a geomagnetic survey. While aerial images of the surroundings of the dolmen showed indicators for prehistoric sites, the third area selected for geomagnetic investigations revealed no structures in the images at all. Having hardly any difference in elevations over a surface of approx. 90ha the terraces of the Tagus in the west of the modern

Fig. 26. Aerial images of the areas with possible prehistoric structures close to the dolmen and the area in the west of Azután (based on modified PNOA 2013 hoja 0654 © Instituto Geográfico Nacional).

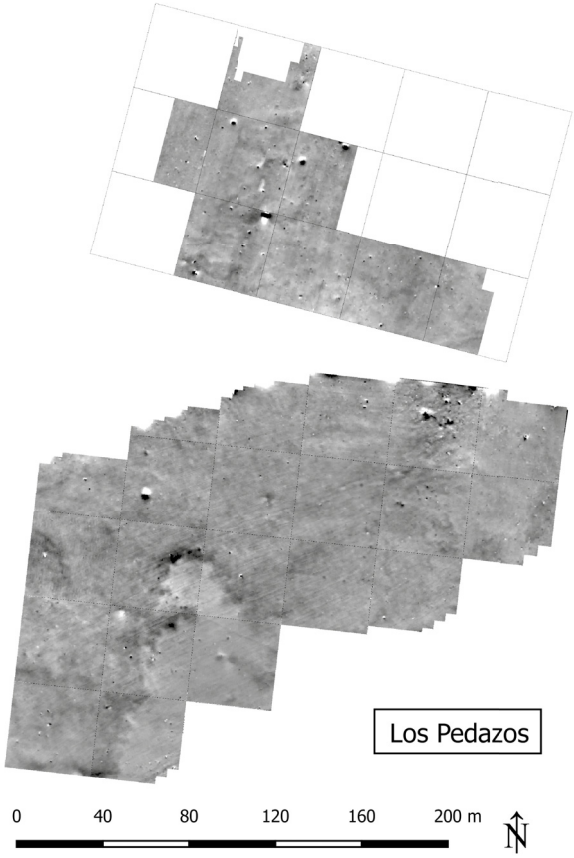


Fig. 27. Magnetogram of the measured areas of Los Pedazos in the southwest of the dolmen.

village presented impressive amounts of surface finds dating to the 4th and 3rd mill. BC; which had been the criterion for its selection (chapter 5.2.2). Here the geomagnetic method was the only way to visualise any possible structures before excavation as neither DEM nor LiDAR-scans indicated depressions or elevations hinting to prehistoric structures (*fig. 26*).

The second fieldwork campaign in autumn 2014 was carried out in collaboration with geophysicists. The 40 x 40m grid as well as the georeferencing of the resulting images were done by the archaeological team. Becker Archaeological Prospection (https://www.becker-prospection.com/) was responsible for the geomagnetic measurements and the transformation of the data into ASCI-formats.

Each of the investigated areas – approx. 25.4ha in total – will be discussed in detail. For a better distinction the researched areas were named after the district they were located in: El Prado at the southern terraces of the Tagus River, Los Viñones located southeast of the dolmen and Los Pedazos situated in southwest (*fig. 26*). They will be described in an order leading from the foothills of the Montes de Toledo to the valley and arriving at the southern bank of the river. The results of the measurements on the river terraces have already been briefly discussed elsewhere (Schmitt 2017; 2018; Schmitt et al. 2019).

Los Pedazos

Los Pedazos is situated on a terrain undulation in the southwest of the dolmen at elevations between 350 to 367m. The area of interest for a geomagnetic survey has an extension of over 17ha including some meters outside the supposed ditched enclosure. At its closest point the site is only 110m distant from the dolmen. Today the site is cut by a track and divided in 2/3 in the north and 1/3 in the south. The aerial image gives the impression that the structures north of the track are drawn clearer than the ones south of it. This might be due to the state of conservation or due to the geology that is dominated by tertiary quaternary layers of sand, gravel and pebbles mainly of compact consistency. In other words, the ground can be described as very stony. This is why for safety reasons from a certain point onwards the recently ploughed parcels of the steeper parts in the north towards the dolmen could not be surveyed. Therefore, predominantly the interior of the supposed ditched enclosure was investigated and unfortunately the inner ditch was only covered in a small part in the southeast. In the end 4.4ha of Los Pedazos were measured, 75% of it being located at the more even ground in the south (*fig. 27*).

Although the aerial image promised interesting results, surprisingly little information could be recovered with geomagnetic measurements. Besides that, the ground in the south is disturbed by earlier depressions that are not visible on the surface anymore. Additionally, the parallel lines running diagonally to the grids from northeast to southwest in the same area are former plough marks, which were hard to see on the surface, as it depended on the location on the field in which direction they were running. Compared to the other areas investigated in Azután, even the small part of the inner ditch that could be recorded in

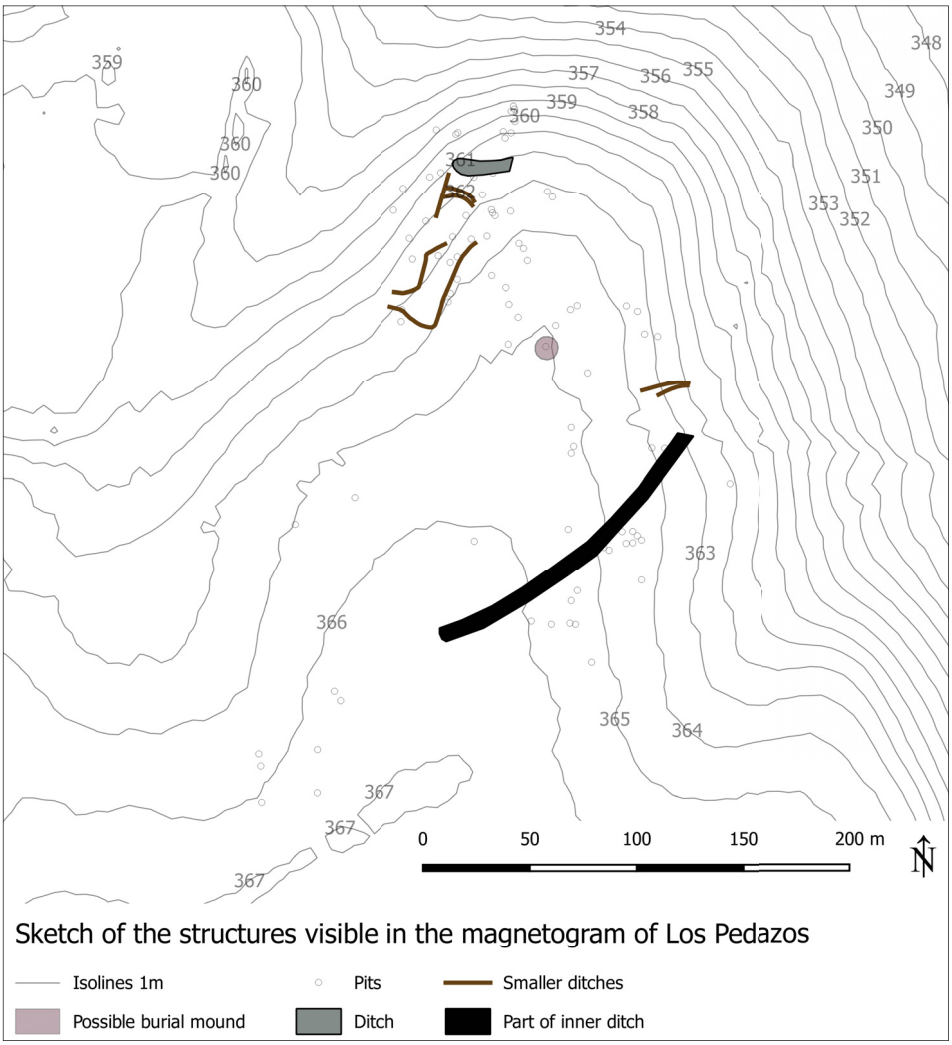


Fig. 28. Sketch of Los Pedazos (isolines based on the MDT05 © Instituto Geográfico Nacional).

the southeast can only be assumed in its course (the enclosure will be described and compared in chapter 5.3.3). The interior part appears to be rather empty; only 33 potential pits could be counted. Apart from the ditch and the pits of 0.6 to 2m in diameter neither any accumulation of structures nor differently magnetised areas forming a structure could be detected in the area south of the track (*fig. 28*).

North of the track in the southeast of the measured area an approx. 20m long and curvy structure visible in the magnetograms might indicate a ditch that was not visible in the aerial images. Due to its curvature, it could theoretically appear in the magnetogram south of the track also, but this is not the case. Therefore, no further statement about this structure can be made based on the magnetograms. Besides ca. 56 potential pits of 0.6 to 3m in diameter and without any connection to other structures, a pit of approx. 1m in diameter seems to be surrounded by a circular structure of 11m in diameter. This could be interpreted as the ploughed over remains of a former burial mound with a small burial chamber. Another peculiar structure was recorded in the southwest and west of the northern part. It could either be a geomorphological depression or a composition of several – sometimes parallel – ditches. The potential eastern ditch runs 21m from west to east where it bends north and is running another approx. 42m in this direction. The potential western ditch has a length of approx. 37m and shows a rather curvy course. The last part of this construct in 13m distance to the western ditch seems to be a combination of an approx. 20m long ditch running south to north and a curved ditch of approx. 14m running from west to east. The small parts of the northwestern part of the inner ditch, which were measured, do not leave an image on the magnetogram though visible in the aerial image, while

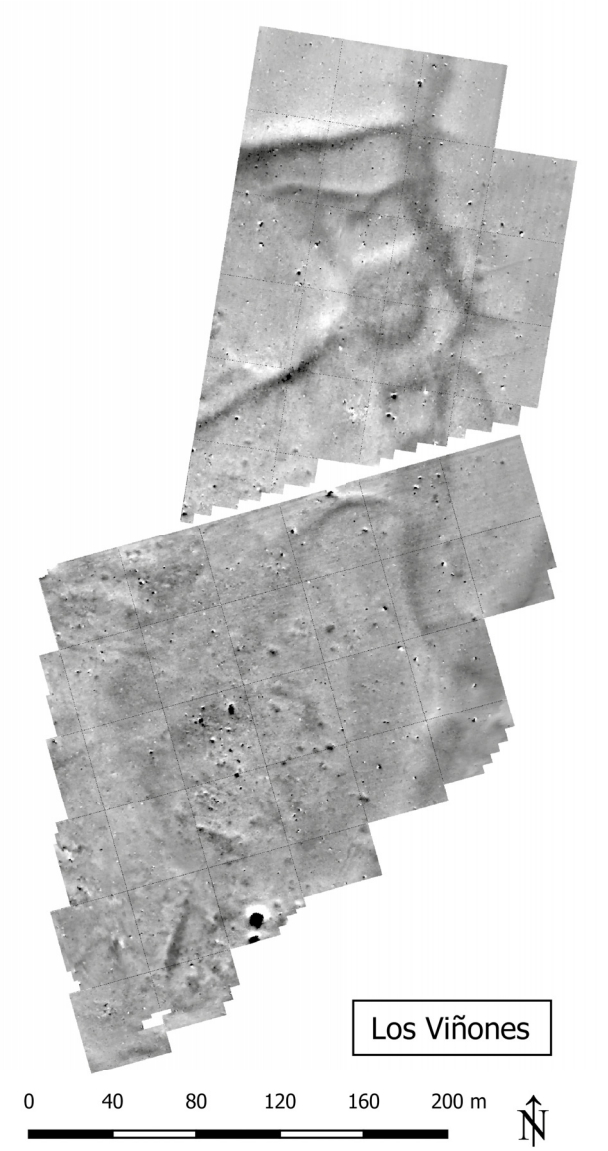


Fig. 29. Magnetogram of the measured areas southeast of the dolmen.

in the almost most northern part of the magnetogram another ditch appears that is not visible in the aerial images (*fig. 28*).

Los Viñones

Los Viñones is the second site detected by aerial images in the vicinity of the dolmen, approx. 230m from the megalithic burial. In the aerial image a semi-circle southwest of the megalithic burial is visible, thus it was assumed that the magnetic measuring could reveal a circular structure. The geology is mainly the same as in the area of Los Pedazos, but Los Viñones is dominated by quaternary gravel. Because of the rather even ground with elevations from 328 to 338m – with the main area of interest only varying 5m in height – and the recently harvested wheat field the entire site and even some parts north of it could be investigated. As the northern part was covered with low alfalfa plants, both fields provided good walking and measurement conditions. At the beginning an area of approx. 4.5ha inside and outside the enclosure was of interest. Because of structures visible in the magnetogram, which could not clearly be dismissed as archaeological structures, the area was extended northwards and in the end 7.5ha were surveyed in total (*fig. 29*).

The area is located in the triangle between the road from El Puente del Arzobispo to La Estrella in the west, the Anguilucha Brook mainly situated in the east and the ruins of a former tile manufactory in the south, which was in operation until the late 1960s. The latter might explain the large anomaly of 7m in diameter in the south of the magnetogram that probably reflects the remains of a modern tile-burning oven.

In the area of the district Los Viñones the results, especially in the case of the pits, show a better visibility in comparison to Los Pedazos and even the supposed ditched enclosure can be traced in the magnetogram (the enclosure will be described and compared in chapter 5.3.3). The potential pits spread over the whole area, but seem to cluster in the southwestern quarter of the interior of the enclosure. Here, some of the pits align parallel or form circles that might be interpreted as remains of dwellings (postholes). Besides the enclosure and approx. 289 pits with dimensions from 0.8 to 4m in diameter, no further archaeological structures were detected. The extension to the north illustrated that the structures 30 to 40m northeast of the enclosure in fact represent geomorphological processes. Gullies and other depressions in the northern extension and in the east of the enclosure are the result of former arms and banks of the Anguilucha, revealing an older picture of the landscape without the ability to date it yet (*fig. 30*). Detailed archaeological and geomagnetic studies of both Los Pedazos and Los Viñones demonstrate that in the future a close collaboration with pedologists and geomorphologists could give impressive insights in the formation processes and the reconstruction of the landscape during

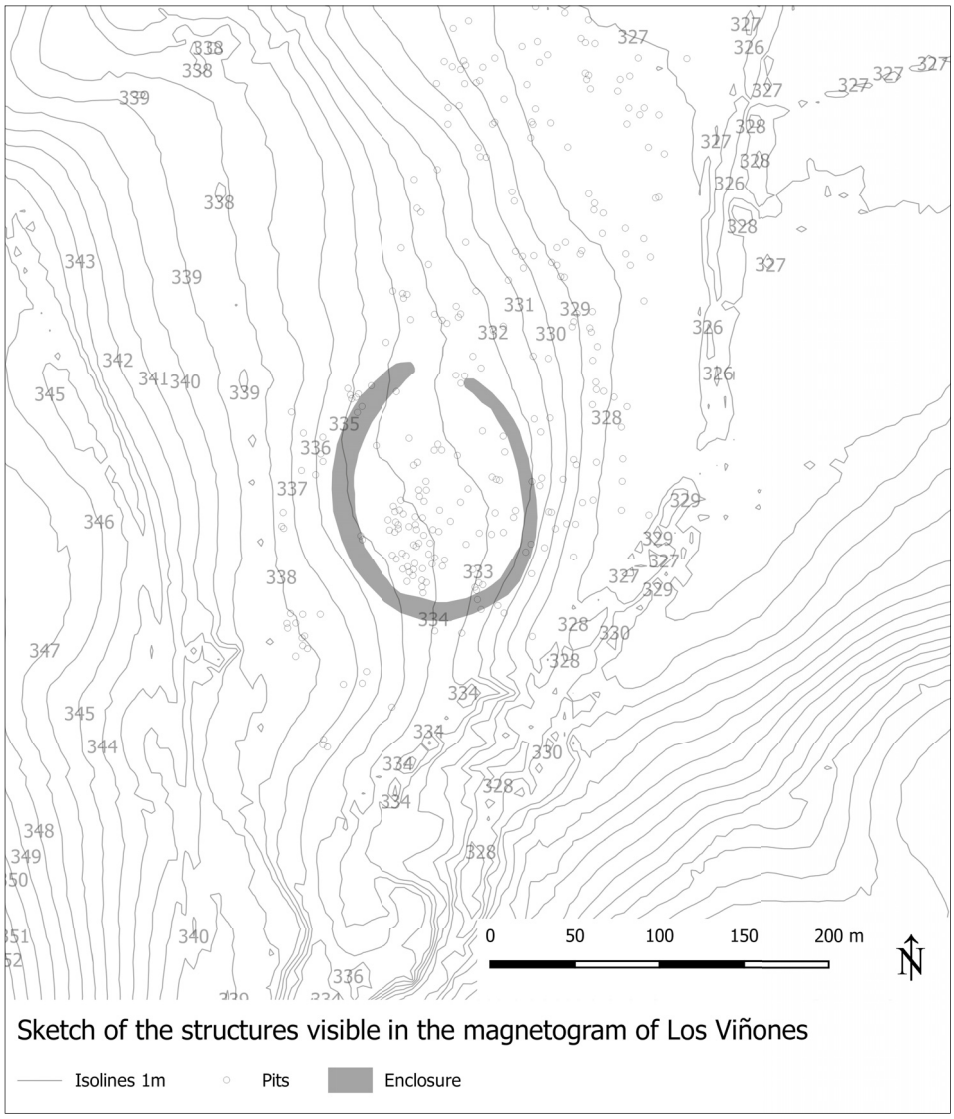


Fig. 30. Sketch of Los Viñones (isolines based on the MDT05 © Instituto Geográfico Nacional).

the Holocene. The area of El Prado would be of interest for additional interdisciplinary studies as well.

El Prado

The last area investigated in the geomagnetic survey is the district of El Prado, situated in the west of the village Azután on the southern terraces of the Tagus. No structures could be detected with the help of aerial images or the DEM (*fig. 23* and *26*) but a massive amount of surface finds indicated a prehistoric settlement of large extensions. In total, an area of almost 90ha would have been of interest for the geomagnetic survey. This could not be realised within the time available. It was decided to start with the areas with the highest amounts of surface finds and at the end of the survey campaign approx. 13.5ha on the southern river terraces had been measured. The studied area in its full extension only varies 4m in height with elevations from 326 to 330m. Due to the rather even territory the only obstacles for the survey were the fast growing alfalfa plants in the southern part, sometimes already knee-high during the measurement, although, this had no effect on the quality of the resulting images. As common for the plain of Azután, El Puente del Arzobispo and Alcolea de Tajo, the clay depositions become more massive closer to the riverbank. The riverbanks are formed by so-called *rañas* (alluvial fans). Unlike the geology of Los Pedazos and Los Viñones, the area of El Prado is exclusively situated on Holocene terraces consisting of gravel layers; sandy, silty soil with pebbles of different sizes which are strongly-rounded (ENADISMA 1972, 5–7, 11).

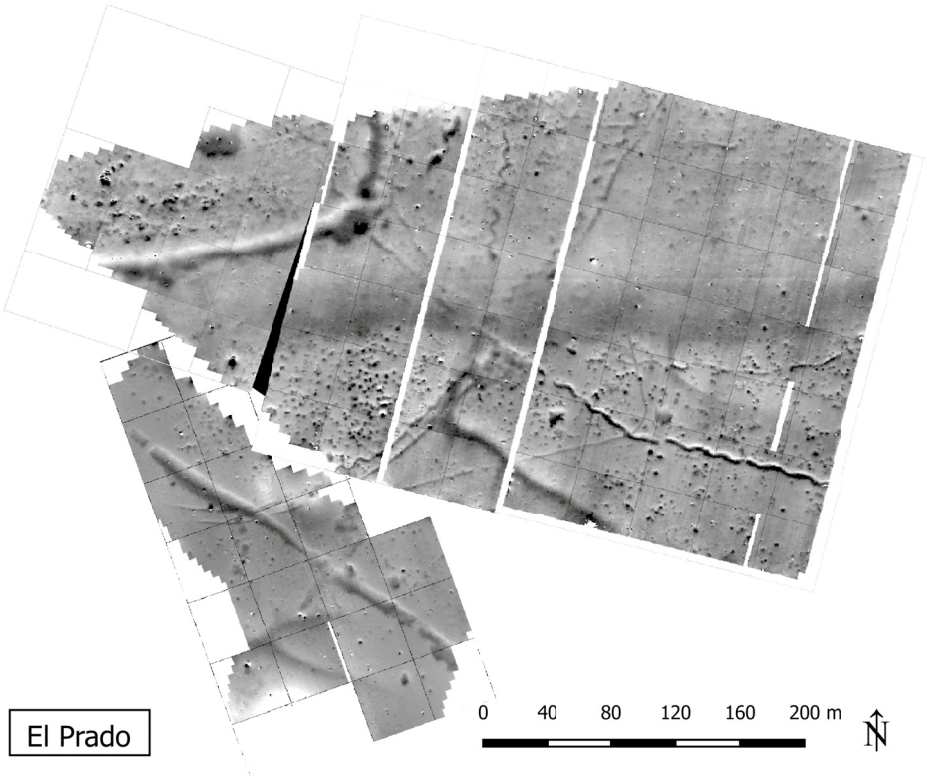


Fig. 31. Magnetogram of the measured areas on the southern terraces of the Tagus.

Impressive results were revealed by the geomagnetic measurements in the area of El Prado (*fig. 31*). While the surface finds already indicated dense settlement activities, the transformation of the measured data into an image definitely surpassed the initial expectations. Several structures interpreted as ditches – almost each of them cutting at least another one – indicated an intense use of this area throughout different periods in prehistory. A massive amount of mostly circular structures, approx. 1180 in total, are spread all over the investigated area. These are potential pits. Particularly, they cluster in the southern part, close to what will be discussed in chapter 5.3.3 and 5.4 as the double-ditched enclosure of Azután. In this area, some of the pits seem to be related and form rectangular, circular or semi-circular structures. Another accumulation is in the northwest within structure (2) accompanied by bigger potential pits of width from 3 to 7.5m and of amorphous forms. The largest oval to shapelessly magnetic signal of approx. 24 x 12m is located in that area as well. Most of the pits scatter all over the southeastern third of the investigated area north of structure (3) without clear clusters and become less dense from structure (5) on northwards. The approx. 1180 potential pits that were mapped vary in dimension from 0.8 to almost 4m in diameter (*fig. 31* and *32*). These measurements have to be interpreted with caution, as the dimensions represented in the magnetogram also reflect the depth of a magnetic object or structure and are not necessarily related to its real size (personal communication of Dr. Dennis Wilken, Kiel; Blakely 1996). The number of potential pits on this site and the others is a subjective count depending on the one hand on my impression and estimation and on the other hand amongst others on the distance between the signals recorded. If structures are situated close to each other, their signals can overlap and what appears to be one pit might actually represent more than just one (chapter 6.2). Apart from that some structures counted as pits here could also turn out to be something else when excavated.

Except for one structure of the ones recorded in the area of El Prado, the site probably dates to the Iberian Neolithic and Chalcolithic period (*fig. 31* and *32*). The exception is the square structure in the centre of the magnetogram, crossed by a straight line running from east to west. Except for the northern part and the southwestern corner, the square-ditched enclosure is almost

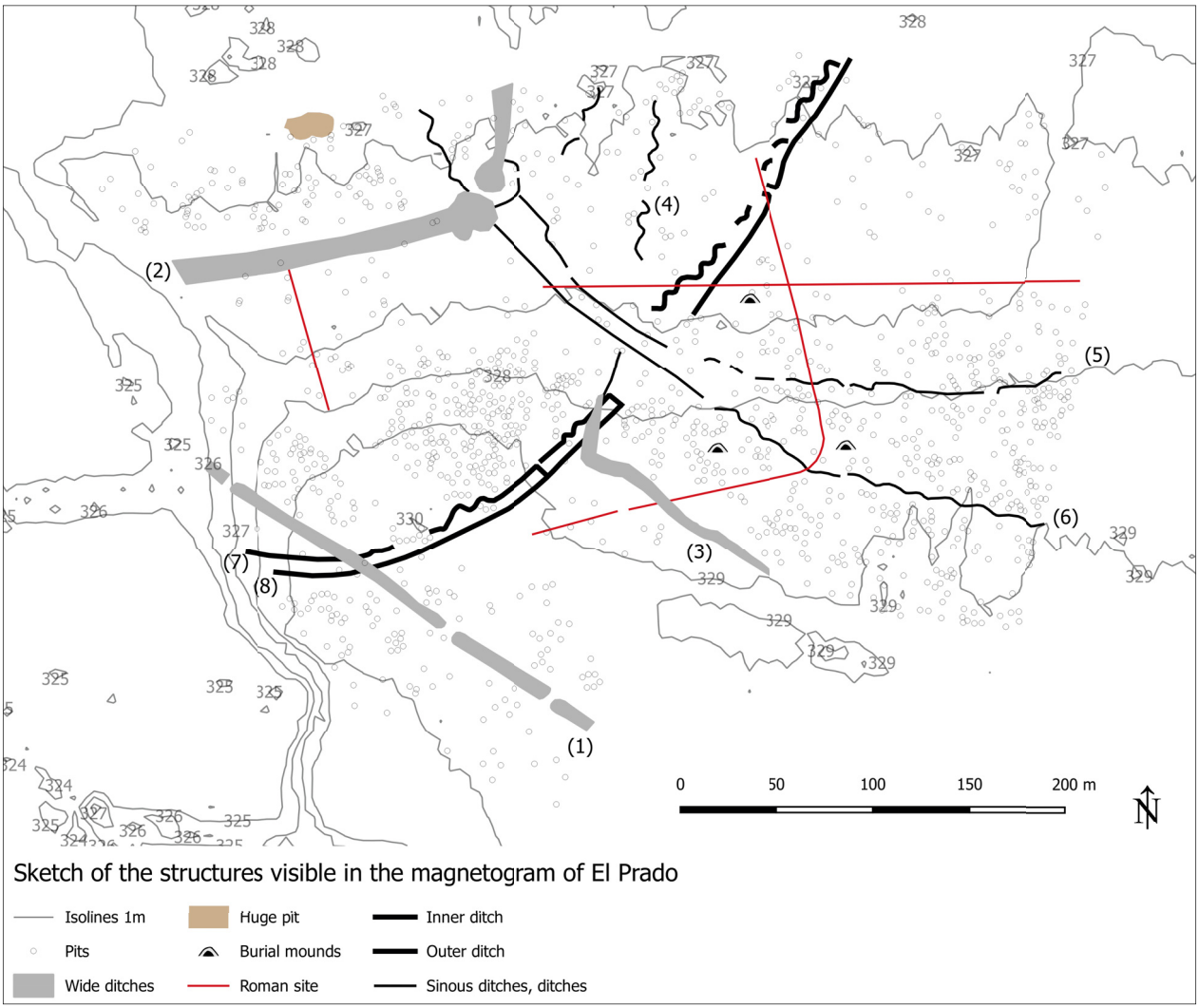


Fig. 32. Sketch of El Prado (isolines based on the MDT05 © Instituto Geográfico Nacional).

completely documented. The 1.5 to 2m wide ditches comprise an area of 240 x 240m. An interruption of the structure of approx. 6m that may be interpreted as an entrance is situated in the southern part of the structure. The line that crosses the structure is 2m wide. A length of approx. 265m was documented between where the line starts to fade out at both ends. This structure seems to be connected to the square-ditched enclosure and might indicate a former pathway leading to the interior. Sites of a similar layout are known in other parts of Europe as well. Comparisons can be found in the Iron Age square-ditched enclosures (Wieland 1999) of South Germany and the marching camps of the Romanisation Period (Küßner/ Schüler 2014). Some surface finds of terra sigillata – the everyday tableware of the Romans – could point to the structure being a former Roman marching camp.

Three circular structures with diameters of 10 and 12m are situated in the eastern part of the investigated area. In the sketch, they are indicated as burial mounds as they seemed to be slightly elevated and two of them are perfectly round (*fig. 32*). Although burial mounds cannot be attributed to the 4th and 3rd mill. BC exclusively similar Chalcolithic burial mounds are known in the province of Toledo: the site of El Castillejo as well as the burial mound TVH (Huecas). This would support an interpretation of the structures as being Chalcolithic burials (Bueno et al. 1999a).

Another structure, exceptional not for its chronological classification like the squared structure but for its type and layout is the 7 to 10m wide

ditch in the southwest. In the west, the ditch seems to end although it can be stated doubtlessly that during the construction of the modern track the ditch was cut off. In the east, the end of the ditch is not reached yet, it probably continues eastwards but due to the restricted time of the geomagnetic survey this area could not be investigated further. All in all, the ditch – or maybe slightly elevated structure – was recorded at a length of 242m and shows three interruptions. Starting from the western end, the first gap starts after 12m of the structure and is approx. 4m wide, the second one appears after another approx. 130m and seems to be the largest of the three with a 7m width. The last interruption appears after an additional approx. 58m and is about 5m wide. Hitherto, no comparisons have been found for this construction type during Iberian Late Prehistory. This could be due to the lack of large-scale geomagnetic investigations in many regions of the Iberian Peninsula, which could lead to structures like this not being discovered or being mistaken as ditched enclosures as only small parts of them were excavated. Even though surface finds allow an approximate dating, the ditch (*fig. 32:* 1) cannot unequivocally be classified to the same period as most of the other documented structures (4th and 3rd mill. BC) because of the lack of typological comparisons.

In the northwest of the measured area, only approx. 220m of the southeastern part of a ditched enclosure (*fig. 32:* 2) could be recorded. The ditch is 7 to 10m wide and shows a 5m long interruption in the east before the course of the ditch continues in a northern direction. At the interruption (entrance?), the ditch ends in two rounded structures. In front of this possible entrance situation, a semi-circle of approx. 2m width runs from the southern round end to the northern part of the ditch. After 20m it is interrupted at a length of approx. 4m and afterwards continues another 10m. It seems like a complex gate-situation has been documented by the geomagnetic measurement.

The ditch marked with (3) in the sketch (*fig. 32)* is situated in the centre of the studied area, approx. 6m wide and cuts or is being cut by at least two further ditched constructions before its course becomes indistinct The structure runs from east to west at a length of approx. 123m and then angles almost 90° to run for another 30m in northern direction where it becomes vague. In this area, where at least four different structures cross each other, the image of the magnetogram is too blurry to decide whether the wavy ditch (*fig. 32:* 4) is the continuation of (3) or not. At present it must remain undecided whether (3) and (4) were related constructions.

Azután is good for not only one but several surprises and impressive results inside the 13.5ha of the geophysical survey on the southern terraces of the Tagus. They have been mentioned in chapter 3.2.2 already: wavy or so-called sinuous ditches. This architectural feature is known from other sites of the Iberian Peninsula but is hitherto not known from any other prehistoric sites in Europe. Even on the Iberian Peninsula, the distribution of the sinuous ditches seemed to have been a phenomenon restricted to the southwest: They are present at 26[16] sites, five of which are in Spain. Not only were ever more ditched sites discovered during recent years all over the peninsula (e. g. Delibes et al. 2014) but, as Valera showed in his works, also the number of ditches with a wavy design increased and their presences in regions outside the Iberian southwest was not exclusionary (Valera 2012a, 169; 2012b, 27). The survey work conducted in Azután in 2014 made visible that sinuous constructions are present in the centre of the Iberian Peninsula along the middle basin of the Tagus River as well. The magnetogram (*fig. 31*) revealed four ditches with a partly or completely wavy plan (*fig. 32:* no. 4 to 7) being recorded as magnetic anomalies varying between 2 to 3m in width. In the northwest of the magnetogram, east of the ditched construction (2) two single 'waves' are located. Given the fact that it remains unclear if they simply represent two isolated mini-ditches or their course continued in a northern direction, no speculation on their type and form will be stated here. They are neither counted among nor included in the descriptions of the sinuous ditches of Azután. The first actual sinuous ditch discussed here is situated in the east of the 'waves' (4) and was already mentioned in connection to (3). Its course can safely be followed from north to south

16 The amount of 26 has not been mentioned in Valera's paper about the sinuous ditches of 2012 but in Valera 2013a, 103.

for a distance of 80m. After about 40m it is interrupted by a 10m wide opening. The ditch vanishes in the blurred part of the magnetogram but might continue in the south as an approx. 30m long, straight ditch after a gap of 50m and could form a connection to (3). Also (5) and (6) are ditches with both a sinuous and straight course. They run from east to north all over the magnetogram and without doubt continue at least in the east while the situation in the north is not quite clear. Both ditches start in the east at slightly different angles and at a distance of approx. 80m from each other. After a section of 180m length, the distance between the ditches decreases to 20m and after the blurred part of the magnetogram – where their course vanishes – they run parallel in a distance of 8m. Maybe they were somehow related to each other and have been erected or been in use simultaneously, although this at present remains a speculation. What can be stated without doubt is that (5) and (6) cross other ditches but do not cross each other. The northern sinuous ditch (5) comprises in its eastern part of flat waves irregularly interrupted by six openings that vary in width between 3 to 13m. As the structure becomes visible after the indistinct part of the magnetogram it continues slightly curved in a northwestern direction without further waves and stops at the semi-circle of structure (2). The wavy parts of the southern ditch (6) are drawn clearer as those of (5) but they are restricted to the eastern half of the ditch as well. The sinuous part shows three interruptions from east to west of 3, 4 and 6m in width and after the last of these openings the ditch continues without further waves directly in the direction of the southern rounded part of structure (2). Here it crosses (2), continues sinuously and seems to end in the interior of ditch (2). The fourth and last wavy construction is a partly sinuous ditch (7) and forms part of the double-ditched enclosure of Azután described below (*fig. 32*) with (8) as the inner ditch.

Although the sinuous ditches of Azután have similar architectural features, it is rather complicated to assign them clearly to one of the four types Valera distinguished for the Portuguese examples (Valera 2012b; chapter 3.2.2). All the ditches located in the area of El Prado are not exclusively wavy but a mixture of flat and sinuous parts. If one would consider only the wavy parts of the whole layout, all of them could be assigned to the regular wavy serpentine type, type C (Valera 2012b, 33).

5.3.3 Description of Azután's Enclosures

The interpretation and discussion of the magnetograms of Azután showed a wide variety of archaeological structures. Especially the river terraces revealed impressive quantities and types of constructions. Most striking are the so-called ditched enclosures dating to the 4th and 3rd mill. BC that are known from all over the Iberian Peninsula. They will be described and compared separately following the direction from the foothills of the Montes de Toledo, along the valley towards the southern bank of the Tagus River. Like in the case of the magnetogram of El Prado, the enclosures of Azután have been addressed in another paper already (Schmitt 2017). This study will focus on their incorporation and the results of the fieldwork will be presented in detail. Later, they will be playing a key part in the chapters about the distribution of resources as well as the organisation of the prehistoric landscape (chapter 7 and 8).

Los Pedazos

The site of Los Pedazos (*fig. 33*) is situated on a terrain undulation with elevations of 349 to 367m in the southwest of the dolmen. As mentioned in the description of the magnetogram, the measurements focussed on the interior of the enclosure while the inner ditch was barely reached. Hence, the sketch of the enclosure is exclusively based on the aerial image, and both its plan and its existence cannot be taken for granted without further investigations. The aerial image (predominantly the PNOA 2013) showed crop marks, which indicated three ellipsoidal ditches. None of the ditches overlap or cross the others, so they may have been related to each other or contemporaneous in their use. Today, Los Pedazos is intersected by a track that runs from east to west and divides the site into a northern (2/3) and a southern (1/3) part. The southern third is less visible than the northern part, with the course of the three ditches disappearing in the southeastern area.

Fig. 33. Aerial image and sketch of the possible enclosure Los Pedazos (modified PNOA 2013, isolines based on the MDT05 © Instituto Geográfico Nacional).

Describing the structure from the inside to the outside of the enclosure, the inner ditch is the widest of them all and ranges between 12 and 16m. It encloses an area of approx. 4ha and is interrupted by an opening on a length of approx. 26m in the west. In front of the gap of the inner ditch, a semi-circular construction is located, which seems to guard the direct way into the innermost part. Together with the opening of the inner ditch, the semi-circular construction might have functioned as a gate. As the middle and the outer ditch show gaps situated almost at the same height (although their length is not clearly identifiable), this could indicate a complex entrance situation. The middle ditch is located approx. 18m from the inner one. At 9 to 11m, it is slightly less wide than the inner ditch. The outer ditch is located 12m from the middle one, and is probably of the same width. Further statements about the outer and the middle ditch cannot be made, as nothing more specific is visible in the aerial images.

The extension of the site of Los Pedazos is defined by the outer ditch and encloses an area of approx. 12ha. At their closest point Los Viñones and Los Pedazos are less than 300m distant.

Ellipsoidal constructions of ditched enclosures are not very common among this type of site on the Iberian Peninsula and therefore Los Pedazos does not have many comparisons. At this point, it can only be compared to a site located on the northern Meseta: La Redonda (Ampudia, Palencia). La Redonda (*fig. 34a*) was first mentioned in 2011 (García 2011, 163) and a plan mainly based on aerial images was published in 2015 in the PhD-thesis of M. García (2015, 168). It is defined as a segmented (causewayed) enclosure and was investigated both by surface surveys and aerial archaeology, but as yet none of it has been excavated. La Redonda comprises of four ditches, three of which have an ellipsoidal outline, while the outer ditch is rather circular. All in all, an area of 1.76ha is covered by this construction (García 2015, 168). Several interruptions divide the different ditches into segments. The inner ditch is formed by four, the middle ditch consists of seven and the outer ellipsoidal ditch of 15 segments. In the east of the site, the middle ditch even seems to share a segment with the outer one. Despite the high number of interruptions, none of the openings seems to line up from the interior of the site to the exterior, so no clear entrance can be defined. Neither the size nor the architectural features of La Redonda are comparable with the ones present in Los Pedazos. Unfortunately, parallels other than the ellipsoidal plan and the probable Chalcolithic chronology are difficult to draw. At this point of

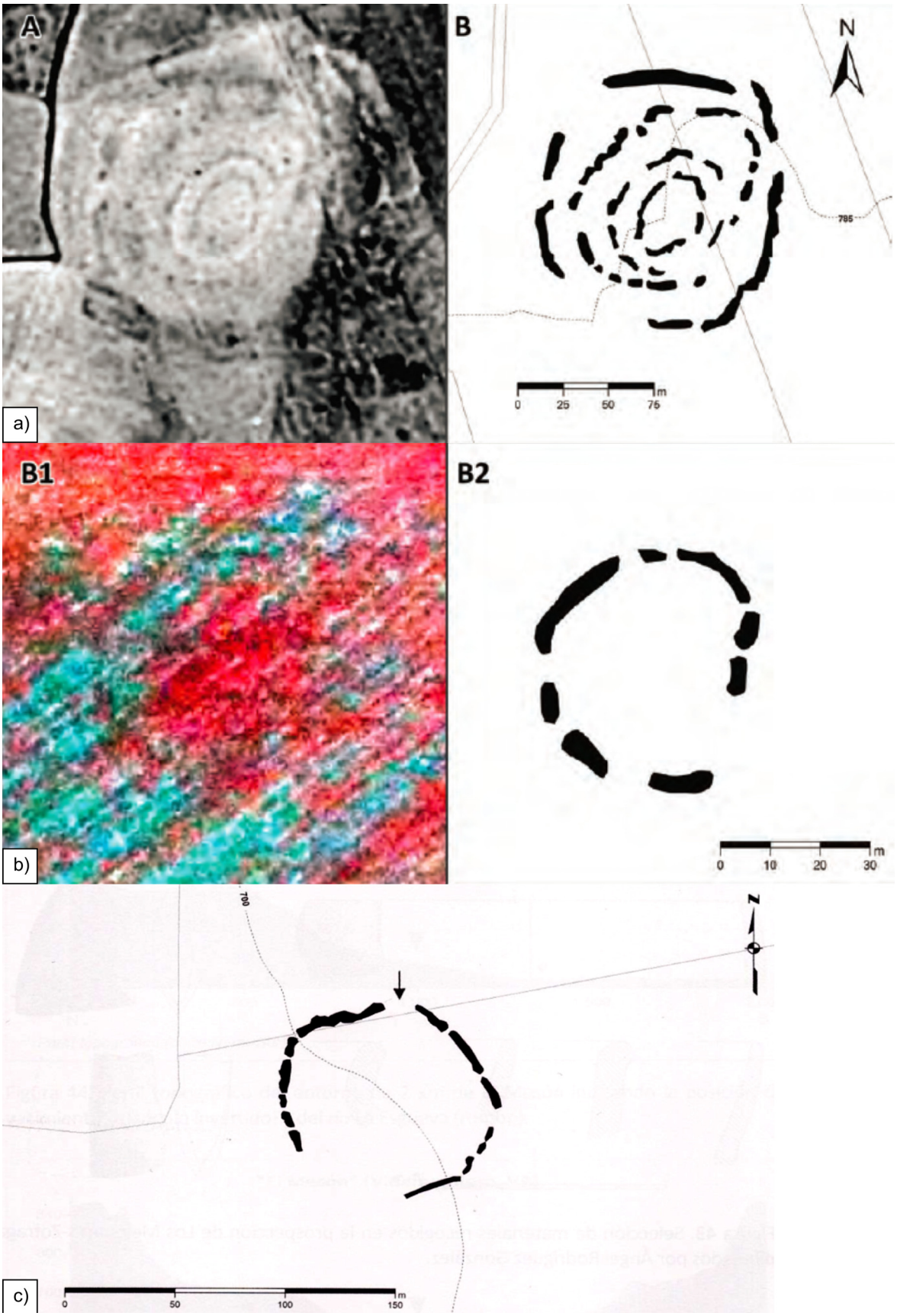


Fig. 34. Comparison for Los Pedazos a) La Redonda (Ampudia; García 2015, 168, fig. 48) and for Los Viñones b) La Serna (Pedraza de Campos; García 2015, 167, fig. 47), c) Los Melonares-Zofraga (Rueda; Delibes et al. 2014, 71, fig. 42). Same compilation as in Schmitt 2017, fig. 4.

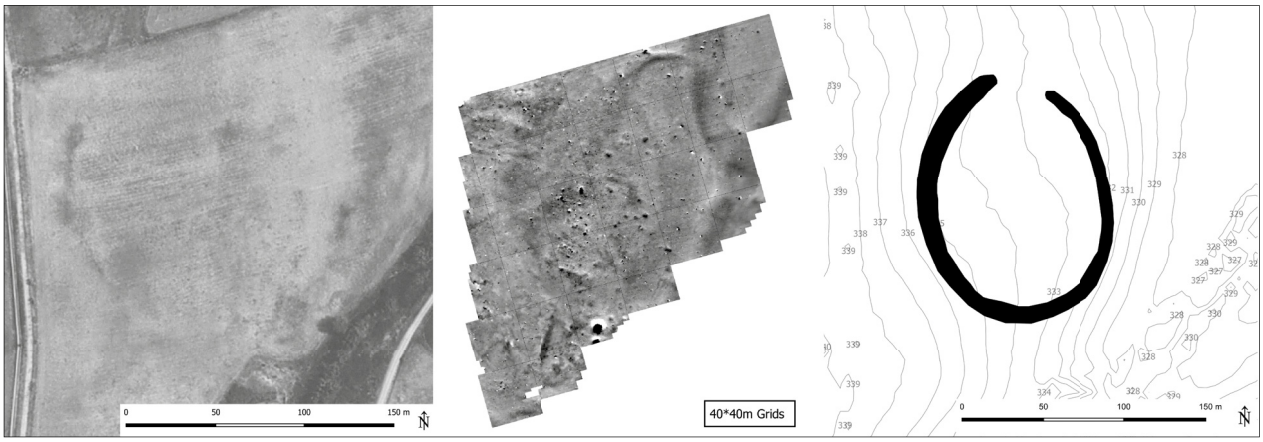


Fig. 35. Aerial image, magnetogram and sketch of the possible enclosure Los Viñones (modified PNOA 2013, isolines based on the MDT05 © Instituto Geográfico Nacional).

investigation, no further sites can be considered for a better comparison with Los Pedazos.

Los Viñones

The site of Los Viñones is situated in the transition of the foothills of the Montes de Toledo to the valley of Azután (*fig. 35*). The enclosure was discovered due to crop marks in aerial images of the area southwest of the dolmen. It is the smallest of the three enclosures discussed here. A semi-circle was visible in the aerial images and the construction seemed to have ditched parts accompanied by at least two round parts. Those round parts visible in the aerial image could not be verified by the magnetogram. For a more accurate depiction of the site, the sketch of the enclosure was exclusively based on the magnetogram. The magnetic anomalies were interpreted as an oval ditch with a width ranging from 6 to 12m. It seems to run continuously with a 30m wide interruption in its north. All in all, an area of 1.4ha is enclosed by the ditch.

For this oval enclosure with only one ditch comparisons are hard to find as well. Again, a look at the enclosures of the northern Meseta is useful. Regarding its oval plan, Los Viñones can partly be compared to La Serna (Pedraza de Campos, Palencia). La Serna (*fig. 34b*) was surveyed and detected in aerial images (García 2011, 163; 2015, 167–169). Like most of the enclosures of the northern Meseta, the site belongs to the segmented type, consisting of eight segments, and has an almost oval outline. The size of La Serna is hardly comparable to Los Viñones, as it only covers an area of 0.08ha. Regarding size and gaps, the site of Los Melonares-Zofraga (Rueda, Valladolid) is more suitable for the comparison with Los Viñones. This enclosure (*fig. 34c*) is known due to survey and aerial images. It was classified to the segmented type as well as La Serna and comprises of twelve segments. Its layout is more circular than oval, but it seems to have a main opening in the north just like Los Viñones. Apart from the sites La Serna and Los Melonares-Zofraga, no other layouts of enclosures with just one ditch and the main opening towards north could be found up to date.

It is debatable if the sites of Los Pedazos and Los Viñones really represent enclosures or rather depressions formed by geomorphological processes, but there are other undoubtably archaeological structures present such as pits that sometimes seem to form rectangular, square or circular structures as well as prehistoric surface finds deriving from the surveys representing archaeologically relevant information.

El Prado

Coming from the western foothills of the Montes de Toledo, passing by Los Pedazos, the dolmen as well as Los Viñones and finally setting foot on the southern terraces of the Tagus, the impressive double-ditched enclosure of El Prado appears. It comprises of two ditches connected to each other. The largest distance from the southernmost part of the enclosure to the Tagus in the north averages at around 550m. The site was not visible in

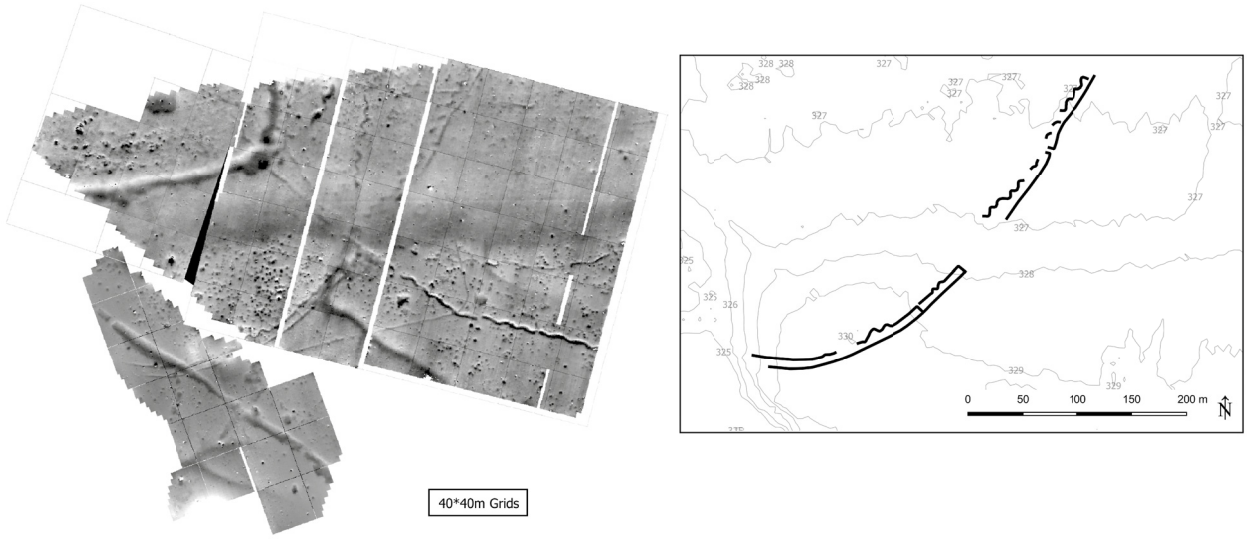


Fig. 36. Magnetogram of El Prado and the sketch of the double-ditched enclosure (isolines based on the MDT05 © Instituto Geográfico Nacional).

the aerial images and was only investigated with the geomagnetic method because of the massive amount of Neolithic and Chalcolithic surface finds. The sketch of the enclosure is exclusively based on the magnetogram. Due to the above-mentioned results of the different methods applied in Azután, the site of El Prado (*fig. 36*) became the most intensively investigated part of the municipality. This gets even more apparent in chapter 6.2, as excavations were carried out at the inner ditch of the double-ditched enclosure as well as at the location of the accumulation of pits in its interior.

In the geomagnetically investigated area of 13.5ha in the west of the modern village of Azután, elevations only vary 4m in height. In the southwest of the studied area both ditches end due to the construction of a modern track that cuts into the ground and probably destroyed the further course of the enclosure. The centre of the magnetogram shows a blurred part where several structures cross each other. At this part, the course of the double-ditched enclosure becomes unclear for approx. 50–60m. Because of shared angles, architectural features and distances between the ditches, the parallel running sinuous and straight ditch north of the blurry part are most likely the continuation of the parallel ditches south of it. Unfortunately, no further parcels north of the measured area could be investigated. Looking at the course in the southwest of the magnetogram, it can be assumed that the double-ditched enclosure continued north, presumably up to the river. Hitherto, the extension of the enclosure is outstanding for the centre of the Iberian Peninsula. Following the angle of the ditches and assuming that both the northeastern and the northwestern part of the ditches ended at the river forming a semi-circle, an area of approx. 50ha would have been enclosed. Provided that the ditches continued north of the Tagus River in the municipality of Alcolea de Tajo, consequently forming a circle, it might even have had an extension of almost 100ha. Regardless of whether El Prado was a semi-circle or a circle, it is the first time that an enclosure of these dimensions and constructional elements has been discovered in Central Spain. As will be seen later, the closest comparable sites are located in distances of more than 150km southwest of Azután, as the crow flies and not taking into account the relief.

Both the outer and the inner ditches are 2 to 3m wide and show a very regular distribution of widths. The inner ditch is one of the four constructions with a wavy outline recorded in the area of El Prado, which were not known from the centre of the Iberian Peninsula until the investigations of 2014 in Azután. It can be classified as a type C of Valera's categories (regular wavy serpentine type: Valera 2012b, 33). The inner ditch is not completely sinuous, but starts out straight

in the south. After approx. 110m, the first two waves become visible, but afterwards the ditch continues its straight course for another 30m until it reaches the first doubtless gap of approx. 2.5m width. After the interruption, it continues first in less pronounced waves and after the blurred part the sinuous design dominates. Along the last 88m northwards, the inner ditch is irregularly interrupted in its course: From south to north, these gaps are approx. 18, 6 and 8m wide.

The inner and the outer ditch are interconnected with ditches of 6m length and 2m width, which are detectable beyond doubt in two cases in the southern half. Two more are indicated in the northern half, situated at the only clear gap within the outer ditch. Besides this gap of approx. 5m – located at the last 84m of the course – no special characteristic in the construction of the straight outer ditch can be observed.

The layout of El Prado is neither comparable to sites on the northern Meseta nor does it show any similarities to any other site of Central Iberia. With its remarkable size, features such as the wavy parts of the inner ditch or the interconnecting ditches as well as the location directly related to the watercourse of the Tagus River, this enclosure has to be discussed within the context of the ditched sites of the southwestern Iberian Peninsula.

5.4 The Prado Double-Ditched Enclosure – Contextualisation

The outstanding amount of finds as well as the impressive results of the geophysical survey on the southern terraces of the Tagus revealed a type of site that finds its closest comparisons many kilometres away from Central Spain. A double-ditched enclosure with these constructional elements and especially of such size could be detected on the central Mesetas for the first time. The discovery of such a site raises several questions, some of which cannot be answered by comparing magnetograms and aerial images. To obtain information concerning the age of the site, the palaeoenvironment and the material culture present within the enclosure, small test trenches were opened. The results of the excavations will be discussed in chapter 6. First, the structural components of the double-ditched enclosure El Prado will be compared to similar sites of the southwest. Sites like El Prado – and the enclosures Los Viñones and Los Pedazos as well – have so far been unknown in that area of the peninsula and must lead to a reconsideration of the supposedly 'deserted' and 'backward' centre of the peninsula during Iberian Late Prehistory.

El Prado shares many similarities with enclosures in the southwest of Iberia but not with enclosures in the centre or the northern Meseta. The sites offering the best possibilities for comparisons, which have been chosen to be discussed here, are situated in the Alentejo Region in Portugal as well as in the province of Badajoz in Spain. Calculating the linear distance and not considering the actual possible length of way, this means that the closest comparable sites are 170 to 260km away from Azután. These sites offer comparisons for the architectural features of the site as well as for the topographic situation with its close connection to a waterway. Seven sites were chosen for a closer study; and there are not many more alternatives to compare El Prado to.

Because of its architectural features, El Prado is discussed in connection with the sites of Perdigões (Reguengos de Monsaraz, Évora) and Moreiros 2 (Arronches, Portalegre). Both sites were investigated with the same geomagnetic method applied in Azután and revealed similar construction elements. Perdigões (*fig. 37a*) is situated in a position described as natural amphitheatre, which opens up to the east in direction of the valley of the Ribeira do Álamo. It was identified as a prehistoric site in the 1980s, but its real extensions did not become apparent until 1996. A new vineyard was supposed to be planted and therefore the area was deeply ploughed. 1996 was also the year an aerial image of the site became available and revealed the real extensions of Perdigões. Both the massive amount of surface finds after ploughing and the aerial image of the area confirmed the importance of detailed investigations. In 1997, the intensive study of the site started, and research continues until today. Through geomagnetic survey in 2009 and 2010, twelve concentric, roughly concentric or amorphous ditches have been detected as well as hundreds of small, circular structures. In total, the archaeological complex of Perdigões occupies an

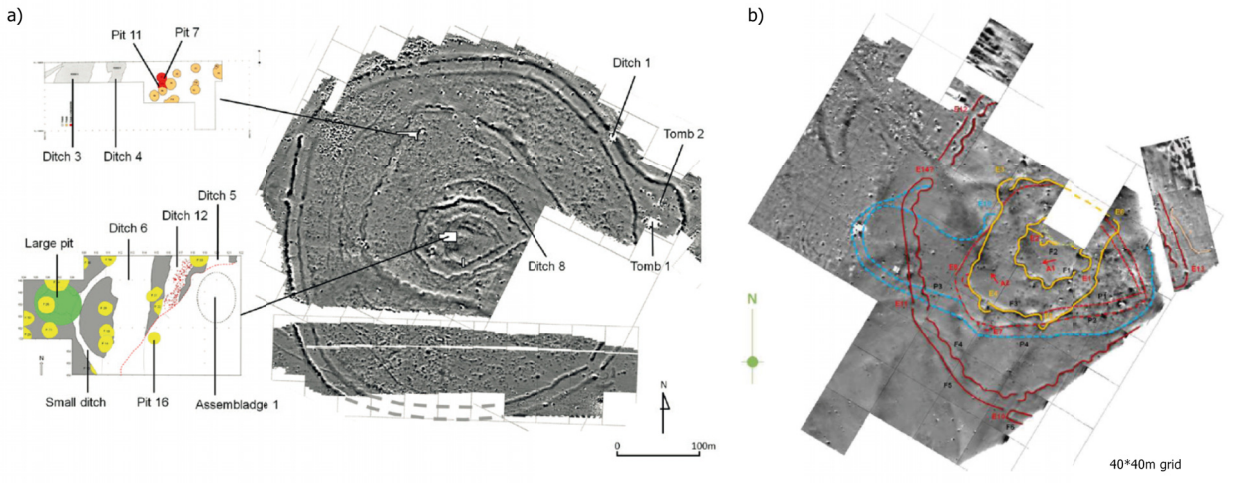


Fig. 37. Comparisons for El Prado because of architectural features: a) Perdigões (Valera et al. 2014a, 17, fig. 13) and b) Moreiros 2 (Valera et al. 2013, 38, fig. 4).

area of approx. 20ha. Only a few metres eastwards of the bulge of the outermost ditch, a megalithic cromlech is situated. The status of the site as a protected area and continuous research allowed for – among other analyses – a detailed radiocarbon dating to a period between the second half of the 4th until the second half of the 3rd mill. BC (Valera et al. 2014a; Valera 2011a; 2013b, 337–339).

The focus of the comparison to El Prado will be on ditch 1 and 2 belonging to the double-ditched enclosure. These two ditches indicate the largest extension of the site and enclose the complex of remaining enclosures of Perdigões as well as an earlier burial ground where ditch 1 shows an irregularity in its otherwise concentric course. Both sites comprise of an inner and outer ditch and have the same interconnecting ditches between them. Having a closer look at the magnetogram of each site, it becomes evident that ditch 1 and 2 as well as the connecting ditches show the same measurements as the ditches of the double-ditched enclosure of El Prado. In Perdigões, the outer ditch runs straight but the inner ditch also has a non-wavy design, while at El Prado the inner ditch includes sinuous parts as well as a straight course within the investigated area. Although both enclosures show similar interruptions or entrances, Perdigões' double-ditched enclosure has a very complex gate situation. It is visible at the southeastern and the western entrance and consists of a small semi-circle close to the outer ditch, which is partly enclosed by a second and bigger semi-circle with a gap in its middle. Together the two semicircles prevented direct access and maybe even the direct view into the interior of the enclosure. The chronology of the double-ditched enclosure at Perdigões derives from ditch 1 which dates to the second half of the 3rd mill. BC: 2578–2050 calBC. Consequently, the biggest enclosure already belongs to the latest occupation phase of Perdigões during the Late Chalcolithic: 2450–2150 calBC (Valera et al. 2014a, 16, 20).

Moreiros 2 (*fig. 37b*) is situated on a little hill slowly rising to the southwest and characterised by shallow terrain undulations. The site was discovered in the summer of 1998 during activities of the project 'As comunidades pré-históricas dos IV e III milénios na região de Monforte' (COMONPH; Lopes/Boaventura 1997). Interestingly, the only known dolmen in the surrounding area is situated 1km northwest of the site (Fragoso 1). Although only a small amount of surface finds was detected, the profile of two ditches could be investigated during rescue interventions in the gravel quarry in 1998 and 1999. The conducted work mainly comprised of the profile cleaning and the detection of datable material. In addition, a sinuous course of ditches could be recorded. The parallel ditches were assumed to belong to a small ditched enclosure chronologically pointing towards the 4th and 3rd mill. BC (Boaventura 2006, 68–72). Some years later, the site of Moreiros 2 was integrated into a project about the 'Plans of ditched enclosures and Neolithic Cosmologies' and hence geophysically

investigated to obtain a layout as well as carbon dates. The fieldwork in 2010 and 2011 surpassed the initial assumption about this enclosure and the inherent number of structures. Based on the survey of Boaventura in 1998 and 1999, the enclosure seemed to occupy only a small area, but after the geomagnetic survey of 7.68ha several ditches were revealed that spread over almost the whole area covered by the magnetogram (Valera et al. 2013, 37 f.). Although the structures are covering an area of around a tenth of the size of Perdigões only, the concentric as well as the rather irregular ditches form an interesting pattern. Besides some small and circular structures, the site comprises of nine ditched structures; four of them are more or less concentric, the other five rather indistinct in their course. Resulting as interpretation from the magnetogram, it was supposed by Valera and colleagues (2013) that the amorphous ditches – probably indicating palisades – belong to one phase of the site, while the outermost two concentric ditches with the two central ones indicate another construction phase (Valera et al. 2013, 42 f.). Additionally, the palisade construction and the enclosures overlap at several points, which would support the idea of at least two different phases.

El Prado can be compared to the largest construction revealed by the geomagnetic method in Moreiros 2: It is the external double-ditched enclosure (ditch 4 and 5), cut by palisade 3 and 4, which surrounds an area of approx. 2.5ha. It is apparent that the ditches show the same width (approx. 2m) as in Perdigões and El Prado. Like the double-ditched enclosure of El Prado – although covering a significantly smaller area – the site comprises of two ditches. The outer ditch is defined by a straight course, while the inner ditch has a completely sinuous construction, whereas the inner ditch of El Prado is only partly sinuous with less regular wavy architectural features. Ditch 4 and 5 show four clear gaps each and these gaps in the outer ditch are similar in width to the ones traceable at El Prado. Completely absent in Moreiros 2 are the ditches connecting the inner and the outer ditch. The only connection of ditch 4 and 5 is situated in the northwest, where both merge and end in a semi-circle (Valera et al. 2013, 39, fig. 3 and 40, fig. 4). Even though Moreiros 2 is dated, the dates unfortunately derive from ditch 1 and 3 and not from the double-ditched enclosure. Apart from the surface finds, the only datable material came from the rescue interventions in 1998 and 1999 (Boaventura 2006), when the bigger enclosure was still unknown. The dates obtained from the ditches of the smaller enclosure predominantly point to the second half of the 4th mill. BC: 3310–2901 calBC (Valera et al. 2013, 43; Valera 2013b, 336–338).

It's not just the architectural features of El Prado that show similarities to other sites. The following two examples were selected because of their similar choice of location. Unfortunately, further comparison of possible similarities with El Prado can only be based on the sketch of each site as well as the available written information. Both La Pijotilla (Solana de los Barros, Badajoz) and Águas Frias (Alandroal, Évora) exhibit a close topographic connection to either a brook or a river. As it still remains unclear whether the double-ditched enclosure of Azután formed a semi-circle or crossed the Tagus and had a closed circular course, both sites of the Iberian southwest are qualified to be discussed here.

During the 1970s, the change from an olive grove to a vineyard in an agricultural parcel of the municipality of Solana de los Barros was the beginning of the investigation of the site later known as La Pijotilla (*fig. 38a*). The removal of the olive trees brought to light a large quantity of surface finds, which were collected by a local family and finally in 1976 presented to V. Hurtado. The first publications were restricted to the collection that in fact was a representative sample of the material of the last occupation phase of the prehistoric site (e. g. Hurtado 1980; Hurtado/Amores 1982). Especially the high proportion of idols was remarkable. The first excavation started in 1976 and was followed by four further campaigns between 1979 and 1982. New aerial images of the area taken during the 1980s showed that the ditch detected in the excavations was part of something much bigger and in fact formed a concentric line on both sites of the brook (Hurtado 1991; Márquez/Jiménez 2010, 54–56). The excavator dealt with a so far unknown type of archaeological site on the Iberian Peninsula: a ditched enclosure. In 1989, the excavations at La Pijotilla were resumed, again because of changes in the agricultural use. This time, the focus was on the funerary area; excavations

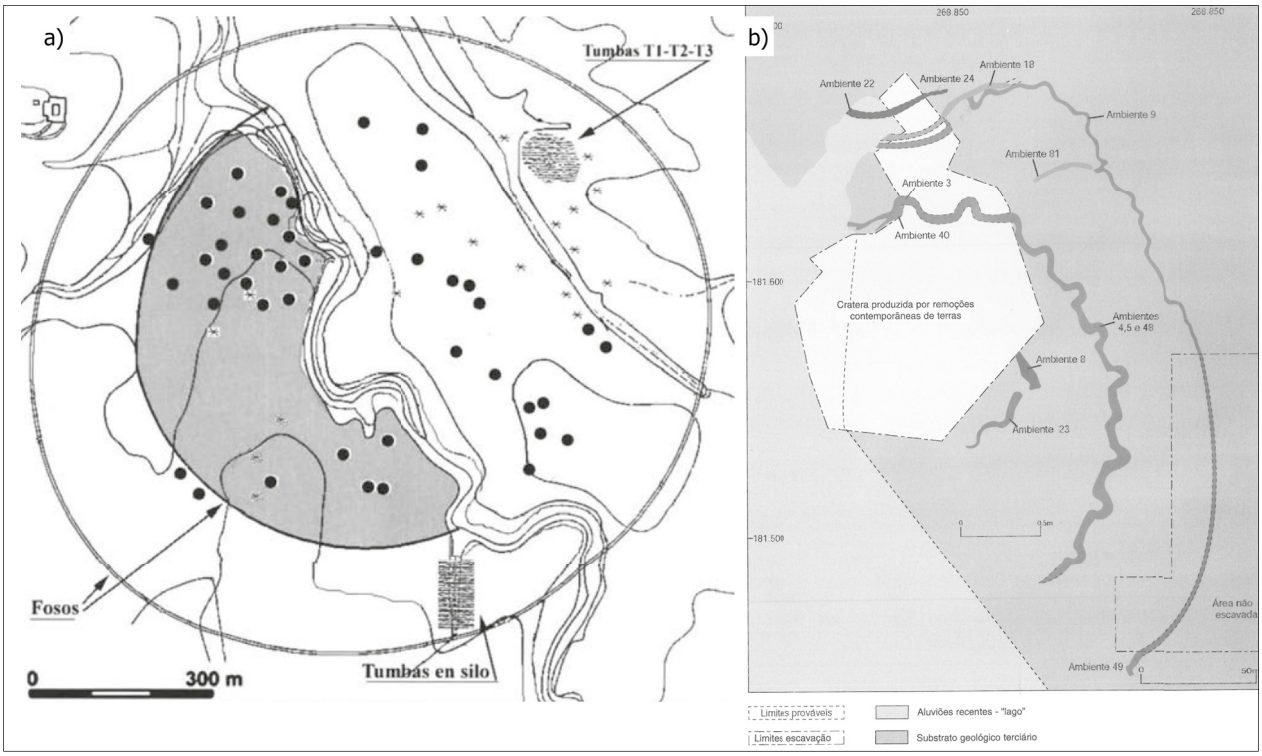


Fig. 38. Comparisons for El Prado because of the topographic situation: a) La Pijotilla (Hurtado 1999, 76, fig. 4) and Águas Frias (Calado/Rocha 2007, 37, fig. 7).

of the tholoi were undertaken in 1990 to 1993 and again in 1995. Finally, in 1996, the construction of a gas pipeline cut the prehistoric site in half, leaving a construction pit, where several negative structures could be recorded (Márquez/Jiménez 2010, 54–57). At present, after years of investigation and thanks to new aerial images – geophysical survey apparently was not undertaken – the site has been identified as an approx. 80ha large enclosure. It is situated on both sides of the eponymous Pijotilla Brook, tributary to the Guadajira River, which in turn is a southern tributary of the Guadiana River. The ditches run in a wide angle from west to east and east to west to the banks of the brook. La Pijotilla comprises of several negative structures and two concentric ditches: The outer one forming a complete circle and crossing the brook, and the inner ditch seeming to be restricted to the western bank of the waterway (Hurtado 2008, 186; 2010, 112). In the publications, and therefore probably also during the investigations, a bigger focus was on the material, its analyses and the burials rather than focussing on the enclosures itself. Information on the ditches is rare because it is barely published (Hurtado 1991) or only consists of a short note about the enclosure within articles concerning other topics (e. g. Hurtado 1980; 2008; 2010; Odriozola et al. 2008; Polvorinos et al. 2002). A very good summary of the history of investigation and the results has been published in the book about the ditched enclosures of the southwest of the Iberian Peninsula by J. E. Márquez and V. Jiménez (2010, 53–66). A chronology that ranges from the whole of the 3rd to the beginning of the 2nd mill. BC is mentioned, including both burials, pits and at least the outer ditch. This means that the site covers the Chalcolithic period, including Bell Beaker up to the Early Bronze Age. Regarding only the enclosure, the backfill of the outer ditch was dated to 2460–2200 calBC 1σ (Hurtado 2008, 90; Márquez/Jiménez 2010, 198). As in the cases of Perdigões and Moreiros 2, the enclosure does not stand for itself but is related to several burials. Be it megalithic tombs, other types of burials, menhirs or rock art, most enclosures do not stand alone but have earlier or contemporaneous indicators of human activity.

Águas Frias (*fig. 38b*) is closely connected to a river as well, which is the Lucefécit River – a western tributary to the Guadiana. The prehistoric

site was excavated during the construction of the Guadiana dam in Alqueva (Portugal) in the 1990s and at the beginning of the 21st cent. Because of the rescue excavations it was possible to excavate the site almost to its full extent, except for the area that has been flooded already due to the slowly increasing water reservoir. At least three ditches enclosing a semi-circular space have been detected. Naturally, because of its connection with the river, the site is situated in the lowlands. Unfortunately, the summary and finds of the excavation of Águas Frias have still not been published satisfactorily, which makes a detailed comparison impossible, and the available plan only consists in a sketch of the ditches without an indication of further structures. All the other publications discussing Águas Frias are mainly based on the paper of M. Calado and L. Rocha (2007). The ditches present a sinuous course with – according to the sketch – different width of each ditch. Information on the sinuous ditches was given along with the ditches of Juromenha 1 and Malhada das Mimosas, therefore a reliable statement about the ditches of Águas Frias cannot be made. According to available information the ditches had a V-shaped profile and varied both in width and depth from 1 to 3m. It is assumed that the ditches stopped at the river and, according to the largest radius, a semi-circular area of a bit over 1ha was enclosed by the system of ditches. Since the Lucefécit River has flooded past its natural banks already, it remains unknown whether there were enclosures on both banks or the site was restricted exclusively to the western bank. Undecorated potsherds were the dominant find category and a lot of plate idols were detected on the surface in various stages of production except for the finished product. Based on the detected material, Águas Frias shows a place continuity from the second half of the 4th mill. until the beginning of the 3rd mill. BC. On a large scale, the site can be defined by an absence of natural defences, the availability of rich, fertile soils as well as water resources in abundance. Additionally, it was located close to a set of rock art in the valley of the Guadiana River. On the basis of the quantity of recorded material deriving from the numerous detected structures (pits, ditches, hut foundations), the excavators interpret Águas Frias along with Juromenha 1 and Malhada das Mimosas as settlements of intense occupation (Calado/Rocha 2007, 35–40; Hurtado 2008, 192–194; 2010, 117 f.; Márquez/Jiménez 2010, 101 f.; Valera 2012c).

Other sites with similarities to El Prado both in construction and in their choice of location are again situated in the Alentejo Region: Porto Torrão (Ferreira do Alentejo, Beja), Monte das Cabeceiras 2 (Cabeça Gorda, Beja) and Salvada (União das Freguesias de Salvada e Quintos, Beja). Salvada (*fig. 39A*) has been discovered in 2012 during the preparation of a survey campaign (Valera 2012d). The site is divided by the Sardão Brook, which runs from north to south through the ditched enclosure situating two thirds of Salvada on the western and the remaining one third on the eastern bank. The size of the site is defined by the two outer parallel ditches and encloses an area of approx. 17ha. The layout is almost circular, although especially the northwestern part of the enclosure does not quite correspond to the circle course. Almost in the middle of the western part of the double-ditched enclosure and several meters distant from the calculated centre of the site, two concentric ditches that enclose spaces with diameters of approx. 50 and 120m are visible. According to the investigators, this has been the area with the highest density of surface finds. Besides the close connection to a watercourse, the double-ditched enclosure of Salvada consists – like El Prado – of an outer ditch with a straight course and an inner ditch with a wavy outline. At present, the prehistoric site of Salvada has not been excavated but intensely surveyed. According to the survey finds, the site dates to the 3rd mill. BC with elements especially of the late 3rd mill. and is therefore without doubt a Chalcolithic site (Valera/do Pereiro 2015, 317–319). Recently, it came to light that 2/3 of Salvada was suffering severe destruction. Because of a change in the agriculture of the area, the prehistoric enclosure was strongly affected by deep ploughing, irretrievably destroying this cultural heritage (Valera 2017).

Monte das Cabeceiras 2 (*fig. 39B*) is very similar to Salvada in its construction as well as its topographic situation and is only 3.5km distant. It is a concentric enclosure with a total of six ditches. Two of them are for sure crossing the Almadas Brook, which runs north to southwest dividing the site in one quarter on the western bank and three

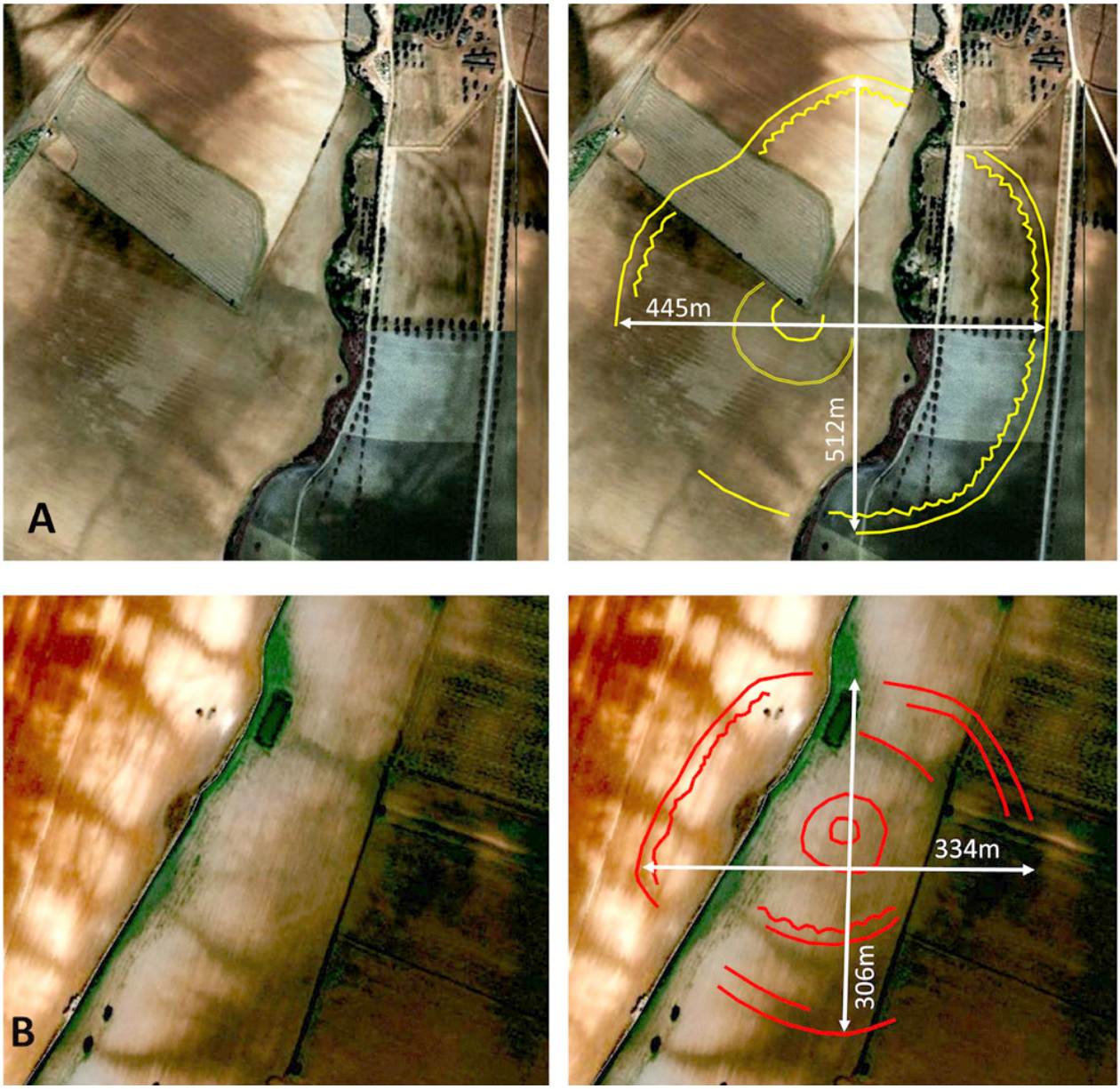


Fig. 39. Salvada (A) and Monte das Cabeceiras (B) in the aerial image and as sketch of the visible structures; each site crossed by a brook (Valera/do Pereiro 2015, 317, fig. 2).

quarters on its eastern bank of the waterway. Only a few months after the detection of Salvada, Monte das Cabeceiras 2 could be discovered in the beginning of 2013 through aerial and satellite images as well (Valera 2013c). The largest ditches of Monte das Cabeceiras 2 run parallel to each other, enclosing an area of approx. 8ha. The outer one presents a completely straight course, while the inner one shows at least along its western course sinuous parts. Inside the enclosed space, two more though smaller ditches run parallel to each other and show an outer straight and an inner sinuous course as well. In addition to these four ditches and almost in the centre of the whole site, the smallest concentric ditches are located with a diameter of 23m for the most central one. Besides surface surveys, the site has been excavated in parts because construction work for a new water supply line affected the site crossing it from north to south. Due to this construction activity, four of the ditches could be confirmed as well as ten of the pits. The material recovered during the survey and during the excavation of the site points to the 3rd mill. BC; the Chalcolithic period. The surface material indicates the presences of funerary structures as well, but they did not show up

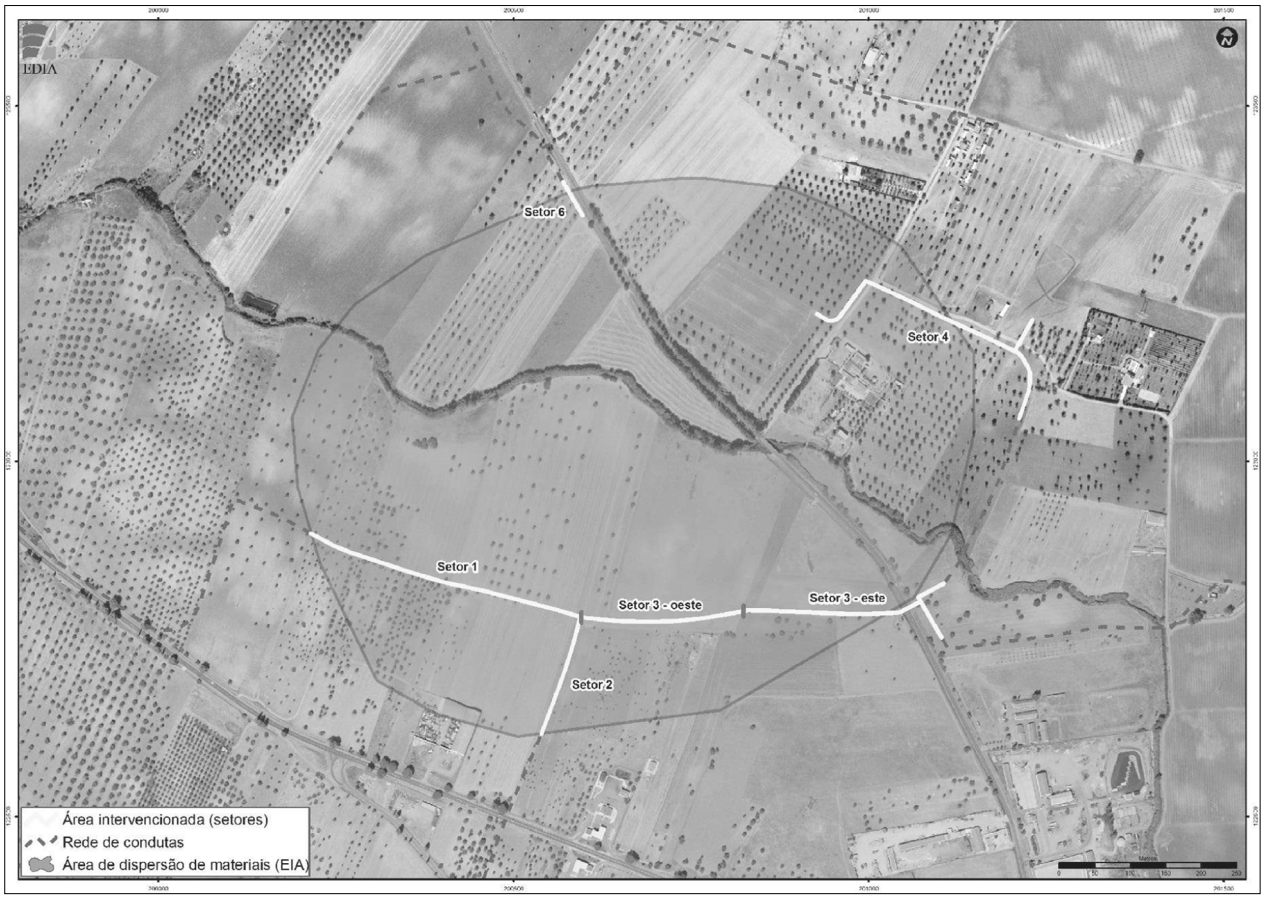


Fig. 40. The site of Porto Torrão with indication of the dispersal area of surface finds and the sectors opened during the investigations of 2008–2010 (Santos et al. 2014, 75, fig. 1).

in the excavation trench (Valera/do Pereiro 2015, 320 f.). Absolute dates do not seem to exist or have not been published yet. Like Salvada, Monte das Cabeceiras has both the topographic situation and the combination of outer straight ditch and inner partly sinuous ditch in common with the double-ditched enclosure of El Prado. Considering the sizes, El Prado remains the site with the largest extension compared to the sites mentioned.

The last site El Prado will be compared to is Porto Torrão (*fig. 40*), which is situated in the Portuguese Beja district like Salvada and Monte das Cabeceiras. The site of Porto Torrão has been known since the 1980s, but it was not known until 2002 that it is a ditched enclosure (Valera 2011b). During the first archaeological interventions by J. Arnaud, a test trench was opened in which three different layers referring to a pre-Bell Beaker and a Bell Beaker stage of occupation were identified. The distribution of surface finds of the same material culture as in the test trench of 1982 pointed to a site on both sides of the Vale do Ouro Brook with dimensions between 75 and 100ha. In the summer of 2002, rescue excavations were undertaken because of the construction of a new power line. During the new investigations, two ditches and several pits could be examined. Although the ditches were aligned parallelly and are located only 8m from each other, ditch 1 is of Late Neolithic date (3325–2901 calBC) and ditch 2 dates to the Chalcolithic (main phase around 2461–1926 calBC). In the years 2008 to 2010, further rescue excavations had to take place, opening six different sectors with a surface close to 3000m². In sectors 1 and 2, one ditch each could be investigated. They were recorded as V-shaped in their profiles, with widths of 7 to 8m and 6m depth. In sector 3-East (este), two parts of ditches were found measuring 5.5m in width and 4.5m in depth. Those ditches were probably not related to the ones detected in 2002, as they had a U-shaped profile and smaller dimensions (5.9–3.5m width, 3–3.4m depth). In addition

to the ditches, several negative structures were detected that contained burials and, close to the enclosures of Porto Torrão, several tholoi and hypogea could be identified (Cardim 6, Carrascal 2). Although the surface finds as well as the results of the excavations point to a huge enclosure – one of the largest on the Iberian Peninsula – neither the construction type and real size of the enclosure nor the limits of the burial grounds can be determined up to now (Arnaud 1993; Valera/Filipe 2004; Valera 2013d; Valera et al. 2014b; Santos et al. 2014). According to present knowledge, the site shares the site type of ditched enclosures with El Prado. Concerning its connection to a waterway, it has not yet been clarified whether the ditches that existed on both sides of the brook were constructed at the same time.

As was demonstrated, besides La Pijotilla and Porto Torrão none of the sites compared to El Prado because of topographic or architectural similarities reaches nearly the size of El Prado. The review of the published enclosures of the Iberian Peninsula did not reveal any other sites of a similar construction or location as El Prado. Ditched and walled enclosures of parts of Iberia have been collected in an exemplary manner for Portugal (Valera 2023), the southwest of Iberia (Márquez/Jiménez 2010) and the northern Meseta (Delibes et al. 2014). A compilation of the sites of the centre as well as the north of the peninsula can be found in this work (chapter 9.1). At present, no other sites that are similar to El Prado to such an extent as the ones aforementioned have been found in publications. Unfortunately, a complete plan – or any plan – is missing for several sites, the sketches are too abstract and just indicate perfect circles as if drawn with the compass. This, besides constructions that consist exclusively of non-comparable architectural features, additionally hampers any reliable comparisons and interpretations with El Prado. It emphasises the importance of combining a set of archaeological fieldwork methods for the investigation of these sites: survey – geophysics to obtain reliable plans – excavations. Excavations, even just test trenches, are especially important, as they produce *in situ* finds to date the sites, which allows for them to be classified and compared in detail within the large complex of Iberian ditched enclosures of the 4th and 3rd mill. BC. For the huge double-ditched enclosure of Azután, the aim is to get a better understanding of the site, a better insight in its time of construction and an approach to the reasons for the choice of exactly this location for El Prado. Like many other ditched enclosures, El Prado is surrounded by several other ditched structures and several hundreds of circular smaller, magnetic anomalies. The combination of so-called pit fields accompanying ditched enclosures can be observed various times on the Iberian Peninsula (Delibes et al. 2014; Valera 2013a).

This combination should be in the focus of the following on-site research as well. After the detailed literature and archive studies for the case study on the inner-Iberian Chalcolithic and after the survey work as well as the detection of the numerous structures on the terraces of the Tagus, two test trenches were planned. One of them situated at the ditches and another within the cluster of pits in the enclosures interior with the objective to achieve an insight in the chronological depth of this part of the municipality of Azután. As late prehistory in Azután has such a huge potential, future projects hopefully will have the possibility to shed some more light on the chronological sequences among the structures on the river bank as well as the comparison of El Prado with Los Pedazos and Los Viñones. Within the limited time of a PhD project, a focus on the most important aspects was necessary, which meant embedding El Prado into the complex of the southwestern ditched sites of Iberia and strengthening its position with the excavation of two small test trenches. The highlighted examples of comparisons for El Prado demonstrate what can be expected from future excavations at the recently discovered double-ditched site.

As mentioned before, the literature and archive studies on the province of Toledo as well as the survey work undertaken in the micro-region offer new insight into the Late Prehistory of Central Iberia. The systematic excavation based on the structures visible in the magnetogram in combination with scientific analyses undertaken on different material revealed even more information on that impressive site.

6 New Investigations and Results of the Case Study – Archaeological Excavation

The archive work as well as the geophysical and territorial surveys gave an insight into the previously unknown Neolithic and Chalcolithic period of the middle basin of the Tagus River and the province of Toledo. The massive amount of surface finds on the southern terraces of the Tagus in the municipality of Azután, but especially the magnetic measurements revealing numerous anomalies and parts of a double-ditched enclosure, confirm an exceptional prehistoric site and landscape. A site of this layout and size like El Prado is unique in that area to date and was therefore the focus of the excavations during the project.

The following chapter will deal with the excavations, their results and the scientific analyses conducted on different materials. As mentioned, the fieldwork concentrated exclusively on one of the enclosures of Azután: El Prado. The non-destructive work during the two survey campaigns in 2014 already gave a very good impression of the quantity and quality of possible finds (chapter 5.2 and 5.3). The surface finds as well as the layout of the site hint to its construction and use during the 4th and 3rd mill. BC. The georeferenced image of the results of the geomagnetic survey allowed for excavations targeted specifically on investigating certain parts of the structures and thus aiming for the highest information potential for the projects' objectives. The size of the test trenches was limited to 5 x 5m to keep the destruction of the agriculturally used area and the site itself to a minimum. The first trench was laid out at the southern entrance of the double-ditched enclosure El Prado to clarify the chronology and construction type of the inner ditch. The second trench was opened within the agglomeration of pits in the interior of the double-ditched enclosure because of the recurrent observation of the connection between the so-called pit fields and the ditched enclosures on the Iberian Peninsula. Besides information on the chronology another emphasis lay on the investigation of the original use of the pits and the material that ended up in them during the utilisation phase.

After explaining the methodology applied during the excavation, the detected structures of each trench as well as the material they contained will be described. Finally, the scientific analyses will be presented, which allow to present the structures in their chronological context and – especially in the case of the pits – will give more insight into their former use.

6.1 Methods

The third and final campaign in Azután took place between November 3rd and December 11th 2015. During this time the team worked seven days a week at the site. The excavation work was planned and executed based on the georeferenced magnetograms in QGIS (coordinate system WGS 84/UTM zone 30N, EPSG: 32630). The magnetograms and the coordinate system were transferred into a Leica handheld GPS and together with a second handheld GPS the predetermined corners of the 5 x 5m trenches were located and set on site in Azután. During the excavation all points were measured using a total station. As there were no points with known coordinates in the area surrounding the excavation a measuring grid was established using fictive fixed points in four different directions in the surroundings of the trenches. Later on, these fictive points were provided with real WGS 84 coordinates using realtime GPS.

For the trenches exact squares of 5 x 5m were measured and marked with wooden stakes in each corner. These were connected with cords which indicated the dimensions of the trenches. The names of the trenches derived from the features they were expected to shed light on: 'Section Enclosure' (SCE) for the trench at the inner ditch and 'Section Pits South' (SPS) for the trench in the southern part of the cluster of pits in the interior of the enclosure (*fig. 41*). SCE had to be opened by pick and shovel because the alfalfa field had not been harvested yet when the excavation began. To reduce the destruction of the plants to a minimum the work was done without a mechanical excavator. SPS was opened on the 16th of November when the alfalfa had been removed. This time an

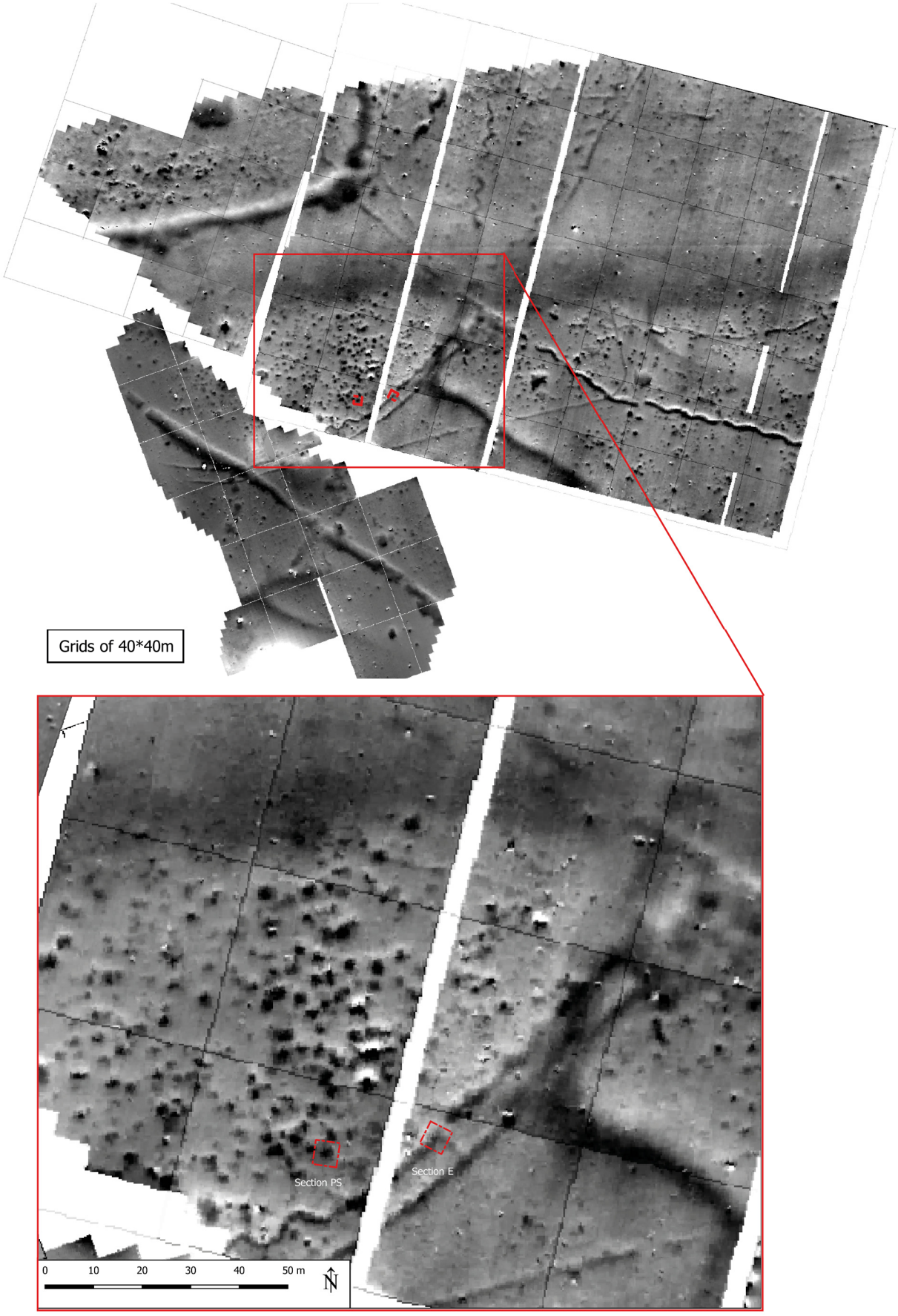


Fig. 41. Location of the trenches indicated in the magnetogram.

excavator removed the first 0.45 to 0.5m of topsoil until the circular structures became visible. Unfortunately, the circular structure in the southeastern quarter of the trench was partly destroyed by the excavator shovel to a depth of approx. 0.7m below modern surface as the structure of the pit was not visible at a higher level. After the removal of the humus layer of both trenches, which predominantly consisted of 0.4 to 0.5m of thick top soil layer mixed by the plough, the archaeological structures were excavated in artificial layers of 0.05 to 0.2m thickness, depending on the density of finds or changes in the composition and colour of the strata. Especially in SCE colour nuances of the backfill material were barely visible or not observable at all. A removal in real backfill layers therefore was impossible.

Measurements of features, finds, layer levels, profiles and samples were done with a total station. During the first weeks hand drawings and sketches of profiles and each planum were produced in addition to a photo documentation. During the last two weeks of the campaign the graphical documentation by hand was ceased due to time constraints.

The photo documentation included pictures of layers and profiles with information on the photo board as well as Structure-from-Motion (processed in Agisoft PhotoScan). Structure-from-Motion (SfM) provided detailed 3D models of the excavated structures, layers and profiles. Generated orthophotos were post-processed in QGIS-projects for the illustration of the excavation plan and for the revision of the structure description in case something has not been documented in the field (like measuring finds, thickness of layers, redrawing etc.). Using this method, much more information on the excavation and its progress was preserved. It produces a huge amount of digital data and needs a large storage capacity.

Written documentation was made for each excavation section, for each structure, the layers and the profiles. Samples were taken for carbondating, palynological analysis and analysis of phytoliths. A few samples were also taken for archaeobotanical studies.

During the final week of the excavation the eScience-Center of the University of Tübingen measured several points in realtime GPS, allowing the fictive fixed points to be transferred into a real coordinate system. To gain new aerial images and create a more detailed DEM of the surroundings of the double-ditched enclosure the whole area was documented with the help of an unmanned aerial vehicle (UAV). Despite the massive amounts of finds in these parcels no crop marks or structure neither in aerial images nor in the DEM 5m or further LiDAR-calculations were detected. Unfortunately, also the more detailed DEM did not reveal further parts of the construction. Agriculture and intensive ploughing presumably levelled the area over the course of the last centuries and decades, erasing even small elevations and depressions.

Back in the office the data was processed: Points were georeferenced, trenches and structures redrawn in QGIS, layers and profiles calculated in Agisoft PhotoScan and topographical correct coordinates were entered into the find list. Selected diagnostic finds were measured, drawn and photographed, the rest of the finds was described, weighed and recorded in the same database as the diagnostic ones for each structure. The information on finds and structures was typologically compared and classified, and samples were sent to different laboratories for analyses. Before describing the results obtained by these analyses, the archaeological structures revealed during the excavation will be described first.

6.2 Results

According to the magnetogram, a dark anomaly in trench SPS was indicating a large oval structure. In trench SCE, part of the entrance situation of the double-ditched enclosure was expected and a darker area located in the corner, where the south to north running ditch bends eastwards, might indicate another pit or a larger amount of burned material (pottery, adobe, charcoal etc.; chapter 5.3.1). The two trenches were approx. 20m distant from each other. In both trenches the first 0.4 to 0.5m of soil were defined by the humus layer and a mixed plough horizon, in which modern as well as medieval and prehistoric potsherds were present. Beneath these layers no more modern or medieval finds appeared and the prehistoric material predominantly pointed towards the 4th and

Fig. 42. Orthophoto taken on one of the last days of the excavation by M. Lang, former head of the eScience-Center Tübingen.

3rd mill. BC. The anomalies present in the magnetogram turned out to be a small pit cutting the ditch in SCE and, instead of one large structure, four pits of smaller dimension were documented in SPS (*fig. 42*). As the dimension of an anomaly in the magnetogram reflects the depth of a structure also, the four structures close to each other and 0.4 to 0.5m below the modern ground appeared as one anomaly in the geomagnetic plan. This emphasises that the number of pits of El Prado based on the magnetograms can only be an approximation to the real number (chapter 5.3.2).

In the following the focus will be on the description of the archaeological structures within the two trenches. An impression of their shape and extension will be given. An overview of the amount and type of material that derived from each structure, the type of ceramic vessels that could be determined as well as a summary of the species that could be defined based on the faunal material is included. Only exceptional finds will be discussed in brief. The complete and detailed list of finds (chapter 5 and **tab. 20* in the online appendix), photographs and drawings of diagnostic finds, statistics of pottery (rim type, decoration and firing) and the different layers of the structures is found in the catalogue, therefore, they will not be addressed in detail here. All in all, both trenches revealed over 3892[16] finds, 642 of which were measured individually with their exact coordinate. Except for a few of the carbon samples all samples for subsequent scientific analyses were measured with their geographical coordinates also.

16 The actual number is slightly higher as e. g. very small pottery fragments were counted and weighed but did receive a collective ID. The same applies to teeth documented side by side on-site.

6.2.1 SCE – A Pit in a Ditch

The weather conditions during the whole excavation were rather dry and in the second half of the excavation foggy and cold in the morning. While SPS was opened by a mechanical excavator, SCE was excavated completely by hand. This resulted in a better visibility of the archaeological structures in SPS than in SCE as the soil in the latter had more time to dry out and therefore the structures were harder to locate. Nonetheless, an almost circular pit that cuts the ditch in the corner where it bends eastwards was revealed in SCE (*fig. 43*). The pit has been excavated completely. The backfill of the ditch has – due to the limited time of the excavation – been removed along the southern profile of the trench only and in about 1.5m of its course in northern direction within the trench. In doing so a complete profile of the ditch could be obtained as well as a representative cross-section of the archaeological material it has been filled with. The rest of the backfill of the ditch in the northern half of the trench has only been excavated in several 0.05 to 0.1m layers. The ditch cut the natural ground consisting of arenaceous, silty soil with strongly rounded pebbles. Probably due to the soil conditions the finds were calcareously sintered, some of them massively. The pit cuts the ditch and was dug in its backfill during Late Prehistory.

The Shape and Filling of the Ditch

Beneath the plough horizon of the first 0.45 to 0.5m two different types of soil became visible. They turned out to be the natural ground and the filling of the ditch. They differ not only in their colour but also in their compactness.

The natural ground – as mentioned above – is composed of the typical elements of the river terraces of the Tagus: arenaceous, silty soil with scattered pebbles. The very compact, sandy ground is characterised by a light reddish-brown to yellowish colour and regular white spots (chalk/limestone). Obviously, finds were very rare in this soil. They only appeared in the transition zones where the prehistoric structures cut the natural ground and a few centimetres below the plough horizon. They are either a result of historic and modern agricultural activities or processes like bioturbation.

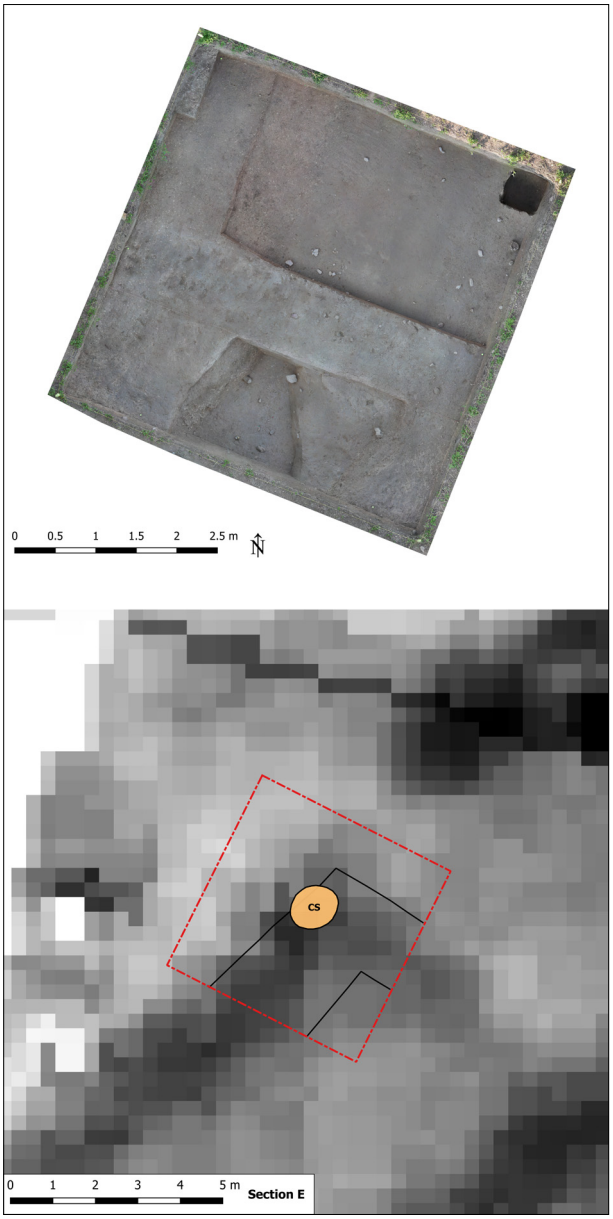


Fig. 43. SfM of SCE (above) before the removal of the cross profile. In the middle of the trench the clustered finds already indicate the existence of pit CS that cut the backfilled ditch. The magnetogram below with the excavation trench (Section E in red) is indicating the relative position of pit CS to the inner ditch of the enclosure.

What turned out to be the filling of the ditch, appeared to be more homogenous in its composition and less compact. The soil was slightly darker, of middle brown colour and loamy consistency. In comparison to almost all the other excavated pits of the site the number of finds was very modest. Except for an agglomeration of finds in the middle of the excavated part of the ditch, potsherds and bones were scattered sparsely. In general,

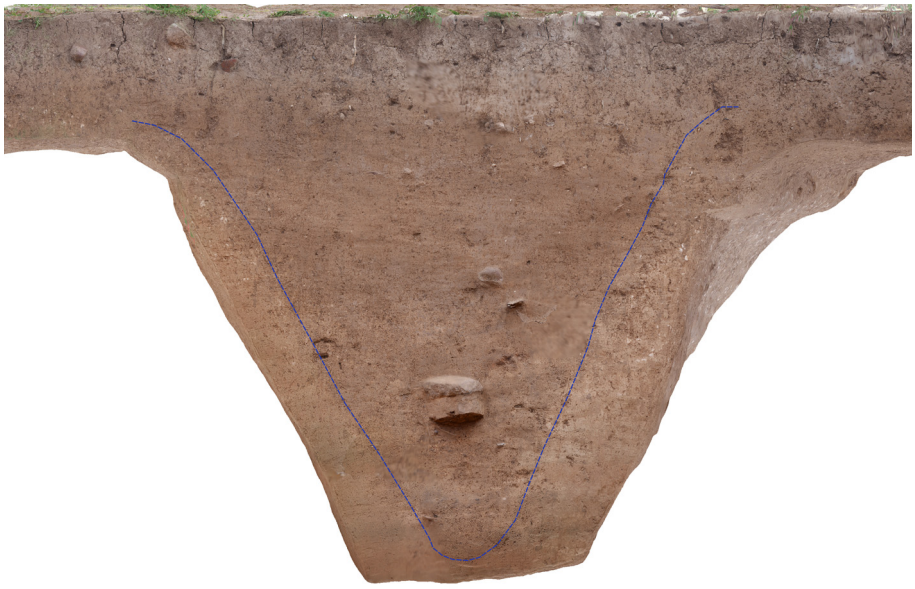


Fig. 44. The V-shaped profile of the inner ditch of the double-ditched enclosure of El Prado. The blue dashed line indicates the extension and the filling distinguished from the surrounding slightly lighter natural ground with its lime inclusions.

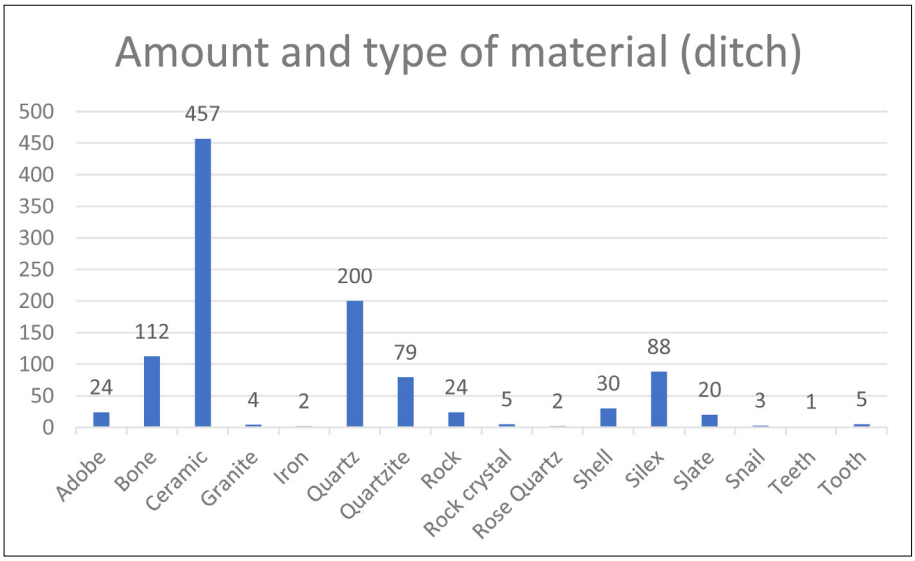


Fig. 45. Filling material of the inner ditch of the double-ditched enclosure in trench SCE.

the preservation of finds, especially of bones, was very poor and became better the deeper they were found. In many cases this is a result of the fertilisation of the fields, which can affect the preservation of material in the ground.

In order to obtain a complete profile of the ditch, the southern profile of the trench was dug a little deeper than the bottom of the trench and a little wider on both sides. The ditch was distinct from the surrounding natural ground and the cover of the humus layer by a slightly more homogenous filling and a middle brown colour. Below the plough horizon of between 0.4 to 0.45m thickness the V-shaped profile of the ditch continued for another 1.8m. At its upper edge a width of approx. 3.3m has been documented (*fig. 44)*.

Altogether, the cross-section through the ditch along the southern profile of the trench – excavated in 14 artificial layers after having removed the top soil – and the rest of its extension in the north-eastern part of the trench, excavated to an average depth of 0.8m from the modern surface on – in nine artificial layers – revealed a total number of more than 1056 finds (*fig. 45*). A certain number of finds were in the mixed plough layer or came from the central part of the trench before the other archaeological structure had been determined.

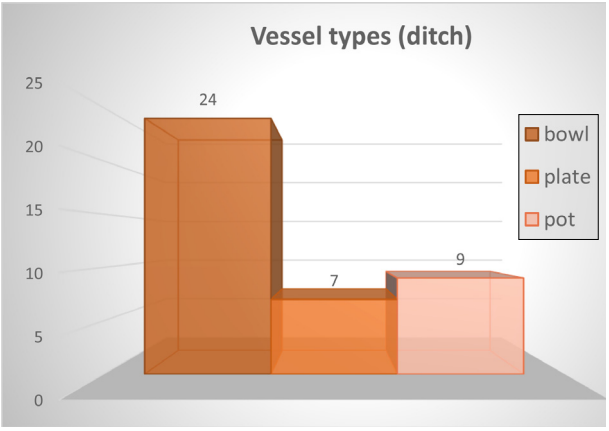


Fig. 46. Number of pottery types that were documented in the filling of the ditch.

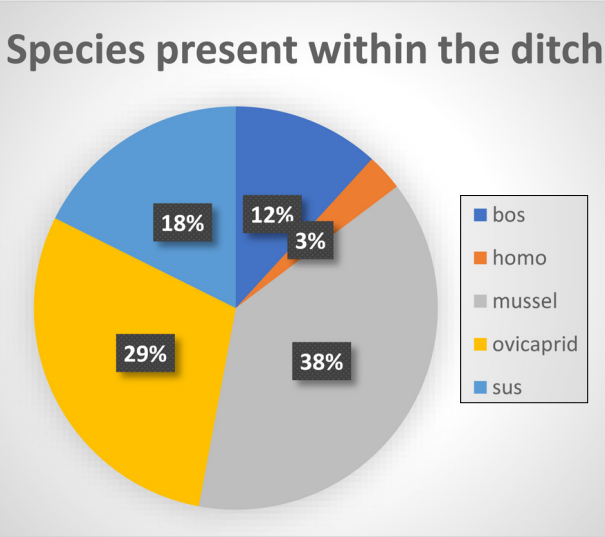


Fig. 47. Percentage of bone, teeth and shell that has been assigned to a certain species.

Therefore, some of the finds cannot without doubt be assigned to the filling of the ditch but might belong to the pit that cut the ditch.

The type of material of the finds is clearly dominated by pottery, followed by quartz and bones of different species. In 40 cases the potsherds were well enough preserved to allow a definition of the vessel type through their diameter and the angle of wall of the rim sherd (*fig. 46*). Fragments of bowls, pots and plates have been identified. With an amount of over 50% bowls are the most frequent category.

Due to their small size or bad state of preservation not even half of the bones allowed classification. The bones and shells that were assigned to a certain species (34 fragments) show that,

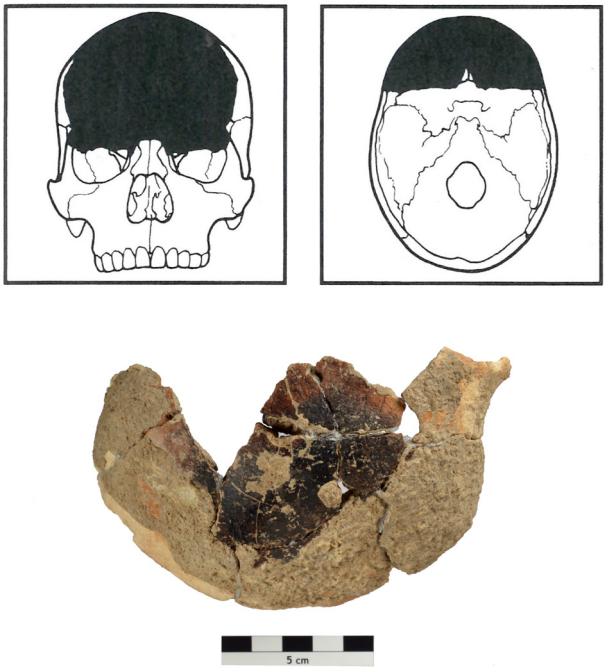


Fig. 48. Part of a human skull (*Os frontale*) found in the filling of the ditch close to the eastern main profile. The upper sketch presents the position of the bone and not the exact found part of it.

besides mussels, *Ovicaprid*s dominated (*fig. 47*). A singular find for this site, which is known from other Neolithic and Chalcolithic ditches as well (e.g. Evangelista/Valera 2019; Kunst et al. 2014; Valera 2019;) is a part of a human skull found close to the eastern profile of SCE within the filling of the ditch. The large part of a frontal bone was broken into ten fragments and was not associated with any other parts of the human skull or skeleton. Maybe further parts could be found deeper or further east, outside the extensions of the trench. It shows burnt parts, both intra- and extracranially, that are located between and a few centimetres above the *orbitae* (*fig. 48*). The thickness and size of the skull as well as the state of the cranial sutures allowed the identification of an adult individual.[17]

17 For an interpretation of the deposition of disarticulated human bones as well as single fragments of the skeleton outside so-called regular funerary contexts see Evangelista/Valera 2019, 62–65. For the variety of funerary practices as well as the sometimes short or very long duration of the connected ritual and the transition phase both with archaeological and ethnological examples see Pearson 2000; Barley 1998.

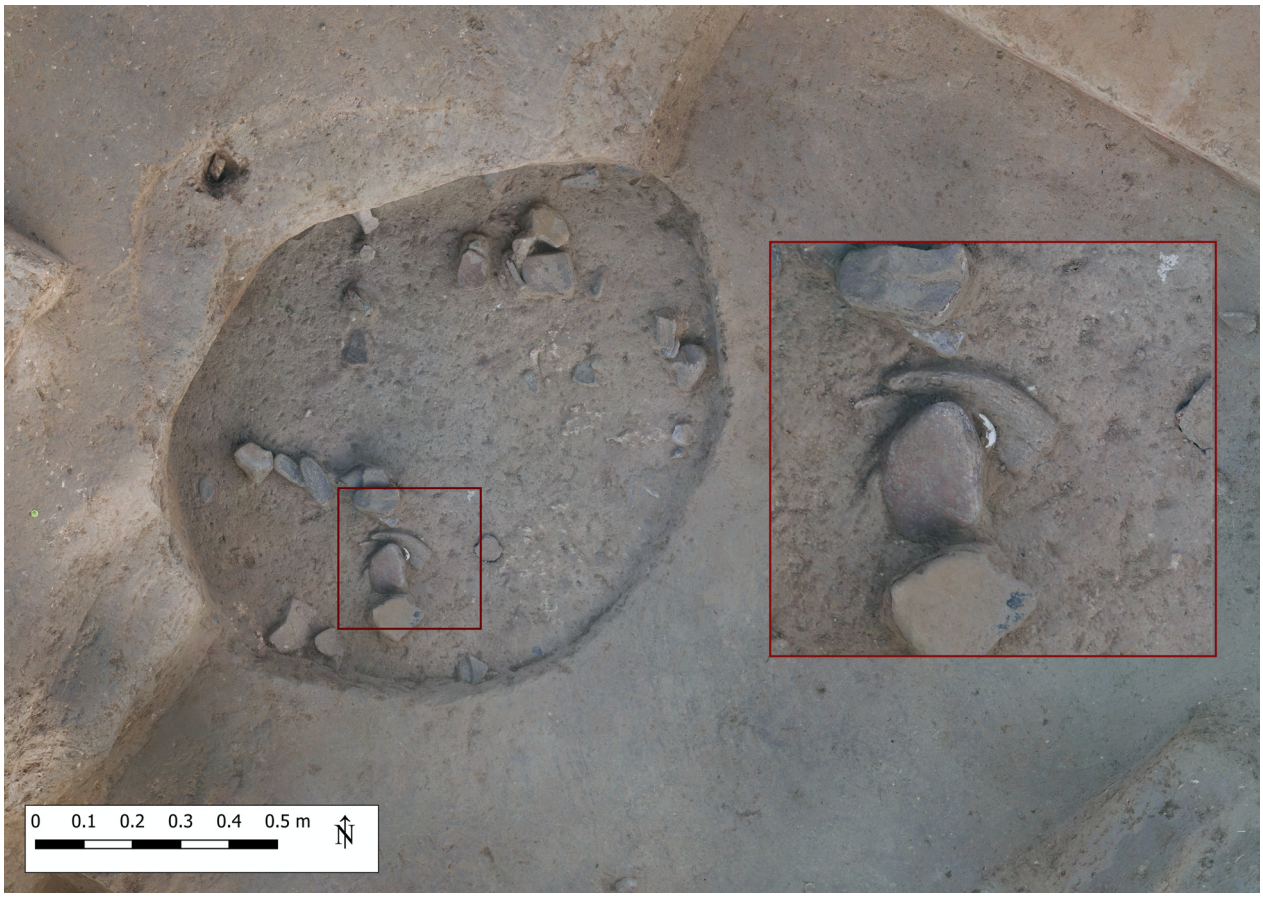


Fig. 49. Layer 7 of pit CS. Marked in the red box and zoomed on the right side, the goat horn that has been recorded. Also visible, the northwestern edge of the inner ditch of the enclosure. More than half of pit CS is cutting the ditch, so the ditch has already been backfilled, when the pit was dug (*terminus post quem*).

Form and Filling of Pit CS

Like the other pits (chapter 6.2.2) this pit was named after its location. As it appeared in the southwestern part of the inner ditch it became pit CS (Corner South). The pit was not visible after the removal of the topsoil, but a higher concentration of finds, such as bone and pottery in the southwestern quarter of the trench, in hindsight pointed to its location. The filling of the pit was not distinguishable from the filling of the ditch at this point. After the removal of several artificial layers to a depth of approx. 0.6m below the modern surface the dimensions of the structure became apparent. To record the complete extension of the pit the cross profile through the ditch had to be removed. Nonetheless the filling of the pit was barely distinguishable from the filling of the ditch. Smaller stones and what seemed to be burnt chalk or limestone at its edges as well as the spreading of the finds allowed the definition of its dimensions. From then on, the pit was separately excavated up to its base in nine artificial layers. The shape of the pit was almost circular with dimensions of 1.15 x 0.95m at the top, and a depth of 0.55 to 0.6m since it became visible approx. 0.6m below the modern surface (*fig. 49*). According to its shape pit CS can be assigned to the 'basin'-type of pits, the so-called *cubetas* (chapter 3.2.2). Quality, quantity and preservation of the finds documented within the pit were remarkably better than the one of the finds from the filling of the ditch. During the excavation of the pit its filling turned out to be distinctly different to the filling of the ditch. It had a noticeably softer texture than the ditch or the natural ground. Gravel and small pebbles and pieces of slate seemed to concentrate in the middle of the structure where the consistency became sandier. Starting at layer 6 the arenaceous centre of the pit became greyish in colour, probably due to an amount of ash in its filling. The chalk concretions at the edges indicated the dimensions of the pit and large pieces of pottery appeared in the filling. As several of the pieces

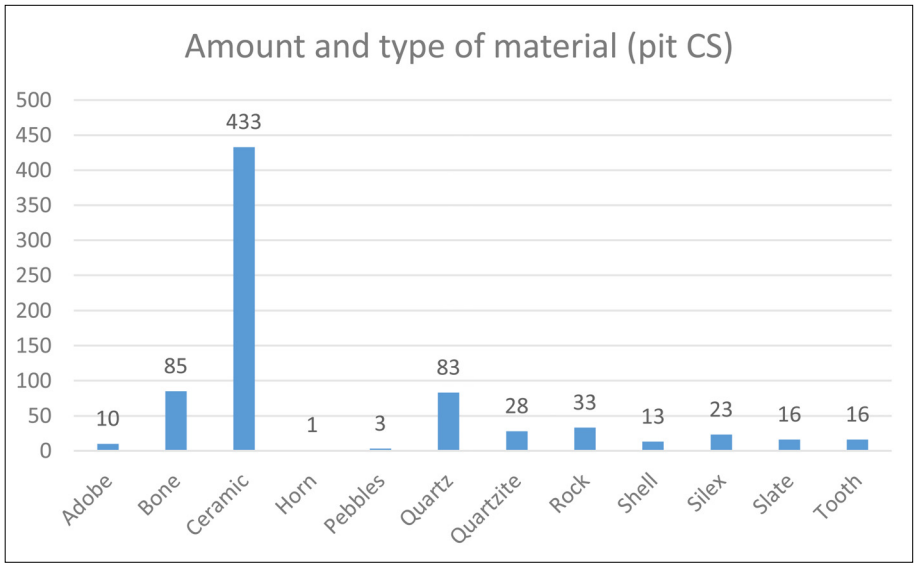


Fig. 50. Material in the filling of pit CS in trench SCE.

Fig. 51. Five sherds fitting together to almost the half of a pot, found at the base of the pit.

did fit together, probably complete vessels were deposited inside the pit. Due to time constraints a reassembly of the fitting pieces was not possible. At the northwestern edge of the pit it became obvious that it was situated at the margin of the ditch and cuts few centimetres into the natural ground, but most of the pit was dug into the filling of the ditch. This stratigraphic situation allows a statement on the chronological sequence or rather the definition of a *terminus post quem* for the establishment of the pit, as the ditch must have already been refilled (see *fig. 49*). Thus, the pit presents an activity that took place when the ditch as a negative structure did not exist anymore.

Ever since the pit in the ditch could be clearly defined, it was possible to assign at least 744 finds to its filling – an impressive amount for the small area covered and the low volume of the structure. Pottery represents the largest group of material, followed by bone fragments and quartz finds (*fig. 50*). Many potsherds are remarkably huge pieces. In some cases, even vessel halves were documented (*fig. 51*). In addition, handles were recorded which, together with the rim sherds, helped with the typological classification. The shapes of 41 vessels have been reconstructed in drawing (*fig. 52*). Bowls are the dominant vessel type, closely followed by plates. Unlike in the filling of the ditch definite silex artefacts were documented as well (*fig. 53*). Other small-finds were a perforated and rounded slate plate (bead? *fig. 54*) and an almost complete goat horn (detail *fig. 49*).

The preservation of the bones in the pit was significantly better than in the filling of the ditch. In total 85 bones, 16 teeth, one horn and 13 shells were found. Almost 50% of the fragmented finds could be assigned to a certain species. Nine shells, 41 fragments of animal bones and teeth as well as the horn (*Capra*) could be classified. Similar to the finds deriving from the filling of the ditch, *Ovicaprids* (sheep and goat) dominate followed by pigs (*Sus*) and cattle (*Bos*) form the smallest group

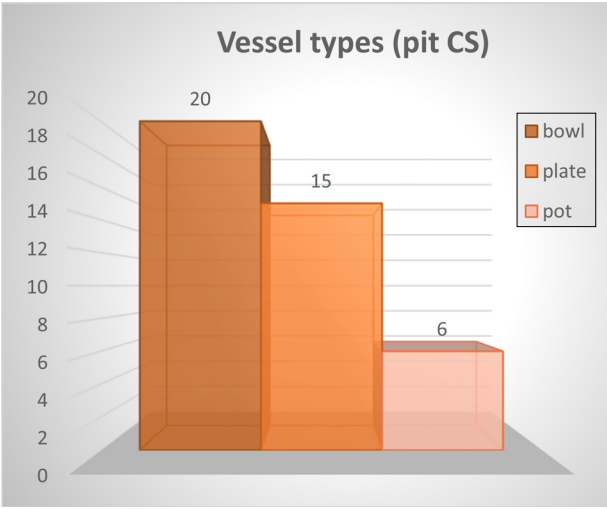


Fig. 52. Number of pottery types documented in the filling of the pit.

Fig. 53. Fragment of a bladelet deriving from layer 2 of pit CS.

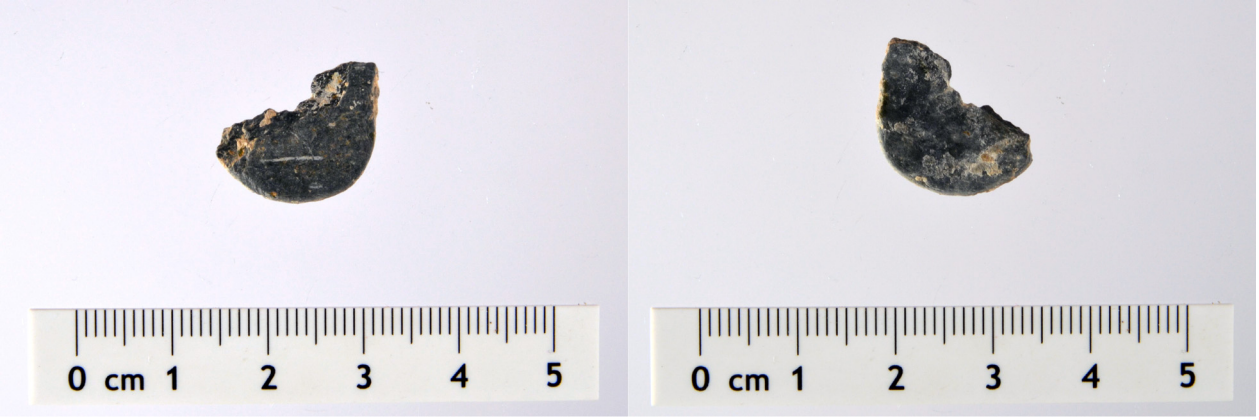


Fig. 54. Front (left) and back (right) of the fragment of a possible slate bead deriving from layer 4 of the pit.

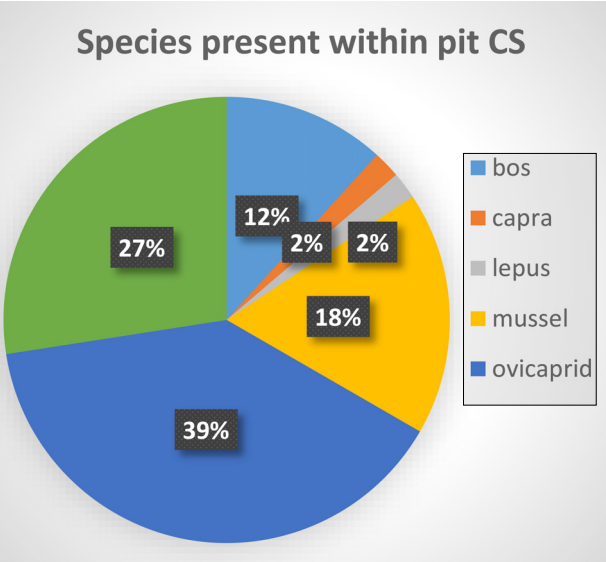


Fig. 55. Percentage of bone, teeth and shell that could be assigned to a certain species.

of the three most common mammals present in Neolithic and Chalcolithic sites of the Iberian Peninsula (*fig. 55*).

6.2.2 SPS – One Anomaly That Turned Out to Be Four Pits

As mentioned above, it was possible to open the trench SPS with a mechanical excavator, which allowed for the fast removal of the mixed plough layer or topsoil. This offered a better initial situation for SPS than for SCE, as the site did not dry out as fast. Two weeks of excavation time had already passed by the time this trench was opened and thus SPS had to be investigated in less than four weeks. In comparison to SCE the archaeological

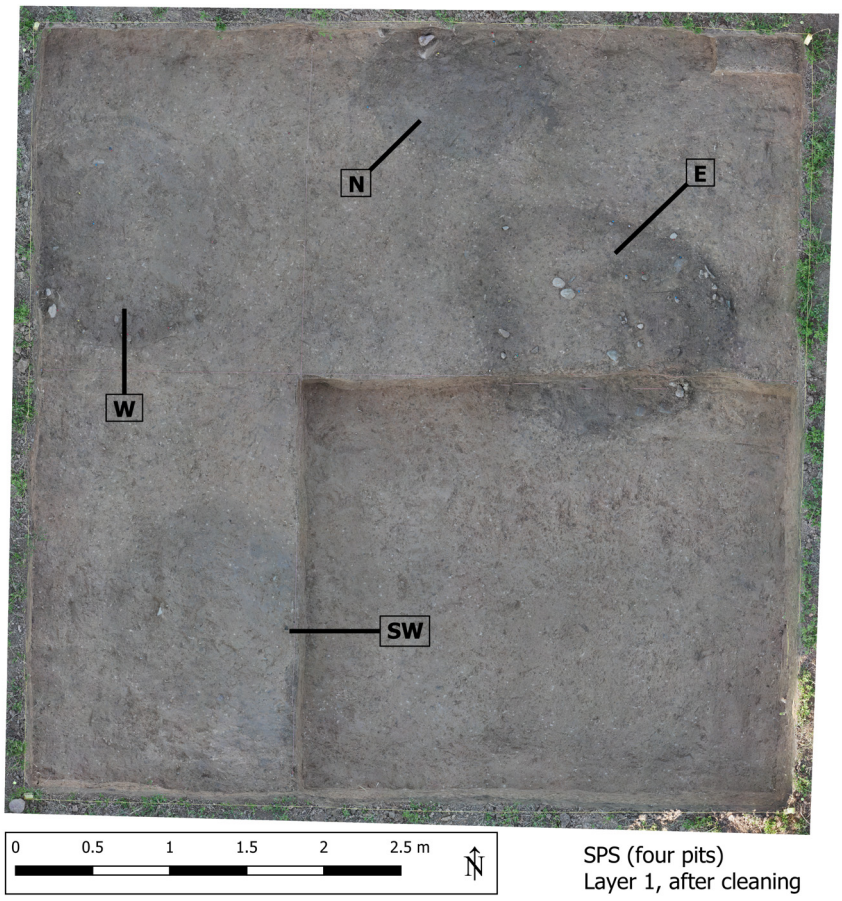


Fig. 56. SfM of the initial situation of section PS after the topsoil has been removed, showing all four pits, three of which were investigated in more detail.

structures were much easier to detect and clear outlines marked their dimensions.

What had seemed to be just one anomaly in the magnetogram turned out to be four pits in reality. They were named after their location within the trench: northern, eastern, southwestern and western pit (N, E, SW and W, *fig. 56*). These structures were dug in the natural ground of arenaceous, silty soil with strongly rounded pebbles; the same soil as in SCE. It contains typical elements of the river terraces of the Tagus. The very compact, sandy ground is characterised by a light reddish-brown to yellowish colour and regular white spots (chalk/limestone); a geological layer and sterile (free of finds) thus without anthropogenic influence. The filling of the pits is distinguishable to the natural ground by a darker middle-brownish colour. Additionally, it is significantly softer in its consistency and contains finds of prehistoric age. Many finds were calcareously sintered, the deeper they were found the lesser the sintered parts on the surface of the finds became.

Two of the pits could not be documented to their full extent as small parts were still covered by the humus layer. The northern part of pit N runs into the northern main profile and a small western part of pit W runs into the western main profile of the trench. Due to the limited time for the detailed excavation of all pits only one pit, pit SW, was excavated to its full extent. Practical considerations led to the decision that pit N should not be investigated further and remain untouched. In the case of pit W only parts of its eastern half and for pit E probably the complete southern half were excavated. As the excavation was not a rescue but a research excavation it was decided to excavate the structures regularly. Thus, it was possible to obtain finds and a complete profile, even when it turned out that pit E and W went deeper than pit SW did.

The description of the structures will start with the completely excavated pit SW, followed by pit E, then pit W and will close with pit N.

Fig. 57. Large stones and slate plates in the eastern half of pit SW that might indicate a collapsed cover of the pit opening due to their inclined angle.

Southwestern Pit (Pit SW)

Pit SW was the single pit in SPS that could be excavated to its full extent. After the removal of the topsoil (0.45 to 0.5m) the almost circular structure in the southwest of the trench measured approx. 1.3m from west to east and approx. 1.4m from south to north. The very homogeneous middle brown to light brown filling slightly differed from the natural ground and had a softer consistency. The pit was dug into the natural ground and did not connect to or cut any of the other structures. Due to the very homogeneous filling no clear stratification was visible. Therefore, the pit was excavated in artificial layers. The eastern half was taken down in nine layers reaching out over the extent of the visible dimension of the pit to obtain a complete profile. The northern edge of the pit was blurred and seemed slightly mixed with the natural ground maybe due to a collapse of the pit wall. This can be assumed because of the large amount of big stones as well as large slate plates observable both in the eastern and western half (layer 7E and 5W) of the pit, in a depth of 0.57 to 0.58m and closely above the base (*fig. 57*). These stones may have covered the opening of the pit while it was still in use. The large slate plates and stones were only documented *in situ* and not further processed as finds as they did not show any anthropogenic modifications such as impact marks or engraving. They were left in Azután. To obtain the complete profile of the pit it was excavated a little deeper after reaching its bottom. As a conical-shaped pit, deeper down it became slightly wider and measured 1.8m in its width at the bottom, reaching a depth of 0.63 to 0.65m (*fig. 58*). Hence, pit SW was the smallest investigated structure in SPS. The remaining western half was only excavated within the dimensions of the pit. It has been excavated in six layers due to the low amount of finds and the homogeneous filling.

Fig. 58. The profile of pit SW shows its conical shape that is indicated by the dashed blue line.

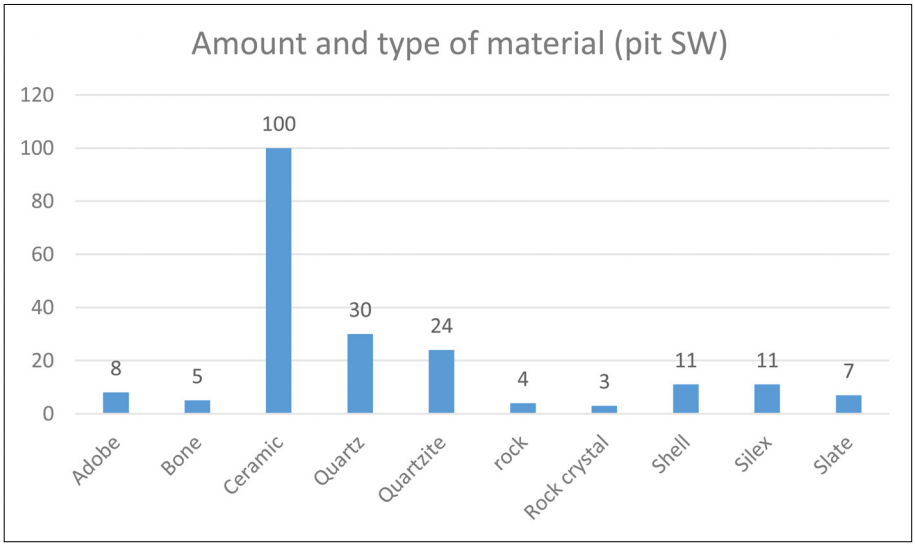


Fig. 59. Material present in the filling of pit SW in trench SPS.

With a total amount of 204 documented finds pit SW shows the lowest number of finds of all excavated structures in both trenches, with very poor opportunities for radiocarbon dating. Potsherds dominate the finds, followed by quartz and quartzite flakes, tools etc. (*fig. 59*). Many of the sherds show a slip on both surfaces. Two body sherds stand out: One of them is definitely decorated with two incised halves of what probably formed triangles meeting at their pointy ends, filled with small imprints (*fig. 60*). The temper differs in comparison to the other sherds, although its fraction does not show quartz parts. The sherd was found 0.14m above the base of the pit. The second sherd

Fig. 60. Body sherd with incised decoration on the outside (layer 5, western half of the pit).

Fig. 61. Body sherd with imprint that indicates a surface treatment with organic material (layer 4, eastern half of the pit). Top: the outside; bottom: the inside of the vessel.

is showing a different surface treatment. Unorganised stripe imprints might derive from the smoothing of the outside and inside of the vessel with organic materials such as straw (*fig. 61*). Of all the 100 documented pieces of pottery only three sherds allow a tentative determination of the vessel type: two possible bowls and one potential plate.

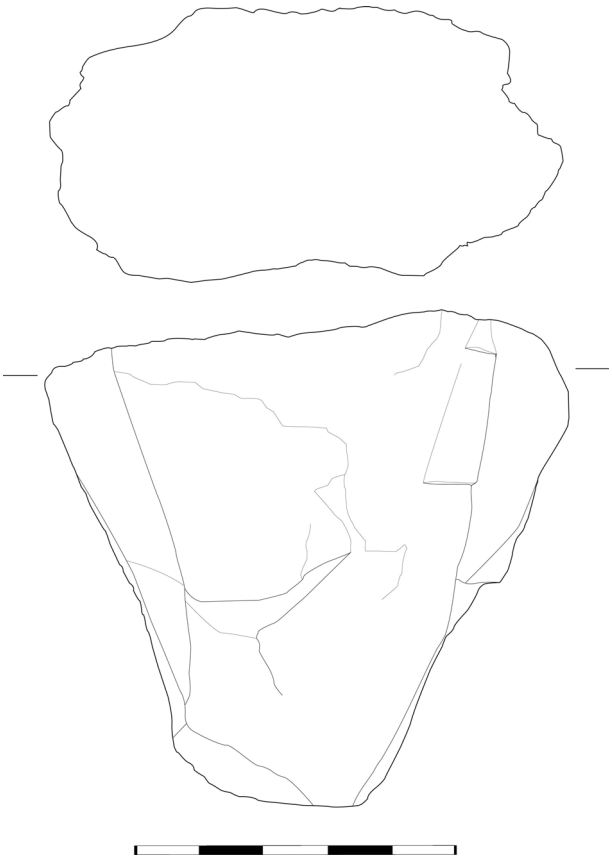


Fig. 62. Drawing of the quartzite core. Lithic deriving from layer 4 of the western half of the pit.

Most of the lithic material is not very specific and can be determined as flakes or a non-discernible type. One larger quartzite core (*fig. 62*) was recorded within the material. In case of the bone (five fragments) and shell (eleven pieces) fragments only the mussels allowed to be classified to a certain species: the dominating painter's mussel (*Unio pictorum*). The bones were too fragmented to allow further statements than 'animal'.

Eastern Pit (Pit E)

The first 0.2m of the southern edge of the structure in the east of SPS had been destroyed by the excavator shuffle, when it was decided to go a few centimetres deeper during the removal of the topsoil. The loss of information was limited. After cleaning the first layer of the whole trench information on the dimension of pit E could be recorded. In a depth of approx. 0.4m below the modern surface the structure had the biggest dimensions of all pits that were uncovered in SPS: approx.

Fig. 63. The deepest completely excavated layer of the southern half of pit E. By that time the profile box had to be enlarged several times already.

1.5m from north to south and about 1.7m from east to west at the widest point (*fig. 56*).

The pit was dug in the natural ground and backfilled with several layers of soil, often of ash-like consistency and grey in colour. This indicated that it had either been refilled at various points in time or with material that originated from different activities. The pit has been excavated in artificial layers as well because it was not possible to follow one stratum without partly destroying another. In comparison to pit SW pit E could only be excavated almost halfway due to its dimension and the large amount of finds in the backfill. As the southern half of the pit has already been partially cut and in order not to interfere with potential investigations of pit N, the profile section was cut from west to east through the centre of the pit, investigating its southern part. Within the first five layers the lower level of the southern edge was reached. All in all, the southern half of pit E was excavated in 19 complete and two additional layers that were restricted to the southwestern quarter (*fig. 63*). The diameter of the pit grew larger with each layer, leading to the profile box having to be extended to all three sides several times. With layer 21 the base of the pit had probably been reached. By that time, the pit had a depth of approx. 1.88m, a width of 2.4m from west to east and a radius – because of the measuring from the profile – from north to south of 0.77m. The bell-shaped profile as well as the dimensions of the pit classify it as a silo as described in chapter 3.2.2.

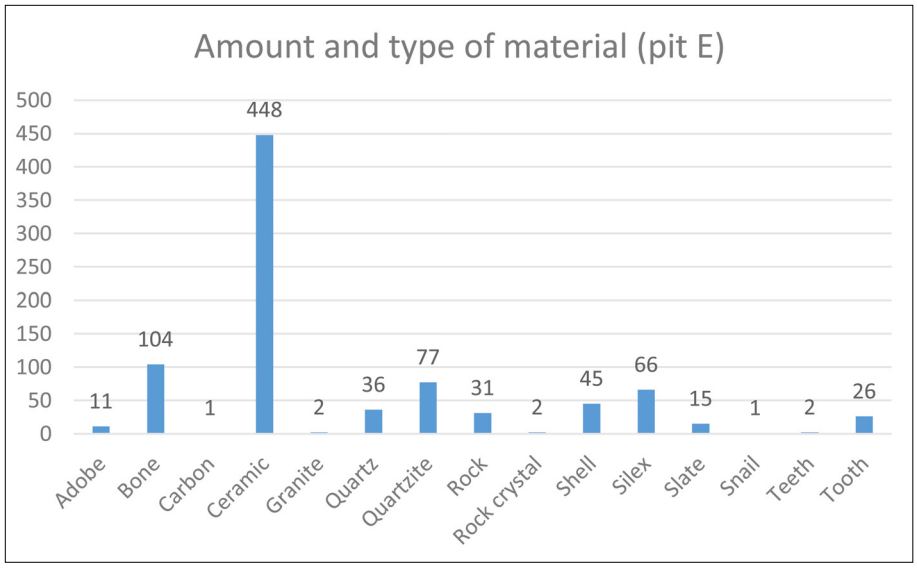


Fig. 64. Material present in the filling of pit E in trench SPS.

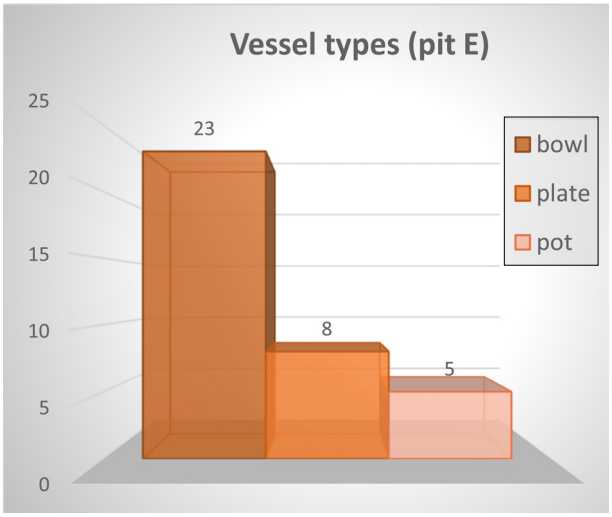


Fig. 65. Number of pottery types that were documented in the filling of pit E.

A number of 867 finds were made with pottery making up more than 50% of the recorded material (*fig. 64*). Even though 448 sherds were excavated only 36 rim sherds allowed a definition of the vessel type. Again, bowls dominate the picture, followed by plates and pots (*fig. 65*). Some very large sherds were recovered, as well as decorated pieces and pieces with applications. Some of the sherds show orange, red and beige slip on the inside and the outside or the outside of sherds. Two sherds stand out: one fragment with a yellow triangle on red ground and another piece with black colour on the inside and a thick black line underneath the rim on the outside (*fig. 66*). They are local examples of painted pottery, which has been known

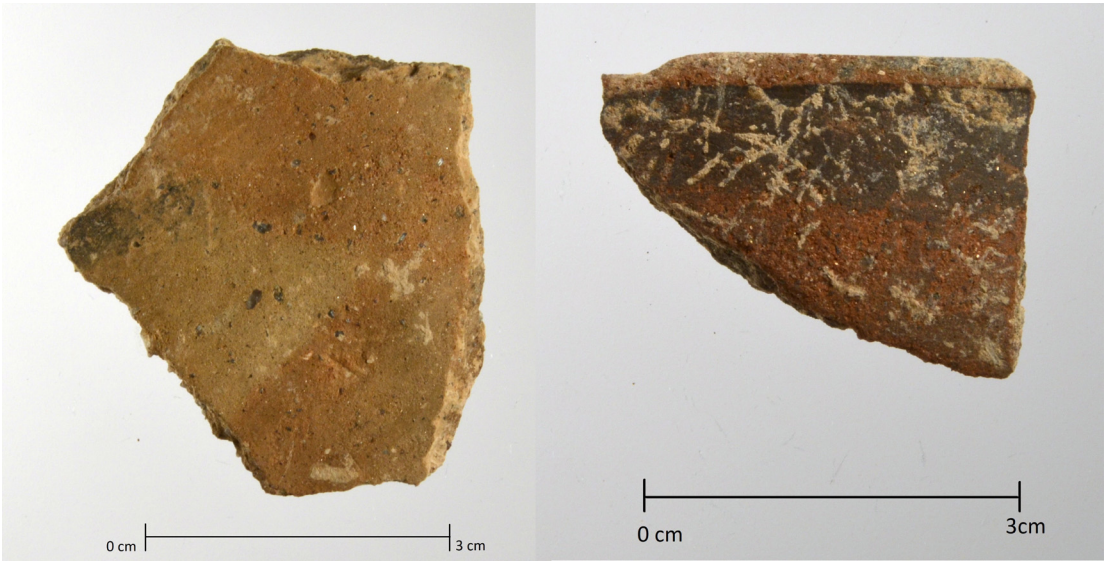


Fig. 66. Left: body sherd with remains of a yellow triangle on reddish ground (layer 3). Right: rim sherd with an approx. 1cm thick black line right below the rim (layer 16).

from the southern Meseta since the 1980s due to the excavation at the Chalcolithic site of Los Castillos close to Las Herencias (de Alvaro/Piñón 1995; chapter 3.1).

Pottery is followed by bone in the number of finds from pit E. The preservation of the bone fragments became better the deeper they were located. Out of 104 fragments 63 (almost 50%) could be assigned to a certain species and out of the shells one snail and almost all mussels could be classified (*fig. 67*). Concerning the reconstruction of the nutrition during the Chalcolithic the percentages of mussels in the graph can be neglected. Although they make up the highest number within the species, their nutritional value is low. The most common mammals in pit E are not goats and sheep (*Ovicaprids*) but pigs (*Sus*). The amount of cattle is close to zero. A special find – but nothing uncommon throughout Iberian Prehistory – are parts of the skeleton of a dog (*Canis*); three joined vertebrae (*fig. 68*): atlas, axis and a cervical vertebra (C3). In comparison to sites such as Camino de Las Yeseras (Liesau et al. 2013) or others on the Iberian Peninsula (e. g. García-Moncó 2008; Daza 2017; Albizuri et al. 2019), where even whole dog skeletons could be recorded, these three bones remain the only skeletal parts of a dog uncovered during the excavation of 2015.

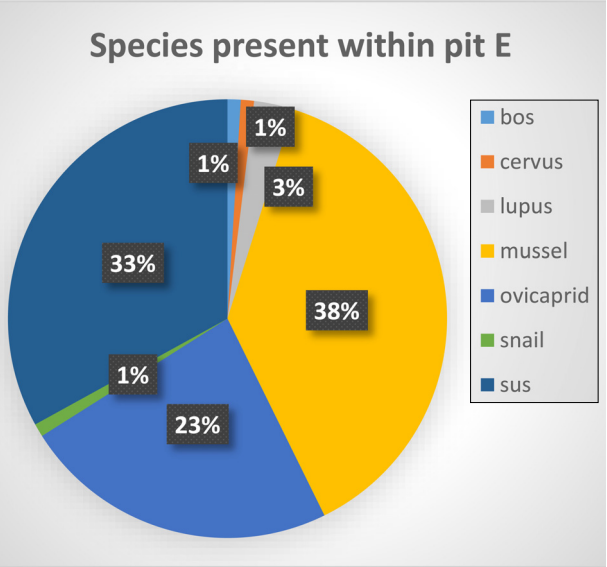


Fig. 67. Percentage of bone, teeth and shell that could be assigned to a certain species.

In the group of lithic finds, quartzite and silex form the largest groups of the 229 artefacts and

Fig. 68. The vertebrae of a dog uncovered in layer 14 of pit E. Located close to the centre of the pit.

Fig. 69. Layer 10, the last excavated layer in the eastern half of pit W. Several greyish backfill layers can be seen in the profile.

fragments. A number of tools (instead of flakes only) made of quartzite and silex were documented. Those are especially blades, bladelets and drills.

Western Pit (Pit W)

The archaeological structure named pit W was situated in the western part of trench SPS and partly ran into the western main profile. Like the other pits, pit W was dug into the natural ground, neither connected to nor cut by any other prehistoric or modern structure. The filling was distinguishable from the surrounding natural ground by a softer consistency and texture as well as by the colour of the filling of the pit. The filling was characterised by sometimes very arenaceous middle brown to greyish coloured soil and often seemed to be filled with ash-like material. Underneath approx. 0.4m of topsoil (mixed plough horizon) the pit had the following measurements in layer 1: 1.4m from north to south and 1.34m from east to west (*fig. 56*). It was almost circular, but a small part in the west was located outside the dimension of the trench and therefore the extension of pit W could not be recorded completely. To obtain a complete profile this structure was cut approximately in the middle at its widest point and the eastern half was excavated in artificial layers. Unfortunately, due to the limited time of the excavation campaign the eastern half could not be excavated to its full extend. Only ten layers of the pit, down to approx. 0,88m, have been investigated. In order to excavate deeper, it would have been necessary to expand the profile box, which was not possible in the time remaining. In layer 10 the pit had already reached a width of 1.86m from north to south and a radius from the profile to its eastern edge of more than 0.65m (*fig. 69*). A cross-section through the backfilled material was recorded and it was possible to gain absolute dates

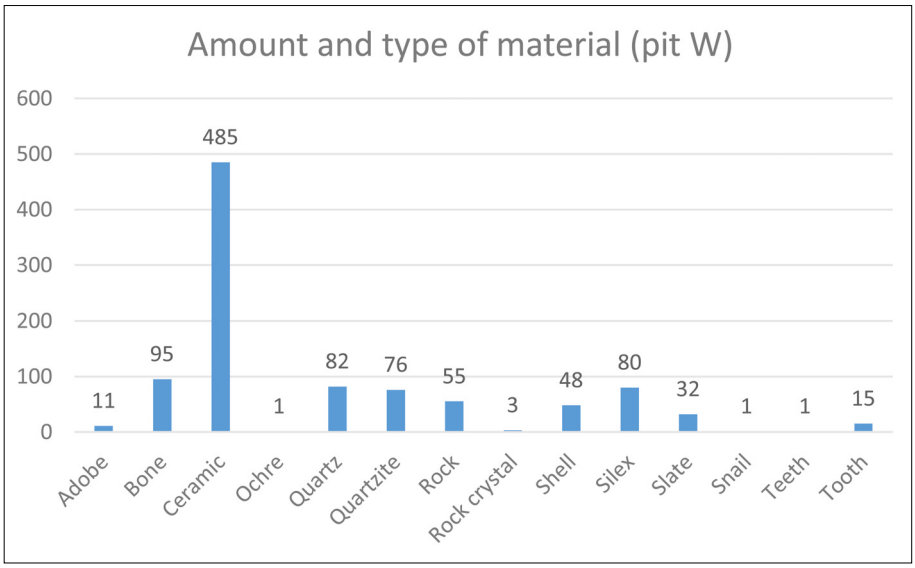


Fig. 70. Material in the filling of pit W in trench SPS.

for the structure through the uncovered material as well (chapter 6.3.1).

A number of 985 finds could be documented within the backfill of the pit (*fig. 70*) – a large number, considering the fact that not even half of the pit was excavated. It even exceeds the amount of finds within the southern half of pit E. The dominant find category is pottery again. In layer 6 and deeper the material was heavily incrusted with calcareous sinter which sometimes complicated the decision if the pottery had been fired under reducing or oxidising conditions. The sherds only occasionally showed indications of slip and except for one perforated rim sherd (*fig. 71*) neither decorations nor handles could be documented. The diagnostic rims (33 pieces) mainly belonged to plates, followed by bowls (*fig. 72*), whereas in all the other investigated structures bowls were the dominating vessel type.

The next larger category is represented by lithics (328 pieces) and within this category especially quartz, silex and quartzite. Slate, rock and rock crystal were found as well. In four cases the silex might be obsidian, but this needs confirmation by a specialist in Iberian Neolithic/Chalcolithic lithics of the 4th and 3rd mill. BC. Two arrow heads were present among the silex finds (*fig. 73*).

Among faunal finds, molluscs dominate the archaeological record. In pit W this is not only because they are easy to identify, but mussels also appear in a larger number than in the other investigated archaeological structures of El Prado. Especially the last excavated layer was bearing ten

Fig. 71. Perforated rim sherd found in the backfill of pit W.

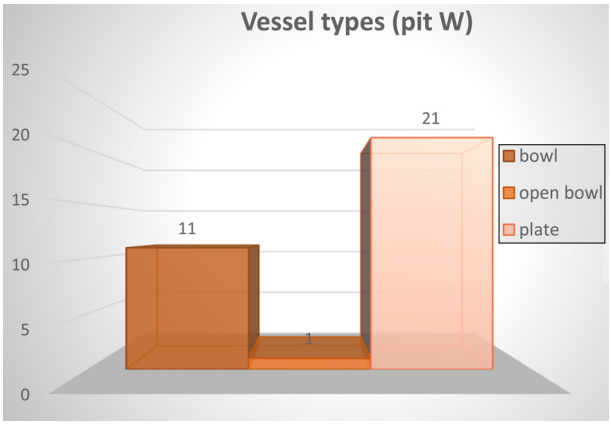


Fig. 72. Number of pottery types that were documented in the filling of pit W.

Fig. 73. Two silex arrowheads from layer 9 of the eastern half of pit W.

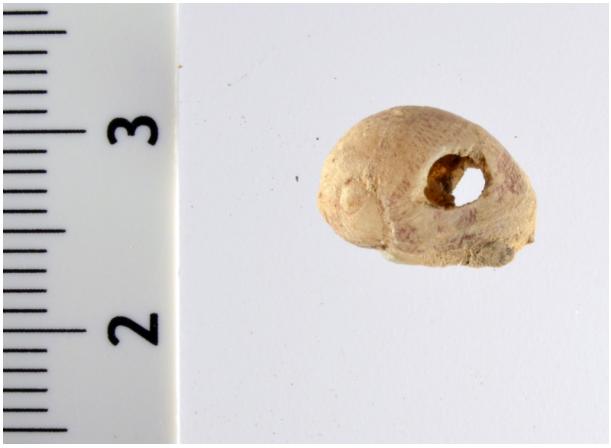


Fig. 75. Perforated snail shell that was found in layer 5 of pit W. Probably the shell of a wandering snail.

Fig. 74. Painter's mussels; all from layer 10 of pit W.

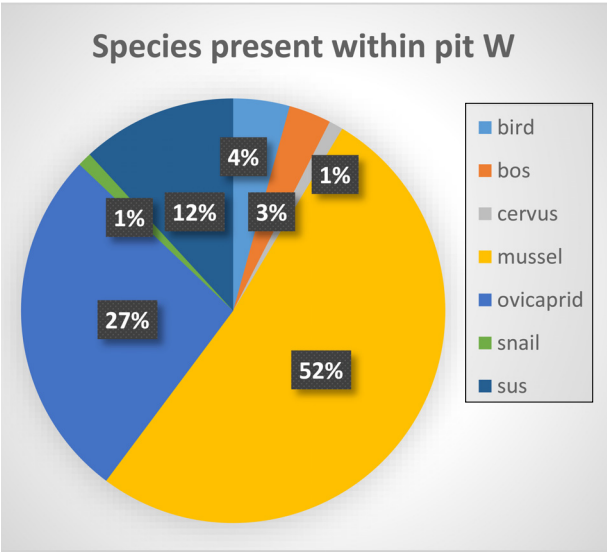


Fig. 76. Percentage of bone, teeth and shell that could be assigned to a certain species.

shells or shell fragments of the painter's mussel (*fig. 74*). In a depth of only approx. 0.88m 48 mussels had been found, while in pit E at a depth of approx. 1.88m only 45 mussels were documented. The perforated shell of a snail (probably a wandering snail – *Radix balthica*) that might have been used as jewellery or was part of the clothing is another special case in the group of molluscs (*fig. 75*).

Of the 95 bone fragments, 44 – almost 50% – were not too fragmented or sintered and allowed a determination of species. As for most of the archaeological structures excavated in 2015, *Ovicaprids* are the predominant species, followed by *Sus*, while *Bos* covers the smallest portion of the domesticated species (*fig. 76*). This results in sheep and goat being probably more frequently used compared to pigs or cattle.

Fig. 77. Pit N as it appeared in layer 1. On the right side in the front the northern edge of pit E is visible.

Northern Pit (Pit N)

About the archaeological structure recorded in the north of trench SPS (*fig. 56*) there is little to note, except for the dimensions of the presumed pit that is referred to as pit N (north). Due to the limited timeframe for the excavation, it was decided to leave pit N untouched for future investigations. In layer 1, approx. 0.4m below the modern surface and underneath the mixed plough horizon, the structure measured 1.22m from west to east and 0.82m from south to north. A part of the pit ran into the northern main profile. Therefore, as it was the case for pit W, it was not possible to record the complete extensions of pit N (*fig. 77*). The structure was dug into the natural ground as well as all the others in SPS and could be distinguished from the surrounding soil through a darker colour and a softer texture of the backfill. It seemed as if pit N does not cut any prehistoric structures or is – besides the constant ploughing – disturbed by any modern structures. It cannot conclusively be rejected that the southern part of pit N and the northwestern part of pit E might cut each other in deeper layers or even could be connected somehow.

Only the material on the surface of layer 1 was collected and categorised (*fig. 78*). The few finds consist of the typical composition found in the other pits but no rim sherds that allow a determination to a vessel shape were found. The mussels uncovered belong to the species of painter's mussels again and the single tooth was a premolar (3) of an *Ovicaprid*.

6.2.3 Summary and General Remarks

Both trenches of 25m² each will be described and listed completely (chapter 10.5 in the online appendix) – with tables of finds of every structure, the material categories as well as all pictures and drawings of selected finds – in the catalogue. Six archaeological structures were investigated during the excavation in 2015. Five of them turned out to be pits and one was the inner ditch of the double-ditched enclosure. Not all the structures have been excavated to their full extent due to the limited time for the fieldwork. Except for pit CS (trench SCE) that cuts the inner ditch, the ditch and the remaining four pits of trench SPS were dug in the

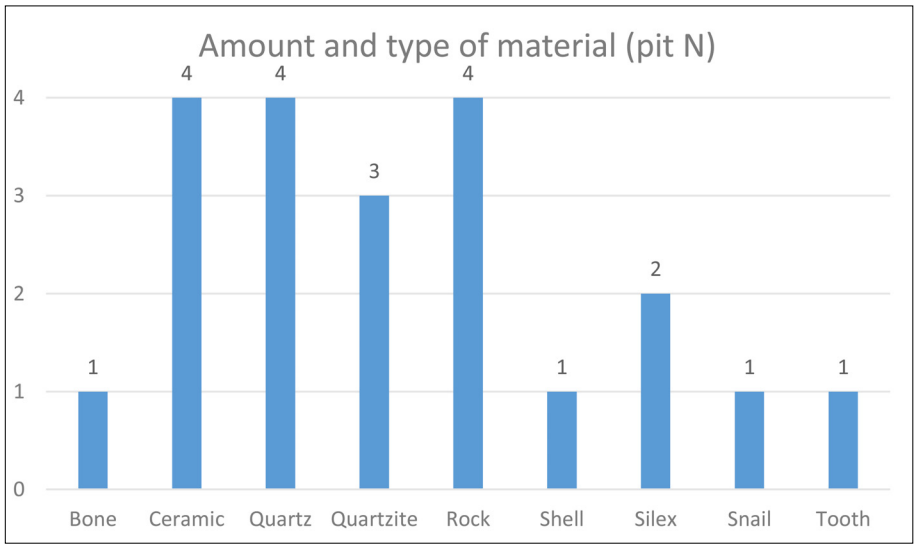


Fig. 78. Material present in the first layer of pit N in trench SPS.

natural ground. The four pits in trench SPS may have had a primary and a secondary use: first being used as storage pits and later backfilled with waste and hence being used as waste pits. This will be further addressed during the discussion of the results of the phytolith analyses (chapter 6.3.2). Because of the location of pit CS – almost exactly in the corner were the inner ditch bends eastwards and runs towards the outer ditch – as well as due to the deposition of almost complete vessels as well as a goat horn close to the base of the pit, the finds may have been deposited intentionally at some time after the backfilling of the ditch.

Both trenches together contained at least 3892 finds (*fig. 79*). The dominating category of material is pottery, in some cases even halves or two thirds of vessels could be documented. For 153 rim sherds the possibility of a determination of the shape of the vessel was given, resulting in bowls being the main type followed by plates (*fig. 80*). Bowls dominated in each structure except for pit W where plates formed the main category.

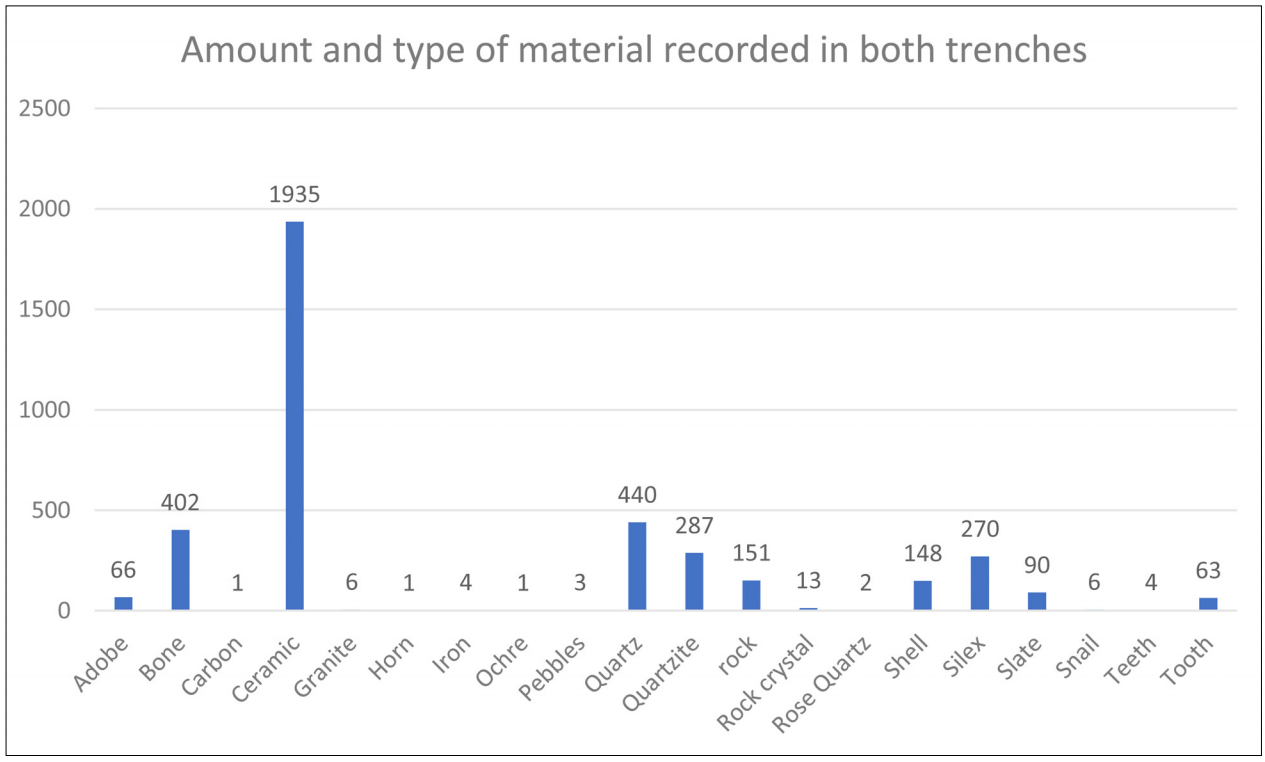


Fig. 79. Material of the excavation in 2015 documented in both trenches (SCE and SPS).

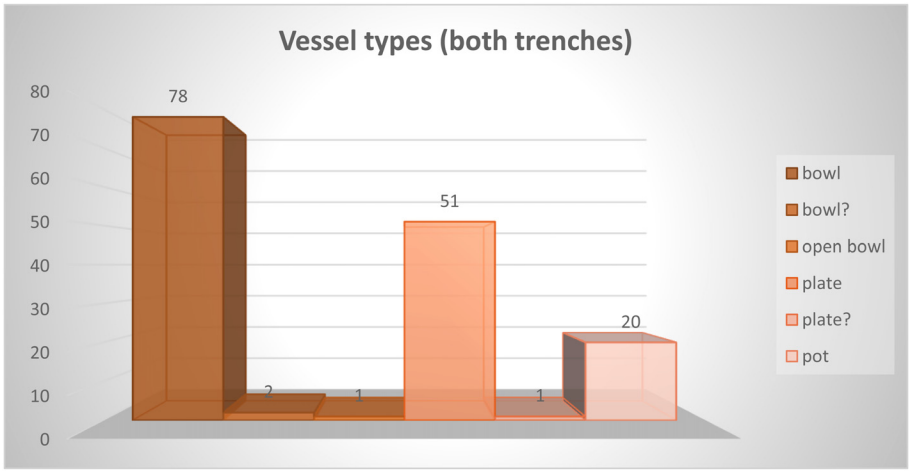


Fig. 80. Number of pottery types that could be determined by rim sherds in the trenches SCE and SPS.

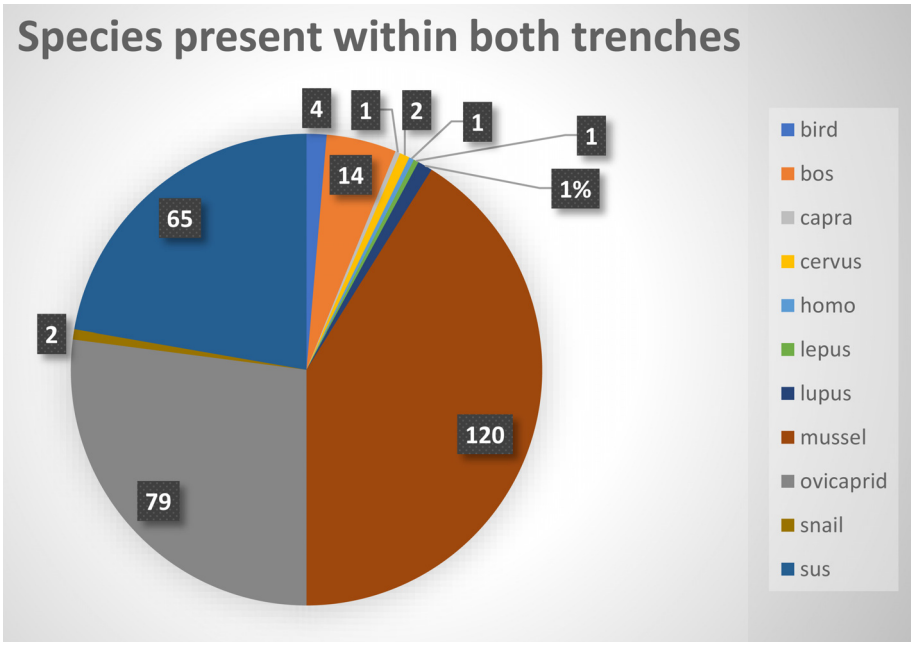


Fig. 81. Percentage of bone, teeth and shell that could be assigned to a certain species.

A total of 81 sherds of both trenches showed reduced firing conditions, so reduced and oxidised firing appears in almost the same quantities.

Lithics are the second largest material group of both trenches and structures, especially quartz, quartzite and silex. Small pebbles (pit CS), slate, rock, rock crystal and rose quartz also have been documented. Except for four presumed obsidian pieces (determination questionable), those lithic materials can be found in the vicinity and the mountainous hinterland south of the valley of Azután (chapter 7.1 and 7.2).

Because they were easy to determine and mostly present in large fragments, mussels dominate within the fragments that could be assigned to a certain species. 120 of 148 shell fragments belonged to the painter's mussel (*Unio pictorum*), the remaining 28 were too small or fragmented for a precise determination (*fig. 81*). In the case of the six snail shells two of them were assigned to a certain species: the wandering snail (*Radix balthica*) and the marsh snail (*Stagnicola palustris*). Besides shell of molluscs, actual bone fragments dominate the archaeozoological record. Except for four bird bones the rest can clearly be assigned to mammals. Of a total of 398 bone fragments, 67 tooth fragments and one horn, it was possible to identify the animal species for a total of 170 fragments (*fig. 81*). Most of these fragments could be assigned to *Ovicaprids* (sheep and goats), followed by *Sus* and *Bos*. Except for pit E where pigs dominated within the group of the

domesticated species, the descending order usually was sheep/goats, pigs and, with small percentages, cattle. Only one case of hare (*Lepus*), one case of dog (*Canis*) as well as one find of parts of the human skull (*Homo sapiens sapiens*) appeared. A professional zooarchaeological analysis would allow for more detail about species, age and sex of individual animals and possible cut marks on the bones.

After the detailed description of the excavation method, the trenches, the structures within them as well as the find categories and some special finds, the scientific methods applied to several samples as well as their results will be discussed. Some analyses provided barely any or no results. Possible reasons for that will be addressed and the numbers of samples taken from each structure and for what purpose will be presented.

6.3 Scientific Analyses

Several analyses were performed on sample material from the excavation in 2015 and in the case of isotopy from other sites of the province of Toledo as well. The initial aim was to investigate the Chalcolithic enclosure as holistically as possible. Due to the soil conditions of the terraces of the Tagus River not all analyses were expedient and delivered results. Samples were taken for radiocarbon dating, for the study of phytoliths, for palynological analyses, strontium isotopy and a small amount for archaeobotanical analyses. Except for the new study at Azután such a complete set of analyses from one site is still very rare for the prehistoric sites of the centre. Examples for sites with similar sets of analyses (additionally including residue analyses on ceramic vessels) are the excavation of Bueno and her team at the dolmen of Azután as well as their works close to Huecas (amongst others Bueno et al. 2005a; 2005c; López et al. 2009; López/López 2005; see chapter 2.3.2 and 4.2).

The presentation of the different scientific analyses will start with the results of the radiocarbon dating and the chronological contextualisation of the structures of El Prado.

6.3.1 Radiocarbon Dating

Following the entry of all detected finds from the excavated structures of El Prado in 2015 into a database, bone and charcoal samples suitable for radiocarbon dating (^{14}C) were selected. Whenever possible bone fragments were selected to obtain the most accurate dates as possible, as charcoal samples often result in wider time spans. Additionally, the old wood effect can be evaded when concentrating on bone. In the case of pit SW, the five highly fragmented remains of bone were insufficiently preserved to give any results, therefore only charcoal samples and one thermoluminescence (TL) sample consisting of a piece of pottery and surrounding sediment were sent to the laboratories. The accelerator mass spectrometry (AMS) analysis was carried out by the 'Centro Nacional de Aceleradores' (CNA, Sevilla, Spain) and the 'Curt-Engelhorn-Zentrum Archäometrie' (CEZA, Mannheim, Germany).

Altogether, 29 samples for ^{14}C- and one for TL-dating were analysed with the initial aim to not only receive one date from each structure but to eventually have dates from the upper, the middle and the base region of the filling of the structures. The dates from the ground of the pits and the ditch were of special interest, as they would have been as close to their construction date as possible. The sediment on and in which the structures lay resulted in only ten of 29 ^{14}C-samples delivering results (*tab. 4* and *5*). This is the consequence of the poor preservation of collagen due to the surrounding sediment consisting of highly arenaceous mineral soil. This would prove to be problematic for the palynological and archaeobotanical analyses later on as well. Again, the regular use of fertiliser in modern agriculture can affect the preservation of collagen; 23 samples (eight pieces of charcoal and 15 bone fragments) were sent to the CNA. As the laboratory could not deliver any dates for pit SW and pit CS it was tried to obtain results from six further charcoal samples (three for each structure) and one potsherd (TL-dating pit SW) through analyses conducted at the CEZA.

Excavated structure	No. of samples	Material: bone	Material: carbon	No. of results
Inner ditch	7	4	3	2
Pit CS	6	4	2	1
Pit SW	8	0	8	2
Pit W	3	3	0	2
Pit E	5	5	0	3
In total	29	16	13	10

Tab. 4. Altogether 29 samples were sent to the CNA (Sevilla) and the CEZA (Mannheim). Unfortunately, only four charcoal samples and six bone fragments produced results.

Sample code	Laboratory code	Structure	Dated material	Uncalibrated date	Calibrated date, 2 σ
EP_007	CNA3851.1.1	Inner ditch	Charcoal: 80cm above the bottom of the ditch	4560±31 BP	3487–3105 calBC
EP_009	CNA3853.1.1	Pit E	Faunal bone (humerus): top of the structure	4381±30 BP	3090–2914 calBC
EP_012	CNA3856.1.1	Pit E	1st phalange (*Ovicapridae*): top of the structure	4392±31 BP	3090–2914 calBC
EP_013	CNA3857.1.1	Pit E	Femur (*Ovicapridae*): middle of the structure	4421±30 BP	3094–2917 calBC
EP_017	CNA3861.1.1	Pit W	Mandible (*Ovicapridae*): middle of the structure	6051±32 BP	5035–4848 calBC
EP_023	MAMS-29785	Pit SW	Charcoal: middle, approx. 30cm depth	4588±23 BP	3494–3137 calBC
EP_026	CNA4285.1.1	Pit W	Faunal bone (ulna): middle of the structure	4390±31 BP	3092–2917 calBC
EP_031	CNA4286.1.1	Inner ditch	Bone fragments (fauna): ca. 1m above the base	4517±32 BP	3356–3262 calBC
EP_032	MAMS-30825	Pit CS	Charcoal: upper part of the structure	4324±24 BP	3011–2894 calBC
EP_035	MAMS-29786	Pit SW	Charcoal: base of the structure	12210±30 BP	12270–12054 calBC

Tab. 5. Uncalibrated and calibrated 2σ-dates deriving from five different archaeological structures of the site El Prado (Azután). Samples analysed by the CNA University of Sevilla using IntCal13 and MARINE13 radiocarbon age calibration curves, calibration programme: Calib 7.0 © M. Stuiver and P. J. Reimer 2013. Samples analysed by the CEZA Mannheim normed after Stuiver/Polach 1977 used IntCal 13 and the Software SwissCal 1.0 (Reimer et al. 2013; L. Wacker, ETH-Zürich).

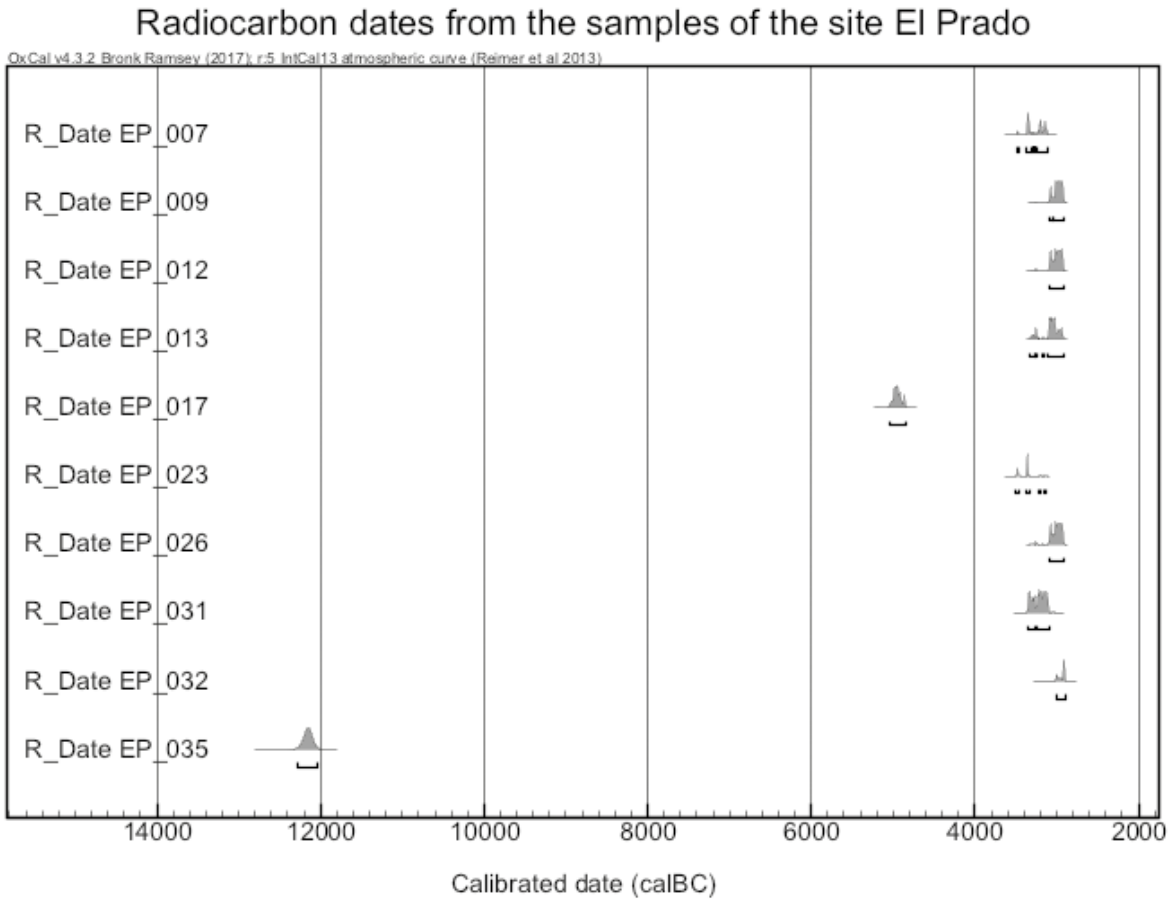


Fig. 82. The results of all datable samples from the excavation in 2015 calculated with the OxCal-program of the University of Oxford, version 4.3.2 (Bronk Ramsey 2020; Reimer et al. 2013).

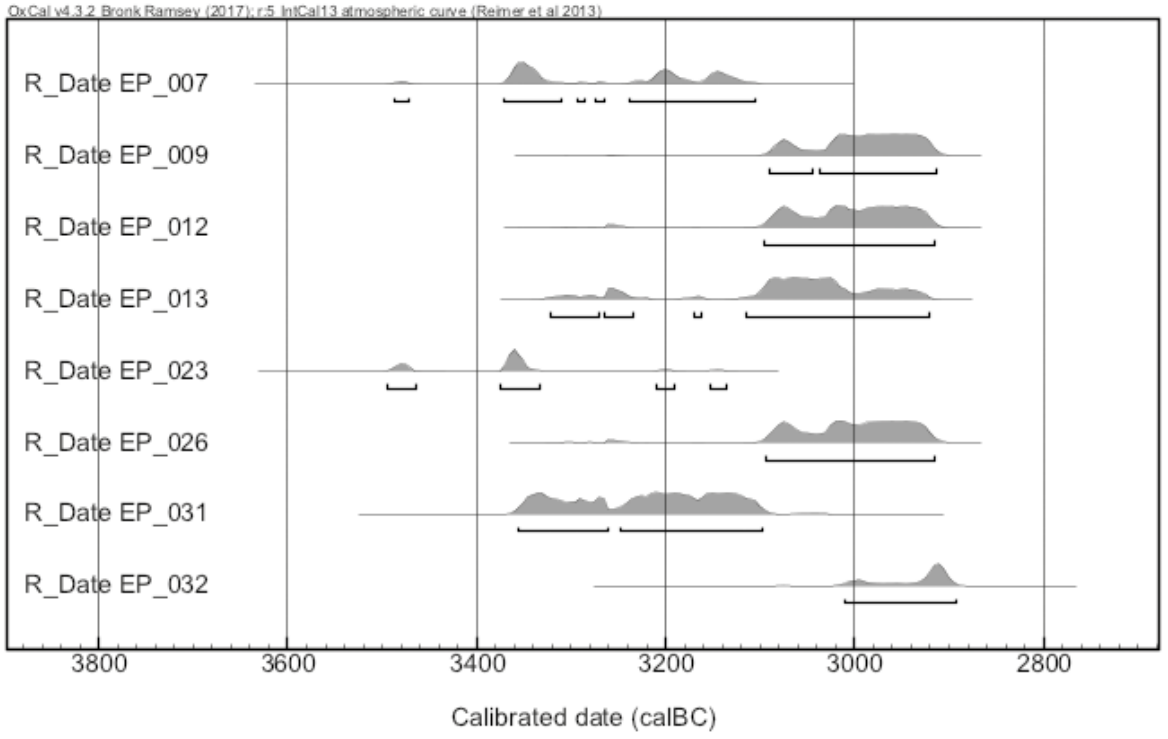


Fig. 83. Display exclusively of the results dating to the end of the 4th and the early 3rd mill. BC (Bronk Ramsey 2020; Reimer et al. 2013).

Luckily, dates for each structure uncovered during the excavation of 2015 could be obtained. Most of the results date to the second half of the 4th mill. BC and the majority of the dates from the pits fall into the timeframe around the turn of the millennia; the end of the 4th and the beginning of the 3rd mill. (for results see *tab. 5* and *fig. 82*). Each structure of El Prado provided dates that point to the Initial Copper Age of the southern Meseta (*fig. 83*).

The two dates of material from the filling of the ditch are dating the lower half of the backfill. The charcoal approx. 0.8m above the bottom of the ditch dates back to the second half of the 4th mill. BC (EP_007, 3487–3105 calBC), while the bone deriving from approx. 1m above the bottom dates the backfill to a more precise timeframe of around 3300 BC (EP_031, 3356–3262 calBC). These dates for the inner ditch of the double-ditched enclosure put El Prado at the beginning of the timeframe for double-ditched enclosures of this construction type, size and topography. As far as comparable sites and ditch types of southern Portugal and southwestern Spain (chapter 5.4) were dated, El Prado seems to be the oldest and among the larger ones. This observation stands in strong contrast to the assumptions of the last decades. The fieldwork in the surroundings of Azután did not only show that the centre of Iberia was far from being a deserted place, but revealed unsuspectedly large ditched enclosures and further ditched systems on the terraces of the Tagus River also. The ^{14}C-results dating this filling of a small part of the double-ditched enclosure to a period around 3300 BC, necessarily implying that digging the ditch took place even before then, proves that ideas concerning the construction of ditched sites did not slowly diffuse from the coastal areas into the centre (chapter 3.2). Maybe they developed on the Mesetas or – even more likely – the Iberian ditched enclosures trace back to a similar communal structure and believe, hence, they present a phenomenon with multi-local places of origin.

From pit CS, the one that was dug in the backfill of the inner ditch, only one sample provided a result. The charcoal date from the upper part of the pit gives an excellent *terminus post quem* for the end of the use of the enclosure, as the ditch had to be completely backfilled when the pit was dug. Thus, by the end of the 4th and the beginning of the 3rd mill. BC (EP_032, 3011–2894 calBC) at the latest the ditch no longer existed. Whether the filling of the ditch was still visible, and the pit was intentionally situated there or whether it was accidentally dug into the backfill will remain unknown. The material within the pit differs from the filling of the other pits and seems to have a more depositional character. Still, its date fits the dates of pit E and W from the pit field in the interior of the enclosure.

All results from pit E date back to the same timeframe and derive from bone samples. Unfortunately, none of the samples was located close to the bottom of the pit but rather situated in the upper (EP_009, EP_012) or middle part (EP_013) of the structure. The three dates cover almost exactly the same period, dating back to the last century of the 4th and the first century of the 3rd mill. BC (3090–2914 calBC, 3090–2914 calBC and 3094–2917 calBC).[18] So far, a primary use as a storage pit (chapter 6.2 and 6.3.2) and a secondary use as a waste pit can be assumed.

Pit W probably had the same purpose as a storage and later waste pit (chapter 6.2 and 6.3.2). As the structure was not even half-excavated due to the limited time of the excavation, no results from above the bottom of the pit are to be expected. One of the carbon results of a bone fragment deriving from the middle of the structure perfectly fits to the dating of pits CS and E at the end of the 4th and beginning of the 3rd mill. BC (EP_026, 3092–2917 calBC). But another date, also deriving from the middle of the pit, dates back to the turn of the 6th to the 5th mill. BC (EP_017, 5035–4848 calBC). As the dated material was bone, this much older date is definitely no result of the old wood effect. This might indicate that the pit had two phases of usage, it is very unlikely that it remained open and visible over a period of 2000 years. It is more likely that the older bone might derive from a former structure that had been destroyed when constructing the younger pit. Still, the older date could be a prove of place continuity along the terraces of the Tagus over centuries and millennia. It cannot

18 Of course, it cannot be excluded that samples from deeper layers would result in older dates.

Sample code	Laboratory code	Structure	Dated material	Result
EP_022	MAL10333	SW	Ceramic and sediment	3000±280 BP

Tab. 6. TL-date from layer 5 of the western half of pit SW indicating some kind of activity around the turn from the Late Bronze to the Early Iron Age.

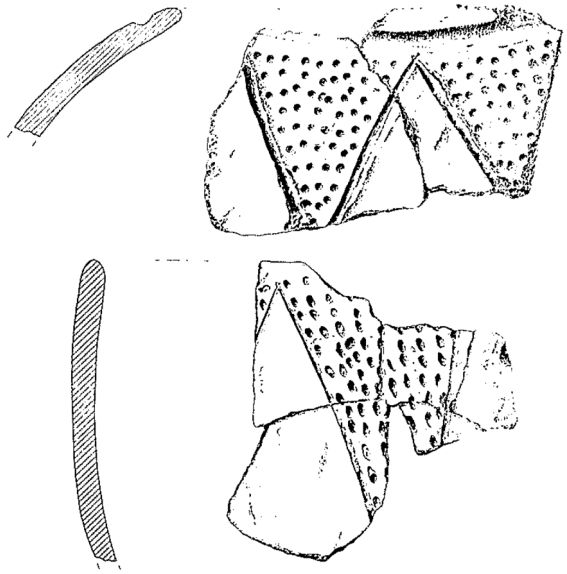


Fig. 84. Pottery from Los Castillos de Las Herencias similar to the imprint on the sherd found in pit SW (fig. 60; drawing from de Alvaro/Piñón 1995, 283, fig. 6 adapted).

be excluded that the older date might just be an outlier as most of the dates point to a very similar time frame.

The results from pit SW are inconclusive. As the few bone fragments were poorly preserved two samples of charcoal were radiocarbon dated and one sherd including its surrounding sediment was TL-dated. This resulted in three extremely differing dates from the middle of the filling (EP_023) close to the base of the pit (EP_035) as well as the lower third of the filling (EP_022). While the ^{14}C-result from the middle fits to the date of the inner ditch and points to the second half of the 4th mill. BC (EP_23, 3494–3137 calBC) the one close to the bottom of pit SW is extremely old and dates back to Late Upper Palaeolithic times (EP_035, 12270–12054 calBC). The TL-date makes the situation even more complex as it delivered a date of around 1000 BC, hence the end of the Late Bronze Age and the beginning of the Early Iron Age (*tab. 6*; EP_022, 3000±280 BP). Instead of dismissing the older and younger dates as analysis errors they may be explained by place continuity as well as bioturbation. When having a closer look at the material that has been recorded within the filling of pit SW some lithics are striking like the core described above (chapter 6.2, *fig. 62*). Other lithics could fit the Late Upper Palaeolithic date as well (chapter 10.5.1 in the online appendix). The simple type and form of the structure – a conical-shaped storage pit – as well as the presence and kind of handmade pottery speak for a Neolithic/Chalcolithic date, especially, because good comparisons for the sherd with the triangular imprints (*fig. 60*) can be found in the material of the Chalcolithic site of Los Castillos de Las Herencias (*fig. 84*). Thus, both the Palaeolithic and the Chalcolithic date are supported by the material in the pit. What cannot be confirmed by the recorded material is the Late Bronze/Early Iron Age date from the TL-dating. It is possible that over 14,000 years ago a hunter and gatherer camp was situated on the southern banks of the Tagus. The remains of this camp could have entered the storage pit when the Chalcolithic community was digging it. After the collapse of the covering and the complete filling of the pit Iron Age activities took place and the small sherd could have found its way into the Chalcolithic structure through bioturbation. What cannot completely be ruled out either is that the storage of the excavated material for ten months before sending the sherd together with charcoal (for ^{14}C-dating) to the laboratory as last attempts to date pit SW may have influenced the TL-analysis. The residual humidity of both sherd and sediment may have changed within this time and produced an imprecise date. While possible backing for the Palaeolithic date can be found in

the material of the pit it cannot be excluded that it presents an outlier within the radiocarbon analysis.

The radiocarbon results of all structures excavated in November and December 2015 show that at least this area of El Prado dates to more or less the same period of time. The oldest dates correspond to the first construction phase of the megaliths, as it is often the case in the coexistence of megaliths and ditched enclosures. Following the chronological differentiation of Hurtado and Hunt (1999, see chapter 3.1.1) this time is defined as Initial Chalcolithic (3500–2800 BC) for the southern Meseta. Except for pit SW, which seems to have been in use during the existence of the double-ditched enclosure, the other investigated pits (CS, E and W) had their utilisation phase after the ditch had already been backfilled. Therefore, the numerous anomalies visible in the magnetogram interpreted as pits can be seen as an indicator for a high prehistoric activity on the southern terraces of the Tagus River over centuries and maybe even over millennia. This has already been indicated by the surface finds documented in that area in spring 2014 (chapter 5.2.2). Not a short period of communal activity but rather a regular use of this land is reflected by them.

The presumption that the pits had a primary and a secondary use was investigated with the analysis of phytoliths within the sediment of the pit fillings and could be verified. Method and results will be discussed below.

6.3.2 Phytoliths

Phytoliths are microscopic silica particles of plants. Their analysis is especially useful to identify parts of a plant besides the flower/blossom that is usually captured by palynological investigations. In cases of poor preservation of pollen or macro remains and other organic materials on a site like on arenaceous mineral soils such as the terraces of the Tagus, the method still allows the identification of plants through their siliceous parts. Like pollen, the silica particles differ from plant to plant in their structure and can be classified under the microscope (Mulholland/Rapp 1992).

No.	Structure	Sample position
44	SW	base
45	SW	middle
46	SW	surface
47	SW	south of pit
48	SW	north of pit
49	SW	below pit

Tab. 7. Phytolith samples taken in pit SW.

To find out whether the pits investigated in trench SPS have been used for storage before they were backfilled in prehistoric times and whether they were refilled quite quickly or have been left open over a longer period, samples and control samples for the analysis of phytoliths were collected. Pit CS was excluded, as it was excavated as complete negative and had a depositional character already. Pit SW, where the filling was very homogeneous besides two control samples, only three more samples were taken out of the profile of the pit filling and one below the bottom of the pit (*tab. 7*). The very heterogeneously filled pits E and W were sampled in steps of 0,1m distance from the base or the base of the last excavated layer upwards. Also, two control samples outside of the pits were taken for each structure (*tab. 8* and *9*). All in all, 34 samples were taken and later analysed in Tübingen, including the six control samples from the sediment outside the archaeological structures. The samples were prepared and the phytoliths counted by G. Ahadi and analysed as well as interpreted by and with the help of M. Toffolo.

From each sample, the phytoliths were extracted and counted by using the rapid extraction method (Katz et al. 2010). Different morphotypes were identified with the help of reference collections of modern and archaeological samples (Albert et al. 2016) and by following the standard literature (Twiss et al. 1969; Mulholland/Rapp 1992; Madella et al. 2005). For studying the phytoliths, a Zeiss Axioscope AX10 petrographic microscope at 200x and 400x magnifications was used (Toffolo 2017).

No.	Structure	Sample position
140	E	base
141	E	base +10cm
142	E	base +20cm
143	E	base +30cm
144	E	base +40cm
145	E	base +50cm
146	E	base +60cm
147	E	base +70cm
148	E	base +80cm
149	E	base +90cm
150	E	base +100cm
151	E	base +110cm
152	E	base +120cm
153	E	base +130cm
154	E	base +140cm
155	E	east of pit
156	E	west of pit

Tab. 8. Phytolith samples taken in pit E.

No.	Structure	Sample position
166	W	base
167	W	base +10cm
168	W	base +20cm
169	W	base +30cm
170	W	base +40cm
171	W	base +50cm
172	W	base +60cm
173	W	base +70cm
174	W	base +80cm
175	W	south of pit
176	W	north of pit

Tab. 9. Phytolith samples taken in pit W.

The results are displayed in table 10, presenting the concentration and percentages of different phytolith morphotypes. Compared to the control samples, most of the samples show a higher concentration of phytoliths. This indicates the presence of plant material from human input. All the samples that yielded more than 300,000 phytoliths per gram of sediment were characterised to calculate the relative proportions of different morphotypes (Toffolo 2017).

In general, the preservation of the samples can be regarded as good. Weathered morphotypes are sparsely present while delicate morphologies, such as hair cells and dendritics, show a large concentration. Only the samples 169 to 174 are less well preserved. Generally, a high amount of phytoliths is preserved, the multicells (connected phytoliths) being an additional indicator for good preservation (Cabanes et al. 2011). The well preserved phytoliths as well as their high number allow to draw the conclusion that they were quickly buried (Toffolo 2017).

Grasses are the dominant plant category within all of the samples. Wild arid grasses (C4 plants) are present in low numbers, most of the grasses are represented by C3 plants (e.g. barley, oat, wheat). That is indicated by the high percentage of short cells from the *Pooideae* subfamily. Most likely these phytoliths derive from domesticated cereals, which is strengthened by a percentage above 7 for the dendritic morphotypes (Albert et al. 2008). In a few samples, dicots such as woody and herbaceous plants are present in substantial amounts. Samples 169 to 174 were less well preserved and display only low percentages of dendritic morphotypes, high percentages of echinate morphotypes. Regarding the poor preservation and the higher amount of weathered phytoliths in these samples, it seems as if echinates might be the result of a partial dissolution of dendritics (Cabanes et al. 2011; Toffolo 2017).

In all the assemblages, the plant part that is most represented is the inflorescence, and the ratio between leaf or stem and inflorescence indicates that the filling of the pits contained a predominance of chaff material (Regev et al. 2015). The dominance of inflorescence contradicts an interpretation of the phytoliths entering the pits in manure or representing remains of organic mats. Considering the overall high amount of chaff from domesticated cereals in all the assemblages, it appears that the studied samples can be linked to

Sample	Concentration (millions/g of sediment)	Monocots (%)	Dicots (%)	Weathered (%)	Inflorescencea (%)	Leaf and stema (%)	Ratio leaf-stem to inflorescence	Dendritics (%)	Short cells (Pooideae)b (%)	Multicells (%)
44	3.74	94	6	0	84	16	0.2	18	100	6
45	4.81	82	18	0	73	27	0.3	35	95	8
46	4.25	97	3	0	62	38	0.6	28	100	8
47 control	0.07	-	-	-	-	-	-	-	-	-
48 control	0.17	-	-	-	-	-	-	-	-	-
49	2.46	94	3	3	76	24	0.3	25	100	10
140	3.70	88	12	0	68	32	0.5	17	100	9
141	4.22	92	8	0	74	26	0.4	17	100	8
142	1.35	88	10	2	75	25	0.3	23	87	9
143	2.59	92	5	3	72	28	0.4	24	89	8
144	0.30	81	19	0	63	37	0.6	5	91	17
145	0.58	83	14	3	76	24	0.3	25	77	11
146	3.21	89	10	1	71	29	0.4	21	93	8
147	2.45	93	4	3	60	40	0.6	13	85	8
148	0.82	87	7	6	68	32	0.5	6	92	8
149	0.70	87	6	7	66	34	0.5	13	85	7
150	0.45	96	3	1	84	16	0.2	18	27	9
151	0.53	90	8	2	65	35	0.5	8	100	8
152	1.30	93	6	1	76	24	0.3	10	100	6
153	2.17	93	5	2	78	22	0.3	15	86	6
154	1.15	88	4	8	68	32	0.5	12	100	7
155 control	0.04	-	-	-	-	-	-	-	-	-
156 control	0.14	-	-	-	-	-	-	-	-	-
166	0.21	-	-	-	-	-	-	-	-	-
167	0.23	-	-	-	-	-	-	-	-	-
168	0.14	-	-	-	-	-	-	-	-	-
169	0.39	85	4	11	79	21	0.3	3	80	16
170	0.41	78	4	18	86	14	0.2	5	91	17
171	0.40	78	2	20	81	19	0.2	5	87	15
172	0.98	65	8	27	89	11	0.1	6	92	11
173	0.90	69	4	27	86	14	0.2	4	83	10
174	0.63	70	1	29	90	10	0.1	6	91	16
175 control	0.13	-	-	-	-	-	-	-	-	-
176 control	0.04	-	-	-	-	-	-	-	-	-

Tab. 10. Phytolith concentrations and percentages of different morphotypes from Azután. [a]Percentage over monocot morphotypes. [b]Percentage over all the grass short cell morphotypes, which include Pooideae, Panicoideae and Chloridoideae subfamilies (data from Toffolo 2017, 2 f., tab. 1).

Sample no.	Structure and position
58	SW: western half, layer 3
72	W: eastern half, layer 6–7 E
77	E: southern half, layer 17
78	E: southern half, layer 17
84	E: southern half, layer 17–18
86	CS: central, layer 8

Tab. 11. Sample number and location within the archaeological structure. Six test samples were taken to check if any macro remains can be detected.

storage of grains. Although the samples 169 to 174 are less well-preserved chaff predominates as well and supports the grain storage interpretation (Toffolo 2017). All the poorly preserved samples derived from pit W (*tab. 10, 11*) with the two ^{14}C-dates that came more or less from the same depth but dated almost 2000 years apart from each other. As the phytoliths here were much more weathered, this pit was backfilled slower but probably not over such a long period.

During the excavation, greyish ash-like sediments were observed in pit E and pit W that were thought to represent some kind of burning event. The phytolith analysis as well as the FTIR-spectrometry (Fourier-Transform-Infrared) could not trace any evidence for burning or burned organisms. Eventually, all three archaeological structures in SPS most probably had a primary use as a storage pit. Most of the samples presented well preserved and barely weathered phytoliths; an indicator that the pits – except for pit W – were backfilled quickly and not left open over a longer time.

6.3.3 Archaeobotany

Because macro remains such as cereal grains are poorly preserved on archaeological sites that are located on mineral ground, only six test samples for the archaeobotanical study were taken during the excavation. Three of them derived from pit E and three more from the pits SW, W and CS (*tab. 11*). Their geographical position was measured (*fig. 85*) with the total station before filling approx. 10l of soil in bags for the analysis in Tübingen. The focus was on sediment that at least appeared to contain more organic material than other parts of the excavated pit (e.g. darker in colour, greyish-ash-like etc.).

The soil taken from the different archaeological structures went through the process of floatation and the remains were sorted by G. Ahadi in the archaeobotanical facilities of the University of Tübingen. S. Riehl took a closer look at the material. Unfortunately, as suspected, the density of preserved botanical macro remains is very low. As the sample material does not derive from near-surface areas, the poor preservation cannot be traced back to secondary mechanical stress but is the results of the arenaceous, silty soil on the terraces of the Tagus River. The sorted material almost exclusively comprised of small charcoal fragments. Only sample 77 (pit E, layer 17) contained a very small apex fragment of a cereal grain that could be interpreted with caution as wheat, maybe rivet wheat (*Triticum turgidum*).[19]

Summarising, it can be stated that the attempt to obtain macro remains of plants from the sediment of the mineral soil on the river terraces was hardly helpful to find out more about content and use of the prehistoric pits. For the prehistoric structures of that area of Azután future investigations should continue with a sampling strategy focussed on phytolith analysis. The micromorphology of the soil must always be taken into account.

6.3.4 Palynology

Palynological studies conducted in the centre of the Iberian Peninsula already revealed that the southern Meseta was probably dominated by a *dehesa*-like landscape (López/López 2000; 2005; López et al. 2009) during the end of the 4th and the beginning of the 3rd mill. BC. A similar climate as today can be expected but with a different density of vegetation and composition of plants. As mentioned in chapter 4.2, research on palaeoflora

19 Written communication of S. Riehl on November 3rd, 2016.

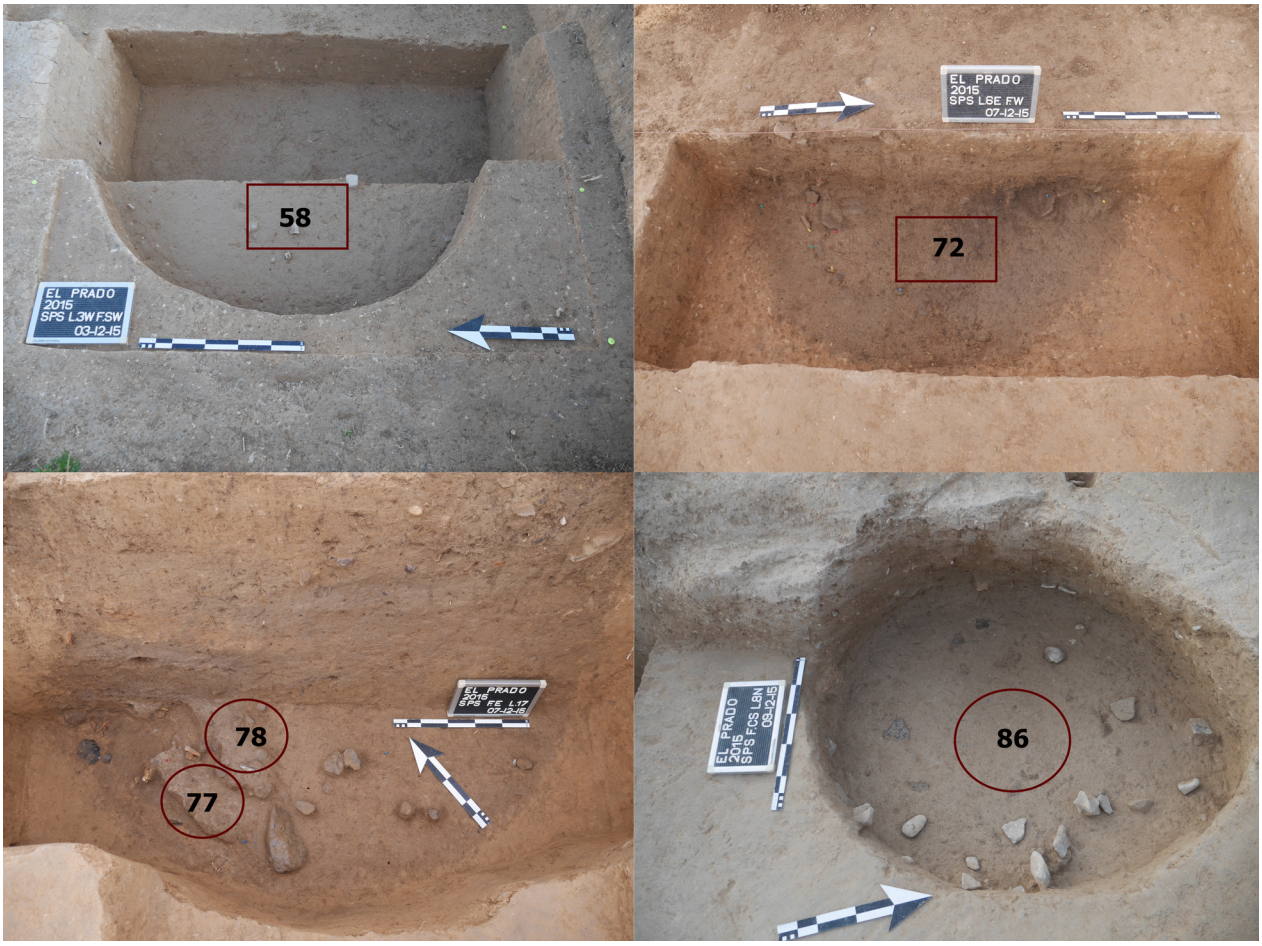


Fig. 85. The location of the samples with indication of their number. Sample 84 was taken from the soil between layer 17 and 18 of pit E. Upper left: pit SW; upper right: pit W; lower left: pit E; lower right: pit CS.

reminds us that, unfortunately, huge areas of the peninsula only allow a delimited insight into the archive of the palaeoenvironment during the Holocene. Many of these archives are fragmentary or chronologically insecure (López et al. 2009, 91). The low number of sites in the centre of the peninsula impedes the location of places that have a sequence, which dates to the end of the 4th and the 3rd mill. BC. A higher number of investigated sites, which close the gaps on the maps and derive from different types of environment, are necessary (chapter 4.2). Therefore, samples for palynological studies were taken during the excavation in 2015 as well.

In case that pollen withstood the test of time in the sediment present at El Prado, each profile was sampled, except for pit CS, as it was excavated in its negative. On the profile of the ditch and the profiles of the three pits SW, W and E, samples were taken from the bottom of the structure up to its top in steps of approx. 0.1m distance. As it is always assumed that ditches were backfilled over a longer period of time and pits are usually filled faster and would represent a more or less closed timeframe, one of the pits was chosen for the study. As all the scientific analyses were conducted simultaneously, the radiocarbon dates were not known yet when sending the selected samples to Madrid. The pollen analysis was carried out by J. A. López Sáez of the 'Grupo de Investigación Arqueobiología del Instituto de Historia del Consejo Superior de Investigaciones Científicas' (CSIC, Madrid, Spain), who had already studied samples from the dwelling under the dolmen of Azután, the sites of Huecas and many more archaeological as well as geological sites in Spain.

Pit SW was chosen for the analysis to check whether the samples would contain enough pollen

to give a more detailed insight into the palaeoenvironment of Azután. Unfortunately, the samples were sterile. The moment the results from the dating arrived, it became obvious the choice of pit SW would have been a problematic one for the interpretation of the Initial Chalcolithic of that region anyway, as the pit probably cut a Palaeolithic structure and was disturbed by younger activity as well. In consequence, results from that pit would not necessarily all represent the second half of the 4th mill. BC. The possibility was given that undisturbed and quickly backfilled structures such as pit E could still contain pollen, but the 15 samples from pit E were also sterile. Only some samples contained few pollen but in a quantity that was too low for a palynological study. The high amount of sand probably causes a high abrasion as well as oxidation that eliminated the pollen. It is the arenaceous environment of the mineral soil destroying the pollen. Apparently, the sterility, with regard to pollen, is a frequently occurring problem in samples from the southern Meseta.[20]

The palynological study as well as the archaeobotanical analysis showed that, on very arenaceous soils, the preservation for pollen and macro remains is very poor and close to zero.

6.3.5 Isotopy

One of the initial aims of the project was the investigation of human and animal mobility because of the assumption that due to the 'deserted' interior of the Iberian Peninsula the communities living on the central plateaus lived a semi-sedentary life. To trace such mobility, samples from animal and human teeth in the Museo de Santa Cruz from some published sites of the province of Toledo were taken (Toledo, Spain) by M. Díaz-Zorita Bonilla (University of Tübingen) as well as from the excavation of 2015 in Azután. It was attempted to choose sites that were located close to the herd drive paths (*cañadas*) that lead through the province.

Samples from seven different sites were taken and analysed. First interpretations of the data show evidence for rather sedentary communities except for one sample of cattle from the site El Tonto (Olías del Rey/Mocejón).

As the results require further in-depth study and a detailed consideration of the strontium values of the different geological grounds of the southern Meseta, final remarks on this topic will be made in a separate journal publication.

20 Information based on email communication with Antonio López.

7 Resources and Mobility

The following reflections concerning the surroundings of the newly detected sites in the west of the province of Toledo have partly been considered before (Schmitt 2017; Schmitt et al. 2019) but deserve a closer look and more detailed considerations. One of the foci will be the available resources in the vicinity of the dolmen and the enclosures of Azután reflected in the material culture detected during the excavations. Not only material resources played an important role in the choice of location, but immaterial resources (social inclusion in a community, collective feasts, ancestral lineages etc.) were decisive as well. The resources lay the foundation for the prehistoric settlement structures and contributed to the change of the environment of the settlement throughout time due to their use or extraction. The discussion of the resources of the micro region, including the site conditions of the valley of the Tagus middle basin and its surroundings, will facilitate the understanding of a first concept regarding the organisation of the landscape and the communication network in the centre of the Iberian Peninsula (chapter 8).

7.1 Down by the River – Resources in the Valley

What are the possible reasons for settling in the micro region of the Tagus middle basin between the valley and the foothills of the Montes de Toledo? Why did communities of the 4th and 3rd mill. BC choose this area for the construction of ditched enclosures, megalithic tombs and walled enclosures in the hills? To approach these questions and to give conclusive answers, the material resources present in the environment must be regarded initially. Subsequently, considerations on the immaterial meaning of enclosures and collective burials for the formation of a community can be discussed (chapter 2.3.3). As mentioned before, the area in the west of the province of Toledo is dominated by a wide and fertile valley along both sides of the Tagus River. Towards the south, mountains rise and form an area less favourable for agriculture, which still offers different advantages.

Surely, at least a basic stock – a bit of several resources – is important for the formation of a community and the foundation of a regularly frequented settlement. In consequence, this means that the agricultural potential of the soil must be able to ensure the survival of sedentary people and their livestock. Edible wild products such as berries, herbs and animals added to the potential sources of food. The agricultural use of the soil and the storage of cereals was proven by the archaeological record of both the dolmen and the excavation of El Prado in Azután (chapter 6.3.2). Therefore, the composition of the soil must have been good and fertile enough to grow nutritious plants. The seasonal exploitation of domesticated plants and animals as well as wild resources could be documented in the area of the dolmen. This is an indication of the abundance of available edible resources and a rather sedentary life of the late Neolithic and Chalcolithic communities in the west of the province of Toledo, as the use of products of each season of the year supports the idea of place-bound people (Bueno et al. 2005c; 2009; Sánchez 2005; Schmitt 2017, 49–52; chapter 2.3.1, 2.3.2, 4.2 and 6.3.2). The vicinity to water courses such as several brooks as well as the Tagus and the Uso Rivers ensured an abundance of fresh water and allowed the use of aquatic resources such as fish and mussels. Fishing and the consumption of river species can be assumed due to finds such as a net weight found during the fieldwork in the year 2014 and is reflected in remains of shells detected throughout the excavation of 2015 in each structure, but especially in the western pit of trench SPS (chapter 5.2.2 and 6.2; Bueno et al. 2005c, 85 f.).

It can be supposed that organic materials such as wood, textile or fur were used by Late Prehistoric societies as well. The dry conditions of the area did not allow the preservation of these materials. There is indirect evidence of their existence: Postholes indicate the position of wooden posts and imprints of grass or hay found on pieces of

clay point to its possible use in the erection of wattle-and-daub dwellings. This clay-mixture could be detected especially in the filling of the ditch during the excavation of El Prado, but no indication of postholes could be documented within the limited space of the excavation trenches. At present, it must remain undecided whether the documented daub formed part of a palisade embedded in the ditch, covered by wattle-and-daub, or whether it has been discarded with other material as backfill of the ditch. The amount of daub is not enough to strongly support the first assumption (chapter 6.2 and chapter 10.5, 10.5.2 in the online appendix). Indirect proof for textiles could not be revealed at the sites of the dolmen of Azután and La Estrella, nor in the small part hitherto being investigated in the area of the huge double-ditched enclosure.

Clay

The most common materials present in the archaeological record of the micro region are – also due to their mineral nature and better preservation – granite, pottery and quartzite. These materials have been used for the construction of the dolmen as well as the walled enclosures of El Castrejón and La Cabeza del Conde, to produce tools or pottery. Ever since the beginning of the Neolithic, clay was a major resource. Pottery was used for food containers that offered more protection against rodents and other vermin. Another advantage in comparison to organic vessels is that specially tempered and fired clay vessels are heatproof, which means that they can be used for cooking, for the smelting of ores and as casting moulds.

Abundant proof of the use of different types of pottery was detected during the fieldwork in the west of the province of Toledo as well as during the excavations by Bueno and her team of the dolmen (Azután and La Estrella) and during the excavation of El Prado of this project in 2015. Clay is a local resource and available on both sides of the Tagus River. The clay layers become more massive the closer they are to the banks of the river (ENADISMA 1972, 5–7). This is the result of the so-called *rañas* (alluvial fans), which shape the valley along the river between the city of Talavera de la Reina up westwards to the town of El Puente del Arzobispo in the southwest of the investigated area. These alluvial deposits on the site El Prado consist of sandy, silty soil with strongly rounded pebbles as a result of fluvial processes. The alluvial soils also contain clay layers of an excellent consistency for the production of pottery (ENADISMA 1972, 11). To this day, pottery plays an important role in the area. Places such as Talavera de la Reina and El Puente del Arzobispo (among others) still benefit from the abundance of clay through the production and sale of ceramic items of characteristic colours (vessels, tiles and decorative products in blue, white and yellow).

Granite

Granite was documented in the archaeological record of the sites as well. It was present in the material collected during the field survey in 2014, the excavation in 2015 and the investigations of the dolmen of Azután and La Estrella (Bueno 1991; Bueno et al. 2005a; Schmitt 2017; Schmitt et al. 2019). Most striking is its use as construction material for the chamber and the corridor of the megalithic tombs as well as its use as filling material of the outer circle of the burial mound. Because of its hardness and porosity, the rock can be used for the production of grinding stones to facilitate the processing of cereal and acorns. Additionally, it was used for tools such as net weights (*fig. 86*) and axes.

Similar to clay, granite is very common because the middle basin of the Tagus River is dominated by granite and fertile ground as parent material (ENADISMA 1972, 5–7). Outcrops of granite at the foothills of the Montes de Toledo and in the valley are concentrated along the Tagus River. They are especially abundant in the west of Azután and southwestwards of El Puente del Arzobispo, where the river continues its way to the province of Cáceres and starts to cut canyon-like into the ground. Huge pieces of granite dominate the area. Depending on the water level, they are more or less easily accessible. Another outcrop can be found along the Anguilucha Brook, in the southeast and south of the dolmen of Azután. Along the different brooks and in the mountainous hinterland – which is dominated by granite – and throughout the hilly terrain, several outcrops are visible. Both soil erosion and fluvial erosion uncovered the bare rock over centuries. Where the most easily available and accessible sources

Fig. 86. Some examples for the use of granite that could be documented in the valley of the Tagus middle basin and on the foothills of the Montes de Toledo.

for granite were located ca. 5000 years ago can still not be stated conclusively. It is obvious that the material is available and accessible in abundance in the surroundings of the archaeological sites, both in the valley and in the mountains. The same is true for quartz and quartzite. They are especially to be found in the mountains and are often associated with metalliferous veins.

Salt

Salt was another resource of significance in prehistoric times. Humans as well as other mammals need salt, as it plays an important role in several body processes such as the control of the water balance or the formation of bones. Salt can be used for the conservation of food. Especially in the Central European regions, this mineral could be considered the prehistoric fridge, as it may have been – and in some regions demonstrably has been – used to cure meat (e. g. Pucher 2008; Barth et al. 2008). In history, the term 'white gold' became common to express its value and the benefit it could bring to someone who was part of the processes connected to the extraction and production of salt and its distribution.

Up to now, neither direct (e. g. briquetage) nor indirect (e. g. the presence of salty inland lakes) proof of the use or extraction of salt could be found in the micro region of Azután. The inland of the Iberian Peninsula is famous for its abundance of surface salt sources as well as lagoons with salty water. Particularly the eastern part of the province of Toledo (La Mancha and Mesa de Ocaña) is known for its salty inland lakes (*tab. 12* and *fig. 87*), as it is located at the western edge of the salt-rich region. The western inlands of the peninsula are predominantly salt-less (Harding 2013, fig. 7.1). Some possible saltern that may have been used during Late Prehistory can be found in the eastern part of the province close to the borders with the autonomous community of Madrid (Valiente 2005–2006).

Name	Municipality and rural district	Description	Publication
Salobral de Yepes	Yepes, Mesa de Ocaña	possible saltern	Valiente 2005–2006
Añover de Tajo	Añover de Tajo, La Sagra	possible saltern	Valiente 2005–2006
Las Salinillas	Seseña, La Sagra	possible saltern	Valiente 2005–2006
Laguna Larga	Villacañas, La Mancha	salty water	Muñoz 2008
Laguna de Tirez	Villacañas, La Mancha	salty water	Muñoz 2008
Laguna de Peñahueca I	Villacañas, La Mancha	salty water	Muñoz 2008
Laguna de Peñahueca II	Villacañas, La Mancha	salty water	Muñoz 2008
Laguna Los Albardiales I	Villacañas, La Mancha	salty water	Muñoz 2008
Laguna Los Albardiales II	Villacañas, La Mancha	salty water	Muñoz 2008
Laguna de los Carros	Quero, La Mancha	salty water	Muñoz 2008
Laguna de Taray	Quero, La Mancha	salty water	Muñoz 2008
Laguna Grande	Quero, La Mancha	salty water	Muñoz 2008
Laguna Chica	Villafranca de los Caballeros, La Mancha	salty water	Muñoz 2008
Laguna Grande	Villafranca de los Caballeros, La Mancha	salty water	Muñoz 2008
Laguna de la Sal	Villafranca de los Caballeros, La Mancha	salty water	Muñoz 2008
Laguna de Navarredonda	Villa de Don Fadrique, La Mancha	salty water	Muñoz 2008
Laguna El Salobral	Villa de Don Fadrique, La Mancha	salty water	Muñoz 2008
Laguna de la Albardiosa	Lillo, Mesa de Ocaña	salty water	Muñoz 2008
Lagunas de la Dehesa de Monreal	Dosbarrios, Mesa de Ocaña	salty water	Cirujano/Medina 2002
Humedal de Huecas	Huecas, Torrijos	rock salt in the environs of the former lagoon	Bueno et al. 2012a
Saladares de Huerta de Valdecarábanos	Huerta de Valdecarábanos, Mesa de Ocaña	salty water	Cirujano/Medina 2002
Saladares de Villasequilla	Villasequilla, Mesa de Ocaña	salty water	Cirujano/Medina 2002
Laguna del Longar	Lillo, Mesa de Ocaña	salty water	Cirujano/Medina 2002

Tab. 12. List of salty inland lakes (lagunas salobres) and other possible salt sources in the eastern part of the province of Toledo.

Indirect proof for the extraction and distribution of salt during Neolithic as well as Chalcolithic times up to the end of the 3rd mill. BC has been found in the municipality of Huecas (Toledo). The presence of rock salt due to a former lagoon close to the site Los Picos as well as the silex mining in the vicinity of the burials of the Valle de las Higueras were interpreted as two of several reasons for the settlement and the excellently crafted, rich burial goods (Benítez et al. 2009; Bueno et al. 2012a; Barroso et al. 2017) that were documented during the excavations.

The location of El Prado in an area of easy transition, interconnecting as well as probably

Fig. 87. Impression of the lagoon of Peñahueca in December 2013. At the margins of the shallow basin in the front, salt precipitations are clearly visible.

controlling the passing from north to south and east to west, suggests that the micro region of Azután might have played an important role in the distribution of salt. Produced and extracted in the east of the province of Toledo, it may have been transported along the Tagus middle basin to provide salt-less areas (Barroso et al. 2017, 91 f.) of the Iberian Peninsula such as the Extremadura.

7.2 Run to the Hills – Resources in the Mountains

As mentioned and described before, the Tagus middle basin is dominated by granite and fertile ground as parent substrate of the soil. While the Tagus lowlands have been filled by tertiary material, the foothills of the Montes de Toledo consists of a slate rich composition. Granite, quartzite and quartz also characterise the mountainous hinterland and are abundant resources visible in several outcrops (ENADISMA 1972, 5–7). Although the valley is more suitable for agricultural purposes, the mountains offer other relevant resources that have been used during Neolithic and Chalcolithic times (see *fig. 92*).

Quartz and Quartzite

Quartz and an extremely fine-grained rock crystal quartz type are present in veins around the modern village of Aldeanueva de San Bartolomé. Outcrops of these veins were recorded during the survey in May 2014 at the site of El Castrejón. The fine-grained grey or reddish coloured quartzite used for the production of tools detected during the excavation of 2015 probably mainly derived from pebbles. Due to their fine structure, they are easier to process. Quartzite can easily be collected for instance at the Sierra Ancha and at the Cabeza del Conde as well. Therefore, it is a material that can be acquired both in the valley and in the mountains. Quartz and quartzite presented the largest group within the lithic material found during the survey and the excavation of El Prado (chapter 6.2), they have been used for the production of tools and more filigree arrowheads (for the latter objects especially quartz). Silex can be found in the form of arrowheads or other cutting tools as well. Still, quartz in its purest form – the aforementioned rock crystal – appears to have been used mainly as a valuable good in burial contexts. It has presumably had a ritual significance (Costa et al. 2011, 259–263). This is reflected by the prism and the nucleus found amongst the burial objects of the dolmen of Azután (no or only little processing of the material) or by the items made of rock crystal (arrowheads and beads) that were documented in the megalithic monuments of Valencia de Alcántara (Bueno 1988; 1991, fig. 42, fig. 61, 101). The rock crystal finds at the site of El Prado are almost exclusively not processed and cannot be designated to a distinct type (*fig. 88*). A presence of this stone in sites of collective practice (burials, feasts etc.) stresses the rather symbolic meaning of the almost translucent material. Maybe especially because of that, this type of stone rarely appears in the archaeological record of Central Iberian Late Prehistory. Although it must be mentioned that rock crystal is a material that has hardly been studied. Only recently a group of researchers in the southwest of the Iberian Peninsula started to investigate this material in greater detail. Apparently, rock crystal is not uncommon in the archaeological record of the southwest, but in comparison to other lithic objects, artefacts made of rock crystal are of reduced size but appear in similar types (Morgado et al. 2016, 232–234). Other parts of the Iberian Peninsula have not been satisfactorily investigated regarding the presence of rock crystal in the archaeological record. This means that the rarity of rock crystal artefacts may reflect

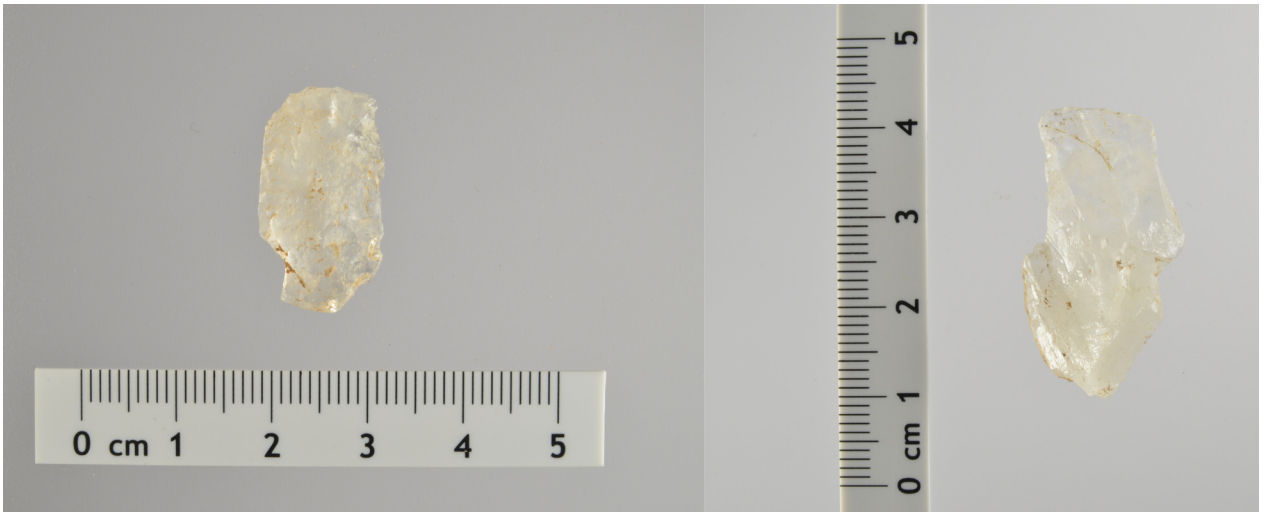


Fig. 88. Two examples of rock crystal finds deriving from pit SW (left) and pit W (right). They have not been worked out on high-quality standards and may have been used as small scrapers.

Fig. 89. Polished axe found during the survey campaign of spring 2014 within the enclosed space of the later detected double-ditched enclosure El Prado.

a lack of research interest related to the material rather than a real absence during Late Prehistory.

What becomes apparent when studying the material culture recorded in the micro region is the absence of jewellery in the form of variscite. Only in the dolmen of Navalcán, which is located approx. 30km distant from Azután, a few beads made of this green stone could be documented (Bueno et al. 1999b). As mentioned before, even the rock crystal finds are crafted in low quality and quantity. Compared to other megalithic burials and Chalcolithic sites, this absence of jewellery is striking. Especially jewellery objects made of variscite, amber or ivory are highly mobile due to their size (Odriozola et al. 2017; Murillo/Montero 2017; Schuhmacher 2017). It has to be considered that the dolmen in the west of the province of Toledo suffered under different disturbances before eventually archaeological interventions took place by the end of the 20th cent. (Navalcán: flooded by a water reservoir; Azután: damaged by a trench of the Spanish Civil War). Therefore, the apparent absence could also represent the destruction or removal of originally existing jewellery in the tombs.

Silex, Crystalline Rock and Granite

Apart from tools made of quartz and quartzite, tools made of silex are also present in the archaeological record of the micro region. Sources of silex exist between the valley and the mountains around Fuentidueñas. It has been used to produce artefacts with especially sharp cutting edges. Artefacts produced of crystalline rock can be detected in the archaeological sites as well. The material is mainly used for polished artefacts such as stone axes (*fig. 89*). Although crystalline rock can easily be confused with granite by the inexperienced eye, the different materials can be distinguished based on their structure and chemical composition. While rock contains more golden mica, an almost rusty coloration is typical for granite. The latter is not that often used for the production of tools but rather for the erection of walled sites and megalithic tombs such as the walled enclosures of La Cabeza del Conde and El Castrejón or the mounds of La Estrella and Azután. Besides slate, which has mainly been used as building material but for

decorative elements such as plaques or jewellery items as well, granite forms the most used lithic material in construction along the Sierra Estrella and Aldeanueva de San Bartolomé. It is widely distributed downhill and along the Tagus Valley of the study area. As mentioned before in the context of the resources in the valley, granite was also used for the production of grinding stones because of its coarse-grained structure. Such tools could be detected during the survey of the project and during the excavation of the dolmen of Azután. These tools formed part of the standard repertoire of Late Prehistoric settlements and were especially used to shred and grind cereal as well as acorns (Bueno 1991; Bueno et al. 2005a).

Slate

Slate rarely appeared at the site of El Prado and is therefore a less common lithic resource documented during the excavation in the year 2015. A slate plate that stuck in the northern profile of the excavation trench (SCE) that was opened to investigate the shape and filling of the ditch was documented. The piece did neither show any traces of anthropogenic treatment (processing, engravings etc.) nor did it cover or indicate a special area or find. It seems to have been part of the regular backfill of the ditch. Only one broken piece of slate, which derived from the younger pit that cut the ditch, might have been worked and formed. The small, disc-shaped object seems to have been artificially rounded and in the centre the remains of a perforation were recognisable (chapter 6.2.1, *fig. 54*). Maybe it is the fragment of an ornament.

Other non-worked slate plates were documented in the excavation section that was focussing on the investigation of a small part of the pit field situated in the interior of the ditched enclosure (SPS). Together with larger pieces of granite (mainly pebbles), they were documented only little above the base of the pit located in the southwest of the trench. Due to the observation that the slate plates were not lying flat on the ground of the structure but in a slight transverse angle, it can be assumed that they collapsed into the pit (*fig. 90*). It is conceivable that for instance wooden slats covered the opening of the pit and were protected with a layer of stones. Once the organic material decomposed, the stones fell into the pit.

Fig. 90. SfM-model of layer 7 of the eastern part of pit SW showing the inclined slate plates and other stones close to the bottom of the pit.

This example underlines the predominantly practical use of slate for covering and building purposes in the micro region, instead of as ornaments or the carriers of symbolic meaning (e. g. engraved plaques). This idea is reinforced by the absence of slate in the archaeological record of the dolmen of Azután and La Estrella as well (Bueno 1991; Bueno et al. 2005a).

Ore

Not only lithic resources and the use of the hinterland whenever possible for agriculture purposes and as grazing grounds for cattle can be detected in the mountains, but also ore veins are existent. In some cases, they are visible as outcrops at the surface or through certain indicator plants that point out the presence of ores. The material that gave the Chalcolithic period its name, even though it is only rarely represented in the material culture of the first half of this period, is copper. A very early copper metallurgy was said to have taken place at the site of Cerro Virtud (Almería) already during the first half of the 5th mill. BC. Still, the rare presence of copper objects in the archaeological record

Fig. 91. One of the depressions detected on the plateau of El Castrejón during the survey in May 2014. The trench may be an indication for prehistoric mining activities.

of the Iberian Peninsula up until the Bronze Age may indicate a low social value of the ore, despite the knowledge of deposits and the skills to process it (Montero/Murillo 2017, 141 f.).

Earlier studies showed that especially the west of the Iberian Peninsula is rich in different kinds of metal ores (copper, iron, silver etc.; Delibes/Montero 1999; Barroso et al. 2003; Bartelheim/Montero 2009, 9 f.). As many of the copper mines were reused during the Roman period, the layers of earlier extraction are often destroyed. As a result, prehistoric copper mining traces are difficult to detect. Through analyses of the isotopic composition of copper artefacts, an isotopic fingerprint can be generated that can facilitate the detection of the site the copper ore is supposed to be derived from. Prehistoric mining activities as well as the processing of ores can be traced by surface finds that indicate a connection to the work with copper ores (hammers, pestles, melting pots, moulds etc.).

Ore veins close to the surface and surface outcrops were localised and documented at the western foothills of the Montes de Toledo, meaning that they also exist in the hinterland of the study area (Montero et al. 1990; Barroso et al. 2003). For example, in Aldeanueva de San Bartolomé at the site of El Castrejón (chapter 5.2.2), the green ore appears within ore veins that run through the granite rock and are also associated with milk quartz. Surface surveys during the late 20th cent. (Carrobles/Méndez-Cabeza 1991, 7 f.), around 2007 (Pacheco/Pérez 2007) and again within this project in 2014, revealed potentially prehistoric finds at El Castrejón. During the 2014 survey mainly small sherds of hand-made pottery were found. Additionally, an artefact made of sandstone, which may have been used as a mortar (*fig. 19,* chapter 5.2.2) to separate ore from quartz, was documented as well. As mentioned in chapter 5.2.2, the hilltop of El Castrejón was enclosed by stone walls (surrounding approx. 1ha of the surface) that were described as possibly being Chalcolithic almost 30 years ago (Carrobles/Méndez-Cabeza 1991, 8). Therefore and because of the latest surface finds, the site was defined as a prehistoric walled enclosure. Within the enclosed space, some shallow and sometimes rectangular pits or trenches were recorded. Those may indicate mining activities, as the extraction work could have followed the ore outcrops at the surface to a low depth underneath the surface into the hill (*fig. 91*). El Castrejón combines indicators for mining (pits and ore veins) and the processing (mortar) only 18km south of the enclosures of the Tagus Valley near Azután. I. Montero and his colleagues (1990, 15) mentioned another location in the area of Aldeanueva de San Bartolomé, approx. 1km westwards of the dolmen of La Estrella. The trenches that could be detected there served to exploit malachite and azurite. They could be dated to Roman times. Up to now, no older prehistoric mining traces have been detected at this site. Hence, the site of El Castrejón as well as the mentioned Roman extraction traces demonstrate that less than 20km from Azután copper mining was possible.

The rural district of La Jara also offers abundant copper sources located 20 to 40km distant

from the archaeological sites of Azután. As far as presently known, these outcrops of copper ore veins did not show any evidence for copper exploitation during prehistoric times. Amongst the abundant copper sources of La Jara, the municipality of El Campillo de la Jara is especially known for its copper mining activities. Besides El Campillo, Sevilleja de la Jara is also very rich in copper ores and also gold deposits. Up until recent times, gold mining was practiced in the mountainous hinterland of the micro region both in Sevilleja de la Jara and in La Nava de Ricomalillo (Montero et al. 1990, 16–22). Whether the gold deposits in the western Montes de Toledo have been exploited in prehistoric times besides the use of placer gold as well must remain pure speculation because up to now no prehistoric gold mining traces could be detected in that area.

7.3 Ungraspable – Immaterial Resources

Many factors are important for a society to found a settlement or a highly frequented site and resources to fulfil the fundamental needs should be sufficiently available. Besides visible resources, material resources like water or silex, immaterial or intangible resources were mentioned before (chapter 1.1.1). They are resources such as knowledge, relationships or social structures (Storberg 2002, 469). They may have been used as cultural capital or as means to exercise power over certain parts of the community or communal life. Before discussing possible intangible resources of the society within the study area – which all must remain an interpretation deduced from the preserved material culture and bound by our own modern cultural limitations – the definition of resources with a focus on the intangible ones shall be briefly refreshed.

As stressed before, resources are of huge significance to individuals but are also essential for the interaction of individuals and groups and related to networks, systems etc. as well that play an relevant part in the formation of the community. These social interactions require the consideration of ‘culture’ not only focussing on necessities, but a range of possibilities should be included in the processes forming a community as well. Such possibilities can be the results of several different beliefs as well as a diversity of organisational practices that coexist for some time and develop in one or the other direction (also dependant on social actors, period, environment etc. – the complete sociocultural background). The social interactions and resources are part of this cultural openness. Therefore, natural products and raw materials are culturally connoted also and not only fundamental for survival (SFB ResourceCultures 2016, 17; Hardenberg et al. 2017, 14). Including the aforementioned statements in a definition of resources for cultural sciences, resources would be seen as ‘the means to create, sustain and alter social relations, units and identities within the framework of cultural ideas and practices’ (Hardenberg et al. 2017, 14).

Through this definition, resources are becoming an analytical tool. Actions of indivuals are under constant transformation because they are dependent on the cultural context they are performed in. With shifts in values and beliefs, the cultural context changes as well. New social contacts or practices, an introduction of new technologies or a new material resource influence the cultural background and the significance of a certain resource. This illustrates that resources usually appear in combinations and do not stand alone. Hence, a resource is usually connected to other resources (knowledge, objects, people etc.) that are needed for its distribution and the maintenance of its social role, resulting in several resources that act and react among each other within a ResourceComplex. Individuals remain in the focus of the change of a resource as their actions in social relations influence the ResourceComplex. Therefore, interactions within the social area between humans and animals, plants, ancestors for example can be regarded as resources with an essential role for changes or the maintenance of certain practices, rules or production processes of a community (SFB 1070 ResourceCultures 2016, 17–19; Hardenberg et al. 2017, 14–16; for the complete definition of resources of SFB ResourceCultures see chapter 1.1.1).

Immaterial resources can be certain social practices, beliefs and structures, the control of networks as well as the reference to and the maintenance of places connected to the ancestors. It is no

accident that these intangible resources seem to find their equivalent in the study area of Azután. Former studies already investigated ancestral references or interactions within a communication network, although they were not specifically listed as 'intangible resources'. In the present study, they will be reconsidered with the help of the newly introduced concept of intangible or immaterial resources or goods.

It has to be stressed again that the interpretation is based on the material remains that somehow were preserved over a timespan of 5000 years or more. They are just a tiny percentage of the objects that were originally in use and our knowledge of them is highly biased by the material they are made of, their size, chemical conditions of their environment, excavation techniques and many more factors. In addition, our interpretation of these objects is again biased by the researcher's knowledge and cultural background.

The dolmen of Azután was erected during the 5th mill. BC. A place continuity or reuse of the area can be assumed, as further back during the Early Neolithic times a dwelling was built at exactly the same spot where centuries later the dolmen was constructed. The main usage phases are the 5th and 4th mill. BC with a later reuse during the Bell Beaker period in the second half of the 3rd mill BC. Another dolmen of a similar construction type and the same chronology has been constructed only few kilometres southwest of Azután in the municipality of La Estrella (chapter 3.3). Both dolmens consisted of a corridor and a chamber of large granite blocks covered by a mound of earth. These so-called orthostates were decorated. The engravings and paintings of different colours could only be seen from the interior, for example when depositing another deceased and only by the people that were allowed to enter the burial monument (Bueno 1991; Bueno et al. 2005a; 2016a). Evidence for a reuse of older stelae and menhirs can be found at the entrance of the dolmen of La Estrella and in the chamber of the dolmen of Navalcán (Bueno et al. 2017, 27), the latter at an approx. distance of 30km from Azután. Such a reuse can be assumed for Azután as well.

Although the burial practice of collective burials appears to be something rather egalitarian, neither was everyone allowed to enter the grave nor was each member of the community placed in a megalithic tomb after death. Often it seems as if a certain group of people (families?) was buried in certain megalithic monuments, as can be assumed for the burials in the Valle de las Higueras (chapter 2.3.3: Bueno et al.). Even within these collective burials of certain groups or communities, individual tendencies can often be observed. The trend towards individuality can be noticed since the construction of the first megaliths. This is expressed by the segregation of a group – being deposited in a certain area of the chamber or separated by additional walls – as well as individual burial gifts that can sometimes be detected. This might have served to emphasise the importance of these individuals for the whole community. Ancestral lineages were strengthened by collective meals and drinks. Taken together with prestige goods or individual burial gifts for certain members of the burial group, influence and power of a certain group inside the community was stressed. The individual tendencies within the megalithic burials were not restricted to a certain gender nor to a certain age; children, adults as well as elderly persons, males and females could be object of such singular treatments in death. The social status and therefore the familiar organisation and the reference to ancestral lineages seem to have been more important than a person's sex (Bueno et al. 2005a, 77–79). This kind of continuity in individualisation, which can be observed in megalithic burials from the 5th until the late 3rd mill. BC, is interpreted by Bueno and her colleagues as the use of ideological resources in favour of more and more consolidated elites (Bueno et al. 2005b, 86; 2017, 31). To strengthen this immaterial resource of ideological power, the reference to the ancestors – including the reuse of older menhirs and stelae to maybe even prolong the ancestral lineage – might also have turned the burial mounds into sacred places. Through worshipping the deceased of one leading group or family, their authority and influence may have been further consolidated. Heritable power that was based on emphasising ancestral lineages to justify a social order also may have led to more social conflicts.

The visible burial mounds could have been a tool for the justification of leadership through individualisation within a place of collective

burial. A further segregation might have existed between people who were allowed to see the interior space of the dolmen and those who were not allowed to enter. Additionally, the visible burial mound might have also served as a graphical and topographical marker. For example, it might have indicated a certain territory associated with a certain group of people or marked the safest and most convenient path through the plains and mountains of the Mesetas. These marked routes and paths belong to the immaterial resources of the study area and are looked at more closely in chapter 8.2 in conjunction with the organisation of the prehistoric landscape. Some of the most important settlement areas developed in areas of easy transit and important interconnection. The wide landscape in the west of the province of Toledo, where Azután is situated on the terraces of the Tagus, is such an area.

Another way to highlight collectivity but also a means of separating an inside from an outside space are the enclosures. The huge El Prado double-ditched enclosure located on the southern bank of the Tagus River and the possible ditched enclosures of Los Viñones and Los Pedazos on the foothills of the Montes de Toledo in direct vicinity to the dolmen of Azután (chapter 5.3.2 and 5.3.3) were places that probably expressed this communal idea of collectivity. Besides the separation into an enclosed space and the outside area by deep ditches and maybe palisades, these enclosures must have been an expression of a massive common performance (building) as well, showing the power to gather a certain amount of people for the construction of a huge site like this. The substantial number of pits – approx. 1180 only in the geomagnetically investigated area – indicate a place that has been visited regularly through many decades and centuries. This is strengthened by the typology of the surface finds that cover various centuries as well as the ^{14}C-dates obtained from the excavated pits (chapter 5.2.2 and 6.3.1). The building process of the enclosure and the process of digging the large number of pits that were used for various purposes during their operating life (storage, food preparation and waste pit) stress the significance of collective tasks.

The enclosure is situated at a strategic position along the Tagus, as the river is not easy to be crossed and the Prado enclosure seems to have included one of the rare fords. Feasts, common rituals gathering people as well as the strategic position within a communication network at a northsouth/eastwest-junction were probably used by the burial community of the dolmen (leadership?) as resources to both demonstrate power and to celebrate feasts that could have served to ensure the support of the community. Further intangible resources besides the organisation and social cohesion are both the transfer of knowledge as well as the transfer of technologies. To be in possession of special knowledge, transfer may have taken place as well. Maybe such an exchange took place during the gatherings in the double-ditched enclosure. Knowledge is power and being able to bundle knowledge by either having it or recruit and retain it in the form of specialists catering to the leading group – meaning it can be shared with or deprived from others – assured the superordinate level of one group. Knowledge on pottery production and composition, the detection and processing of ore or the breeding of domesticated animals would be conceivable among others.

As mentioned in the chapter on the resources of the mountains (chapter 7.2), different types of stone as well as copper ores that could have been exploited are present in the hinterland. In two places those resources seemed to have been protected by walled enclosures (El Castrejón and La Cabeza del Conde). Besides protecting the resource of metal ore, those sites might have served as territorial markers, similar to the dolmen as well as the ditched enclosure of El Prado (*fig. 92*). This is another immaterial aspect that completes the image of the perfect position of the sites of Azután: fertile land in the valley, ores in the hinterland, an east-west corridor, a ford across the Tagus (northsouth corridor). Chapters 7.4 and 8 will further focus on the territorial markers and a system of exploitation of the landscape.

Up to now, the investigations in the micro region already hint to a certain organisation of society. The possibility to gather and hold a certain amount of people as well as surplus production and a system of leadership supposed to maintain the social organisation, which may have been based on families or related groups

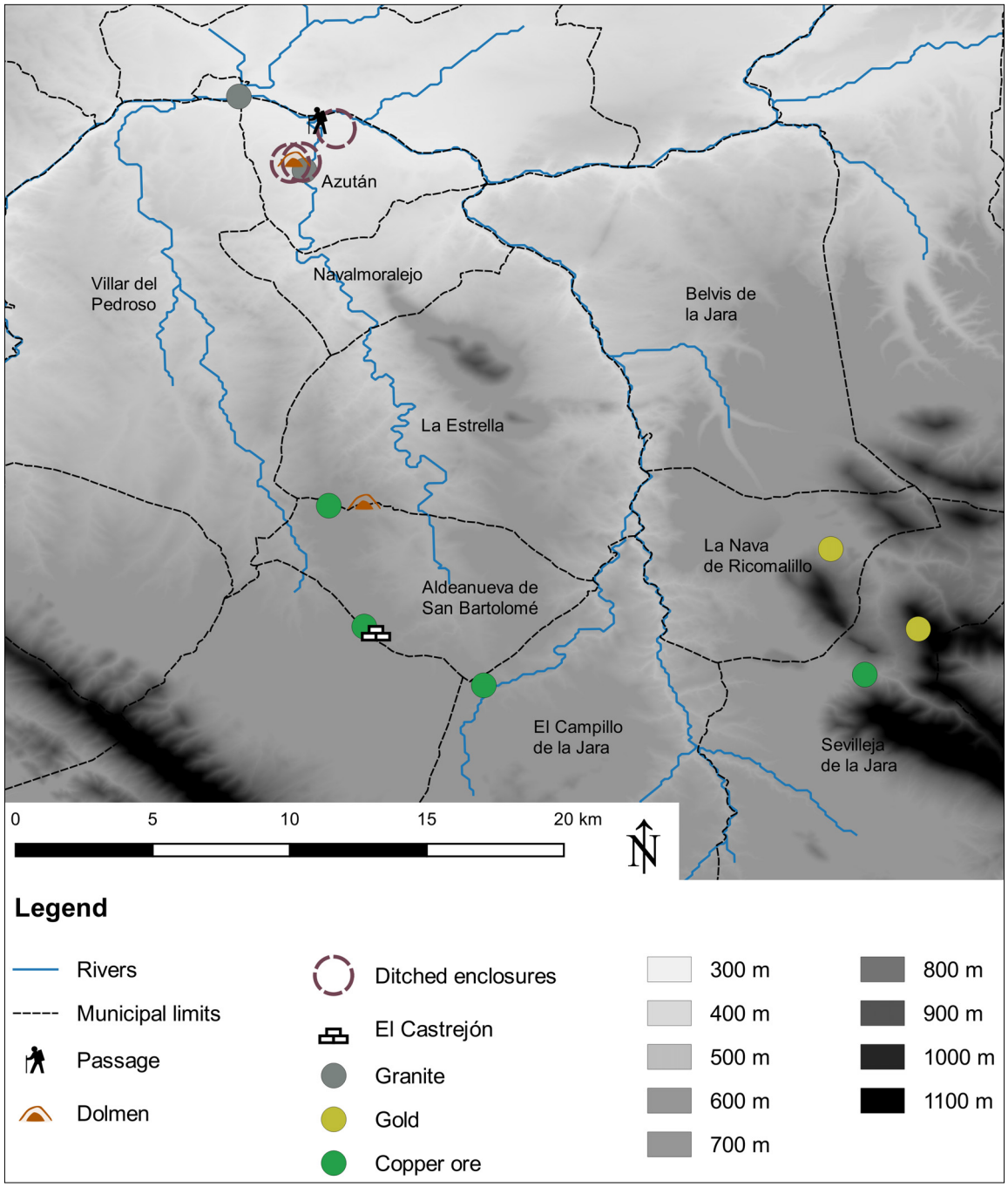


Fig. 92. The map shows both some of the material resources mentioned in chapter 7.1 and 7.2 as well as immaterial resources such as dolmen and enclosures marking the way to the perfectly positioned Prado enclosure down by the river.

that trace back their importance by the emphasis of and the reference to the ancestral roots in the region. Megaliths, ditched enclosures and fortified settlements are the three visible elements of this system of social cohesion, using certain burials as means for the constitution of political power (Bueno et al. 2005b; 2017; chapter 2.3.3).

7.4 All the Small Things – The Economic Base of Society

It has been suggested several times in this thesis that different ResourceComplexes and not only one ResourceComplex (for the definition of ResourceComplex see chapter 1.1.2) – or economic base of society – contributed to the favourable

location of the micro region selected for this study (chapter 2.3.1, 2.3.2, 4.2). Agropastoralism, accompanied by a spread of the *dehesa* system, the exploitation of forestal and aquatic resources, suggest the mixed system of farming and cattle breeding connected with the use of seasonally available wild products (such as berries, honey, undomesticated animals). Besides this interaction of different subsistence strategies, another relevant factor was the integration into a communication network by the positioning along an east-west corridor and at a strategic position along the Tagus middle basin. A closer look at these statements will be provided now and in the following chapter. The Tagus River and its middle basin certainly can be regarded as one of the most significant resources in the study area, not only because it is a source of fresh water but also because of the excellent central position on the Iberian Peninsula, which has been emphasised by Bueno and her colleagues (e. g. Bueno et al. 2005a; 2010; 2016a). As mentioned before, the study area along the Tagus middle basin forms a natural corridor connecting the east and the west. North and south of the river, the landscape of the southern Meseta is framed by mountain ranges which can be crossed via passes. In combination with old drove-ways (*cañadas*) they facilitate the connection to other rivers: the Guadiana in the south and the Duero in the north. This kind of contact has certainly already been possible in prehistoric times. Obviously, the central position of the Tagus that connected heterogeneous areas made it an important intersection (Bueno et al. 2010, 154).

Quite a few studies have dealt with the relation between *cañadas* and megalithic sites and revealed close spatial connections between the old drove-ways and the Neolithic and Chalcolithic sites. Therefore, it can be supposed that these transhumance tracks were established and in use long before the foundation of the *mesta* by the end of the 13th cent. AD. The close connection of megaliths and other sites to the path network indicates a far older use of these ways that reaches back in times of the prehistoric communities (Galán/Martín 2009; Murrieta-Flores 2012).

Megalithic burials as well as stelae have been said to have served as visible markers for the easiest ways; the course of the subsequent *cañadas reales*. These visible monuments might not only have marked the routes of the Neolithic and Chalcolithic communities but also guided people of this study area on their everyday ways. Hence, they may have been omnipresent in their minds as well (Bueno et al. 2015, 62–64). The assumption of megaliths acting as visual markers for certain routes across the Iberian Peninsula was investigated and considered as conclusive for several areas along the Tagus (for more detailed information see Bueno et al. 2004; 2010; 2015; 2017). This is also the case for the research area of this case study (Bueno 1991; Bueno et al. 2005a). The two megalithic burials of La Estrella and Azután were already mentioned in that context. They are situated along a drove-way known as *cañada real leonesa oriental*. It leads from Ávila on the northern Meseta across the Tagus in the valley of Azután to Puerto the San Vicente in the south. It is not only connecting the northern and the southern Meseta through the passage across the Gredos Mountains but also allows the connection of the Tagus basin with the river basins of the Duero in the north and the Guadiana in the south. The argument for the relevance of the communication route and the significance of the archaeological landscape in the surroundings of Azután is strengthened as well by the location of the walled enclosure of El Castrejón in the municipality of Aldeanueva de San Bartolomé and the latest discoveries of the ditched enclosures on the southern bank of the Tagus and on the foothills of the Montes de Toledo. The Tagus is a perennial river and as such often cuts its way canyon-like into the ground. This is especially impressive in Toledo (city) but is also the case from El Puente del Arzobispo to the west, which makes the river difficult to cross. Natural fords are rare. As a matter of fact, the location of the double-ditched enclosure adds another advantage to the micro region of Azután; it is situated at one of the rare natural crossings. The huge enclosure El Prado may even have surrounded the passage and served to control and protect the favourable place.

Fertile soil along the terraces of the Tagus middle basin not only facilitated animal husbandry and offered enough pasture to feed the cattle but also analyses on archaeological material deriving

from the sites of Azután (dolmen and El Prado) as well as in the north of the province (Huecas) support the cultivation of cereals in the surroundings (Bueno et al. 2005a; 2005c; 2009; 2010; chapter 6.3.2). The study of the archaeological record of the dolmen of Azután proves the use of wheat since the 5th mill. BC. This strengthens the assumption that wheat had been cultivated right from the beginning of agriculture on the Iberian Peninsula. Evidence for wheat agriculture around the middle of the 5th mill. BC and even before can be found both on the southern and the northern Meseta. The site of La Atalaya (Muñopepe, Ávila) on the northern Meseta (Guerra et al. 2012; 2015) provided dates of the 5th mill. BC as well. Even older proof for the cultivation of wheat was documented on the southern Meseta in the site of Los Barruecos (Malpartida de Cáceres, Cáceres), which dates back to the late 6th mill. BC (Cerrillo 2005). Previously the assumption was to negate early wheat farming in Central Iberia, claiming it slowly diffused from the Mediterranean regions into the centre. Studies of the last two decades found more and more evidence to contradict this traditional diffusionist view. Apparently, agriculture and forestry played an important role from the beginning of the Neolithic onwards. Besides the use of the forest for hunting wild animals, collecting herbs and berries as well as honey, a mixed system – the *dehesa* – was established that allowed the use of the spaces between the predominant oak trees and beneath the canopy as cereal fields or pasture for the domesticated animal. While acorns served as an additional food source for pigs, there is enough evidence all over the Neolithic of the Iberian Peninsula that they played a role in human nutrition, too. This is reflected among others also in the sites of Azután and Castillejo, where acorns were ground into flour and, mixed with other food, consumed as some kind of porridge (Bueno et al. 2002; 2010, 157 f.).

Analyses of phytoliths as well as of residues in pottery allow insights into the range of consumed products and offer hints on vegetation of the prehistoric landscape. They are supported by palynological data that reveal a more holistic image of the environment, too. Palynological samples deriving from the dolmen of Azután and the burials of Huecas give indications for the clearance of the landscape as well as expanding agriculture (chapter 2.3.2 and 2.3.3). Both cereal (*Cerealia*) pollen and the spurs of coprophilic funguses point to the availability of grassland for cattle feeding and breeding and enough open spaces for the cultivation of wheat (López et al. 2009, 95–97). These analyses show clear evidence of deforestation during the time between 4000 and 2500 BC. A once dense holm oak (*Quercus ilex*) forest cover transformed into a landscape described as *dehesa*-like. Not more than approx. 15% of all vegetation is represented by holm oaks; a significant reduction of this tree species. They are, together with juniper, still the dominant type of tree (López et al. 2009, 94 f.). The number of juniper and oak pollen as well as the presence of acorns in archaeological contexts illustrates the beginning of the *dehesa* economy (Bueno et al. 2005b, 84–86; 2005c, 86–88). In addition to the evidence for cereals by several methods of analysis and the presence of domesticated animals, the increase of pollen of shrubs and bushes points to a rather sedentary farming and cattle-breeding economy, as does the *dehesa* landscape (Liesau 2009; López et al. 2009, 96 f.; Bueno et al. 2009, 54 f.; López/López 2000; Schmitt 2017). A land use in the form of farming, cattle breeding and forestry forms the most decisive ResourceComplex of the Neolithic and Chalcolithic periods. Thus, the combination of communication, mobility and connectivity integrated Azután with the prehistoric communities of the 4th and 3rd mill. BC.

New analyses of phytoliths from the excavation of 2015 confirmed the results concerning the cultivation of cereals mentioned above. Because of the soil conditions, unfortunately no pollen survived in the samples taken from three of the pits and the inner ditch (chapter 6.3.4; arenaceous conditions ground the pollen over the millennia). The most significant ResourceComplexes (economic bases) around the turn of the 4th to the 3rd mill. BC seem to have been the control of the communication network as well as agropastoralism. This included resources such as the system of paths, the river, visual markers, fertile soil, the ability to gather people as well as the connection to the ancestors and the perpetuation of certain social structures. The organisation of the landscape will be closely considered in the following chapter, starting with the theory on central places.

8 Organising the Landscape

One of the final points that will be considered in this study is the integration of the micro region of Azután in the general landscape with a special focus on central places, intersections and gateways. After having discussed the favourable position of the Prado enclosure as well as the resources of the Tagus valley and the mountainous hinterland, the focus will be on the attempt to reconstruct the organisation among the different types of sites in the prehistoric landscape. As far as possible, an interpretation of the purpose of the large double-ditched enclosure in the valley will be given. Regarding the small size of the excavated area and the limited knowledge concerning the huge site, the interpretation cannot go beyond initial considerations. Further archaeological research combined with detailed scientific studies as well as geophysical investigation will be necessary to find out more about the purpose of El Prado and its surroundings. Before discussing the structure and organisation of the Early Chalcolithic landscape of the research area or the function of El Prado a short explanation of the theory of central places and gateways will be given.

8.1 In and Out – Theory of Central Places and Gateways

Investigating territories and central places means investigating the relations between human and environment also (Ullmann 1980, 13) and therefore is a key issue when investigating resources. Thus, an understanding of the theory of central places is necessary. W. Christaller developed the original central place theory in 1933 to understand the basic principles that determine the distribution and the size as well as the number of cities. His theory defines the purpose of being a centre of a certain area as the most important function for a city (Christaller 1968, 23). Being a central place increases the meaning of a city as it is supposed to provide the area it dominates with goods (material resources) and services (immaterial resources, e. g. administration or cultural events). Centrality thereby is the degree to measure the influence of a place and how it can provide its complementary region with goods and services (Christaller 1968, 27–30). Centrality is not only given by the supply with commodities but requires a production of surplus in relation to the demographic density of the catchment area (Knitter 2013, 7 f.; see also Nakoinz 2012, 217).

According to Christaller, neither the distribution, nor the amount or the size of settlements can be understood if only regarding the natural location and conditions. Additionally, it would be feasible to deduce the principles, which lead to a certain organisation of places, only through statistics or historical studies (Christaller 1968, 13). As Christaller considered an economic-geographical theory with a deductive approach as a potential answer to the organisation of places, he developed an economic, spatial-equilibrium theory. Through this theory an ideal pattern of settlement will result that is based on the competition for space (Christaller 1968, 13–16; Pacione 2009, 125). However, Christaller's model assumes the world to be an unlimited, uniform plain, without obstacles and with the same settlement conditions in each place. This leads to cost and distance being in proportion to each other. He assumes the population to be equally distributed as well as evenly constituted in their income and supposed to have the same demands. The central place has the purpose to provide goods and services for the associated sites and places of its surroundings. Human beings are exclusively thought of as economically acting persons (*Homo economicus*), following the logic that as consumers they always chose the closest supplier to minimise the distance, while the supplier aims to maximise the profit. Besides that, the suppliers do not only want to maximise their profits but also their clientele by locating as far away as possible from the next supplier to ensure that the consumer visits the closest centre (Knitter 2013, 7 f.). It is all about maximising on the suppliers' side and minimising the temporal and spatial expenditures on the consumers' side.

The original central place theory only refers to formal economic criteria. Therefore, changes for prehistoric studies have been made. Regarding Christaller's principles of settlement distribution (trade, market and administration), studies suggest that neither in a contemporary nor an archaeological context one distinct principle is present; it is usually a complex combination of these three principles (e. g. Bernbeck 1997, 171).

The basic points of critique of Christaller's theory are

– that it cannot be applied to each type of settlement;
– that it massively simplifies human behaviour especially because it is determined by the economical component;
– that it is static;
– that it does not include political decisions.

For settlements under external influences, models integrating supra-regional connections or networks are needed (Crumley 1979, 152; Knitter 2013, 10–12). D. Denecke simplified the concept of central functions that define a place of high importance and made it applicable to historical periods (Denecke 1973, 51). It was E. Gringmuth-Dallmer who adapted the concept of central functions for studies dealing with prehistoric times up until the Middle Ages (Gringmuth-Dallmer 1996). According to his concept, the functions characterising a central place are security and administration, trade and religion as well as craft and industry. He assumes that the more functions are present at a settlement, the more complex and multi-layered it is. This would make central functions a tool to measure centrality, allowing a reconstruction of settlement hierarchies (Gringmuth-Dallmer 1996, 8; Knitter 2013 10–12). If a place fulfils more of the stated functions than another it would be higher ranked in the hierarchy and perform more relevant services for the community. Eventually, O. Nakoinz linked the functions defined by Gringmuth-Dallmer to the original central place theory of Christaller. Regarding the central place theory, Nakoinz describes it as a theory that is supposed to have the aim to outline the spatial organisation of interaction between several places. This is why the definition of Nakoinz focuses on the latter, the interactions. D. Knitter summarised the key statement of Nakoinz's adaption as follows: 'Centrality is the relative concentration of interaction' (Knitter 2013, 12). Christaller's term of centrality is generalised by this definition, which allows the integration and the investigation of human actions of any type, be it of economic, spatial or social kind or the contrary (Nakoinz 2012; 2019; Knitter 2013, 10–12).

The central place theory describs the processes related to a settlement's external relations that are taking place on a local scale (Taylor et al. 2010, 2811). The regional and supra-regional relations should be covered as well. Therefore, another concept must be considered: the concept of gateway cities or sites. Such a gateway site is supposed to develop at marginal areas of production regions. The purpose of a gateway is the control and the facilitation of connection and contact between the so-called outside world and the central place it is related to (Burghardt 1971, 269). Gateways are forming the focal points at the integration of their supplier region and surroundings in a larger economic context (McKenzie 1967, 4). Generally speaking, gateway sites emerge at a number of location and due to different initial situations defined by A. F. Burghardt (1971, 270) and K. G. Hirth (1978, 37). They develop

– at intersections between regions of different production directions;
– along zones of different economic character;
– along natural corridors of communication;
– at critical passages that are located between highly productive or densely populated areas;
– at locations with a strong demand for limited resources;
– at the interface between zones of different socio-political or technological complexity or with differing religious believes.

A gateway has the tendency to be situated between different regions. While the gateway is operating on the supra-regional trading scale, a central place is located within a region in the production centre and has local connections. According to this, gateway places are defined by long-distance connections. While central places are situated in the centre of an area and focussed on the interconnection with its tributary places, the gateway is located at or close to the border of its tributary area with the function to handle the supra-regional contact (Burghardt 1971, 269 f.; Nakoinz 2013; Knitter 2013, 13 f.). Regarding both function and location

of each type of place the supply area is supposed to be shaped differently. A central place has a compact supply area (squared, circular or hexagonal), while a gateway place apparently has an elongated, fan-shaped supply area (Burghardt, 1971, 270). Burghardt explains it best when he describes it in a very picturesque way: '[…] one may envisage the central place as the centre of a bowl, the gateway as a funnel or spout.'

The development of those theories and their application – especially of the theory of central places – on studies dealing with archaeological sites all over Europe and in other regions as well has been very influential during the last years and decades to get an idea about the prehistoric distribution of sites and how ancient communities used the landscape (e. g. García et al. 2013; Müller et al. 2019; Papantoniou/Vionis 2019). Here is not the place to discuss these studies *in extenso*, it should be kept in mind that in the case of the Iberian Peninsula the sites defined as central places in the 1980s and 1990s (e. g. Nocete 1989; Morán/Parreira 2003; Hurtado 1995) must be reconsidered with today's knowledge of the settlement areas. Detailed large-scale studies in the environs of supposed central places significantly increased the number of known small sites as well as such of several hectares' sizes (e. g. López 2016; Valera/do Pereiro 2013; Valera 2023).

The detection of the double-ditched enclosure El Prado as well as the mapping of the unpublished and potentially late prehistoric sites of the province of Toledo (chapter 5 and 6) also changed our knowledge on several settlement areas. The 'deserted' interior turns out to be neither sparsely settled nor lacking large-scale enclosures.

With this short explanation of central places and the introduction of gateway places as a background the following part approaches the meaning of Azután and focusses on the reconstruction of the micro region during the Copper Age. What can be said about the organisation of the landscape and the interconnection of the sites, and could Azután have been integrated in the communication network of the Early Chalcolithic? Depending on the purpose and function of the sites and especially the huge enclosure El Prado, areas of potential conflict or peer group pressure may have resulted as well from the separation of certain areas.

8.2 Ruled by Secrecy – The Purpose of the Prado-Enclosure

What kind of site were the Prado enclosure and its surrounding area? Did they possess redistributional and connecting functions that would define them as a gateway or was it a central place of agglomeration? Other possibilities are that it might have served as a gathering point for social activities or had religious meaning for the community.

To shed some light on these questions and considerations, some points need to be clarified first. A crucial factor is the environment (climate, vegetation, topography and the available resources). Environmental characteristics are an important factor in human spatial organisations. Besides the environmental conditions, the chronological situation between the sites in the micro-region has to be examined. Theories about the organisation of sites and their surrounding landscape strongly depend on whether sites were contemporaneous or not. The size of a site and its location must be considered, but also human choice and ritual reasons played a part in the selection of a certain area. The idea – stated in a similar manner by Bueno (1991; Bueno et al. 2004; 2005a) for the southern Meseta on several occasions – is that burials, ways of communication as well as enclosures or settlements marked certain territories and were an expression of social structures. Based on the previous research of Bueno and including the new investigations undertaken in the study area of Azután and the surroundings of the dolmen this idea will be reapproached. The question to what amount the resulting assumptions can be applied to other parts of the southern Meseta can be of interest for future studies as well.

The geomorphological situation (chapter 4.1), the results of the palynological studies (chapter 4.2) and the work in the archives as well as the archaeological fieldwork (chapter 5 and 6) have already given an impression of the high prehistoric potential that can be expected in the next years, given that further projects will investigate in the micro region of Azután and other areas of the province of Toledo. Additional geomorphological studies undertaken in other parts along the Tagus River (e. g. Wolf/Faust 2015) can contribute to further approximation to the prehistoric

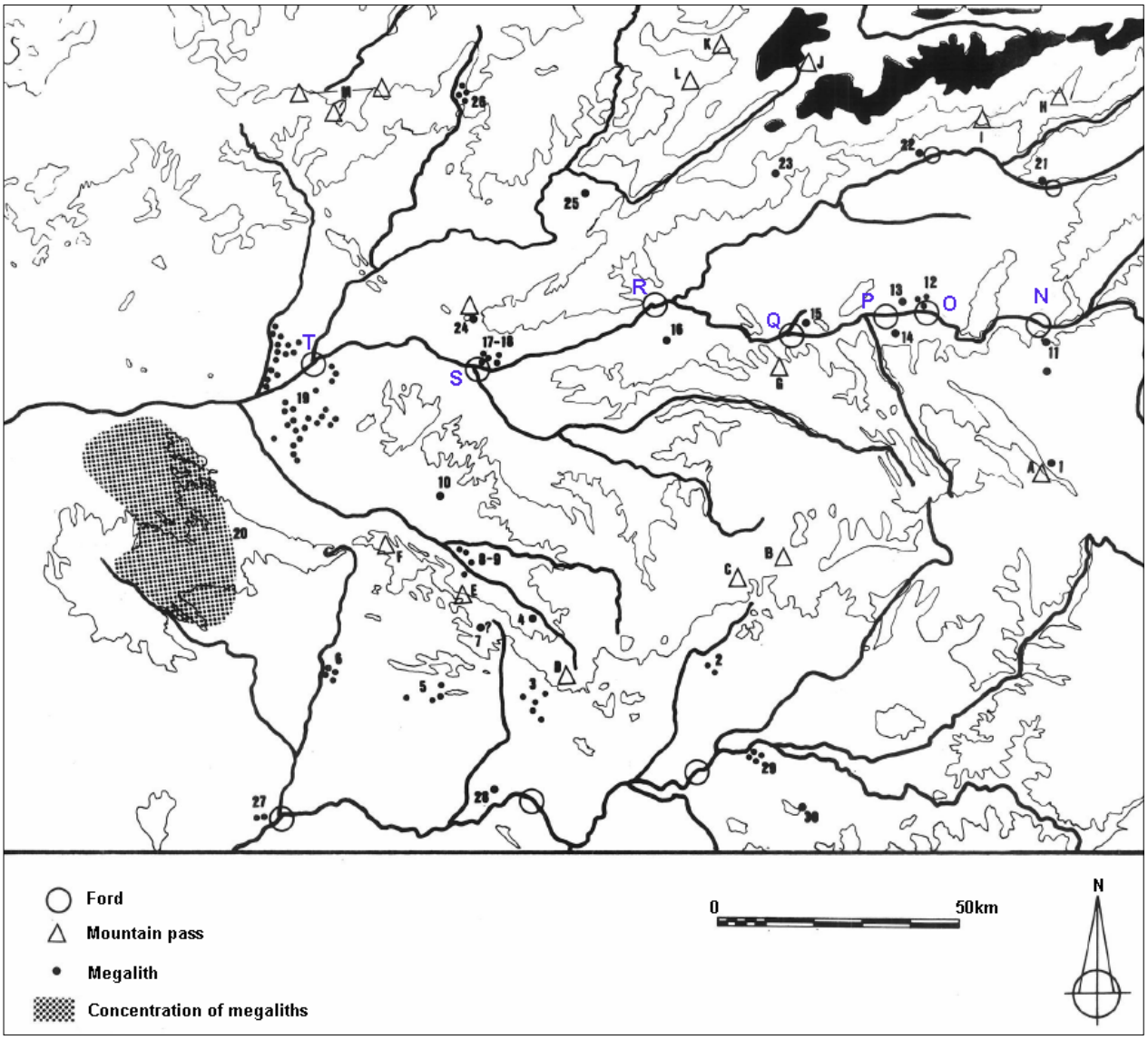


Fig. 93. Galán and Martín combined the known megaliths, fords as well as mountain passes in a map. Often passes and fords correlate with the location of megaliths. The ford of Azután is indicated by the letter N (modified after Galán/Martín 2009, 197, fig. 1).

environment. Obviously, the surroundings of the modern town of Azután provide a favourable situation: In comparison to its southern hinterland the location on the fertile terraces of the Tagus River offers abundant clay sources and ideal farm- and pastureland. Granite and quartzite deposits can be found in the direct vicinity. The latter were used for the construction of megalithic monuments, grinding stones and other tools. Cooper ores were available and probably extracted by surface mining in prehistoric times in the mountains not far away (Montero et al. 1990; Barroso et al. 2003; chapter 7.2). All these factors along with the presumably *dehesa*-like landscape (amongst others López et al. 2009, see chapter 2.3.2 and 4.2), reveal that the settlement conditions for the people 5000 years ago have certainly been very appealing.

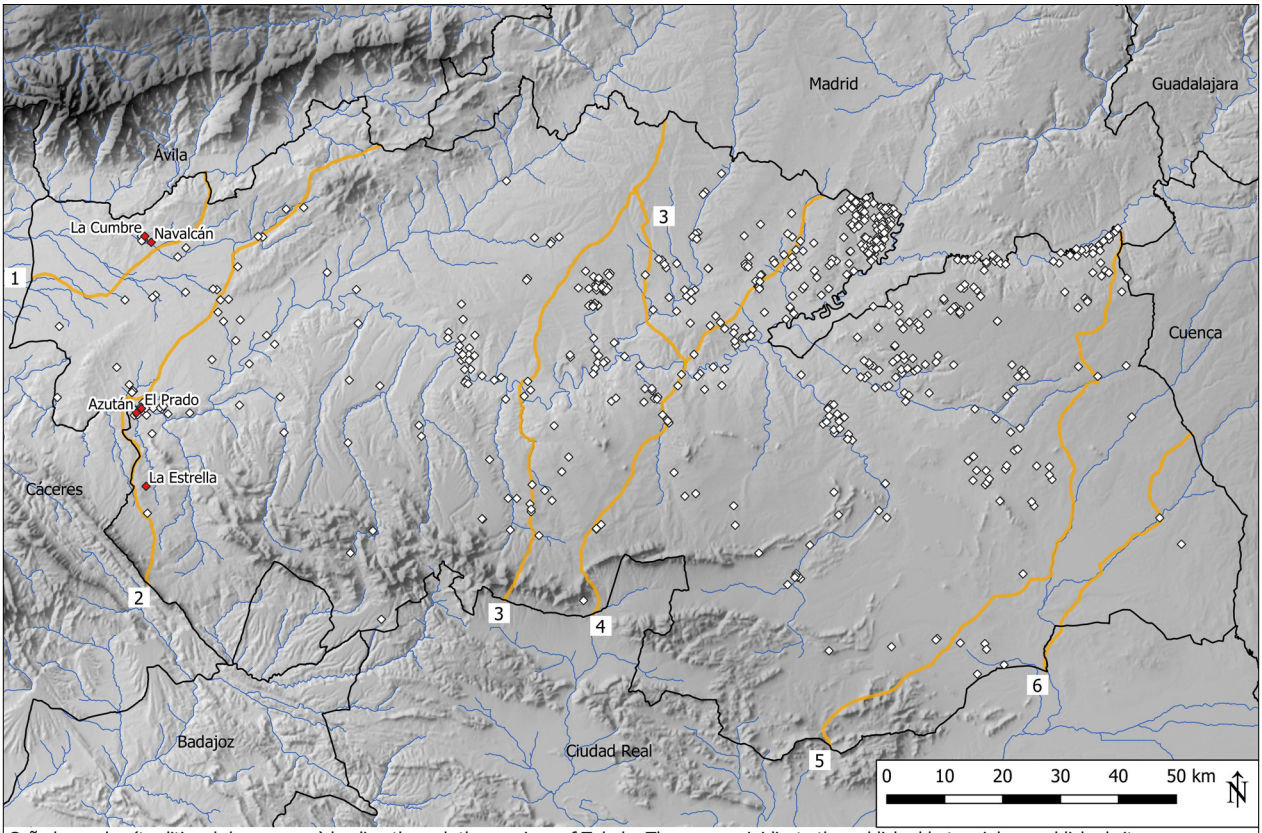
A study about the location of megaliths in relation to fords across the Tagus carried out by E. Galán and A. M. Martín (2009) pointed out an additional favourable settlement condition for Azután. As mentioned, the Tagus is a perennial river, which cuts canyon-like into the landscape often. This, for instance, is the case at the old city centre of Toledo and behind El Puente del Arzobispo in western direction. In prehistoric times rivers like this not only served as a communication route but may have divided regions and served as

borders also, whenever they were impossible or difficult to cross. As Galán and Martín illustrate in one of their figures (*fig. 93*) one of the rare fords across the Tagus was located close to Azután (N). The next ford is more than 20km away (Talavera la Vieja (O)). In their study about the location of megalithic monuments, the authors draw a persuasive connection between megalithic monuments, river passages and mountain passes (Galán/Martín 2009, 199–202). They point out that besides the practical or ritual use of megaliths (burial grounds or carriers of messages) the burial mounds or stelae also served as territorial or path markings.

Another study in western Andalucía investigated Copper and Bronze Age sites with the aim to reveal the main routes used during these periods. The focus was on the connection between all known sites and the possible human movement in a defined study area. By using computational techniques natural corridors and possible main routes were defined and analysed by P. Murrieta-Flores (2012, 108–113).

Both studies intend to strengthen and emphasise the link between routes and site location but do not refer to the local conditions of the sites. It remains unclear whether the sites are situated where they are due to the routes and the connection to the communication network or due to other favourable settlement conditions. In the case of the study area around Azután both aspects are combined: a favourable situation for agriculture on fertile ground and abundant resources to settle as well as the ford across the Tagus, which suggests the location of the Prado enclosure alongside a well-used route. Including the locations of the dolmen of Azután as well as the other three megalithic burial mounds of Toledo (La Estrella, Navalcán, La Cumbre), the theory of settlements and megalithic monuments marking territories and ways of communication is strengthened (see Bueno 1991; Bueno et al. 2005a). These megalithic burials are located alongside the *cañadas reales*; the traditional drove-ways of Spain (transhumant routes). In historic times, they were mainly used by herdsmen of flocks of sheep and goat herds to drive the animals from the winter pastures to the summer pastures and in reverse, selling their meat and fur on the way (Zöbl 1982, 6–14, chapter 2.3.1). It is not yet satisfactorily probed whether those routes go back to prehistoric times, although the project reinforced the theory with the detection of the huge enclosure on the terraces of the Tagus as well as the fieldwork in the valley and the mountains. Hence it cannot be denied that Azután and the 13km distant dolmen of La Estrella are situated alongside the *cañada real leonesa oriental* from Puerto de San Vicente to Ávila just as the dolmens of Navalcán and La Cumbre – a distance of 30km from Azután – are located alongside the *cañada real leonesa occidental* (*fig. 94*). The routes mapped below are only a depiction of the most frequented routes through the province of Toledo or to certain places in the province. Further routes exist in the 'Red Nacional de Vías Pecuarias' (National Network of drove-ways) provided by the Spanish government and these often interconnect both the *cañadas reales* as well as other drove-ways. Besides the striking location of the dolmen as well as the ditched enclosures and El Castrejón along the old drove-ways, most of the sites agglomerate in the vicinity of the river systems of the province. Although rivers can sometimes be difficult to cross they often belong to the least cost ways, because the wide valleys allow easier movement.

Further fieldwork in this area at the western edge of the province of Toledo, where the valley widens in the direction of the Extremadura, might show that Late Neolithic and Early Chalcolithic activities in the area were not restricted to the burial of the deceased but also included settlement activities, gatherings and more. This part of the southern Meseta is a region connecting different landscapes (e. g. wide fertile valleys, mountainous hinterland). As El Prado is the only large ditched enclosure known from the centre of the Iberian Peninsula it might be interpreted as the connecting point between different socio-cultural regions defined by the size and layout of their enclosures. Palynological and archaeobotanical studies confirmed the practice of agriculture in a *dehesa*-like landscape. Sheep and goats were more important for the economy then pigs and cattle (chapter 6.2) which points to a society based on agropastoralism. Fertile soil, abundant copper and gold resources as well as clay, stone and silex sources formed the basis for settlement. Megalithic burials equivalent to burials known from the Extremadura and enclosures



Cañadas reales (traditional drover ways) leading through the province of Toledo. The squares inidicate the published but mainly unpublished sites.
1: Cañada Real Leonesa Occidental; 2: Cañada Real Leonesa Oriental; 3: Cañada Real Segoviana; 4: Cañada Real Galiana; 5: Cañada Real Soriana Oriental; 6: Cañada Real de Alcázar.

Fig. 94. The six *cañadas reales* that lead through the province of Toledo in connection with all the sites mentioned in chapter 5.1.2 and 5.2.2. The locations of the four megalithic burial mounds in the west of the province of Toledo as well as El Prado are marked in red (map based on the modified MDT200-TOLEDO © Instituto Geográfico Nacional and other information provided by the Spanish government institutions; traditional ways digitalised after the Red Nacional de Vías Pecuarias).

similar to sites known from the Alentejo indicate supra-regional contact.

Considering the factors that define a site as a central place or a gateway, Azután fulfils more requirements for a gateway than a central place. The area

- is situated at the intersections between different regions of production;
- is located along natural communication corridors;
- seems to have long distance connections;
- is situated at a critical passage that also serves as a contact point.

The dolmen and the enclosures are probably connected to each other due to their proximity and in the case of El Prado this is even more likely because of overlapping ^{14}C dates. The Anguilucha Brook flowing between the areas of the dolmen and the small enclosures and El Prado may have divided the landscape into an area of the living and an area of the dead. Each of the dolmen in the west of the province of Toledo is situated along the *cañadas.* In addition to the original purpose as a burial they probably functioned as visual markers also as already supposed by Bueno and her colleagues. The megalithic burial mounds appear in the valley, in the case of Azután at the foothills and in the hills, marking the way through the hills into the valley.

8.3 Where the River Flows – Structuring the Landscape of Azután

When trying to structure a prehistoric landscape, the absolute dates of the sites must be considered, as contemporaneity is a crucial criterion for an interpretation and interaction of the sites in the

micro region. A closer look at the chronological depth of the sites in regard to a possible simultaneity in absolute dates is possible for the dolmen of Azután and the Prado enclosure. Relative dates deriving from the excavation of the dolmen of La Estrella and the survey material are considered as well when trying to structure the Early Chalcolithic landscape of Azután.

As mentioned, the megalithic burial mound of Azután comprises several utilisation phases (amongst others, chapter 2.2 and 3.3). Beneath the mound, a Neolithic settlement phase has been identified by the dwelling foundation below the dolmen. It was dated to the end of the 5th mill. BC (4230–3973 calBC). ^{14}C-dates taken from the megalithic burial itself date the construction of the monument of Azután to the end of the 5th mill. and the first half of the 4th mill. BC (4039–3657 calBC; Bueno et al. 2016, 162). Based on these dates and the finds, it can be assumed that the main usage phase of the dolmen has been the 4th mill. BC, with a subsequent use during the Bell Beaker period in the second half of the 3rd mill. (Bueno et al. 2005a, 117–131).

The structures excavated in the interior of the double-ditched enclosure El Prado and the dates deriving from the excavation of a small part of its interior ditch confirmed the relative chronology based on the surface finds and revealed a long chronology and place continuity on the terraces of the Tagus River. Although the ^{14}C-dates cover neither exactly the main utilisation phase of the dolmen of the first half of the 4th mill. BC nor the later Bell Beaker phase, surface finds indicate settlement activities during this time. All ^{14}C-dates from the enclosure either date back to before the main phase of the dolmen or very close to its end. As no ^{14}C-results from the exact base of the ditch exists, its prehistoric excavation might have taken place much earlier than its backfilling. The results of the radiocarbon dating stated in chapter 6.3.1 will be briefly summarised again. A ‘messed up’ situation resulted after the analysis of two charcoal samples from the base and the approximate centre of pit SW and an additional thermoluminescence (TL) sample. The base-sample dates to the last quarter of the 13th mill. BC, the sample from the centre dates to the second half of the 4th mill. BC and the TL-sample dates to the 1st mill. BC. In other words, inside the structure there is evidence for late upper Palaeolithic, Early Chalcolithic as well as probably Early Iron Age activities (for an interpretation attempt see chapter 6.3.1). One sample from pit W dates back to the end of the 6th and the early 5th mill. BC, another one to the turn of the 4th to the 3rd mill. BC. All three radiocarbon dates from pit E date the structure to the turn of the 4th to the 3rd mill. BC as well. The inner ditch itself seems to have been excavated during the second half of the 4th mill. BC (Early Chalcolithic) and pit CS, which has been dug into the backfill of the ditch, provides an excellent *terminus ante quem* for the backfill, as the ditch must have been completely backfilled before the pit could be excavated in its filling. It dates to the turn of the 4th to the 3rd mill. BC (just like pits E and W). Thus, the enclosure so far dates to the second half of the 4th mill. BC and, hitherto, the investigated part of the agglomeration of anomalies in its interior – the pit field – shows both earlier and later dates as well as pits concurrently existing with the not yet backfilled ditch.

Because of the huge size of the Prado enclosure (50ha or maybe even 100ha) and the limited size of the excavation trenches in 2015, there exists a possibility that part of the ditched enclosure has been dug during an earlier or later time of the Iberian Late Prehistory than the investigated section revealed. Based on the currently known chronological situation, the main use of the dolmen seems to have slowly come to an end with the monument still being a visible marker in the landscape while the building activities on the southern bank of the Tagus were in full progress. The diverging chronology of the pits illustrates that the area was regularly frequented throughout centuries and even millennia (*tab. 13*).

The other potential enclosures Los Pedazos and Los Viñones in the immediate surroundings of the dolmen have not been verified as enclosures yet. They are located approx. 1km southwest of El Prado. In the case of Los Viñones, the structures visible in the aerial images as well as the geomagnetic measurements did not give conclusive evidence for the existence of an enclosure. The structures could also describe old courses of the Anguilucha Brook. The collected surface finds of both areas, Pedazos and Viñones, indicate

Laboratory code	Structure	Dated material	Uncalibrated date	Calibrated date, 2 σ
CNA3851.1.1	Prado ditch	Charcoal: 80cm above the bottom of the ditch	4560±31 BP	3487–3105 calBC
CNA3853.1.1	Prado pit E	Faunal bone (humerus): top of the structure	4381±30 BP	3090–2914 calBC
CNA3856.1.1	Prado pit E	1st phalange (ovicapridae): top of the structure	4392±31 BP	3090–2914 calBC
CNA3857.1.1	Prado pit E	Femur (ovicapridae): middle of the structure	4421±30 BP	3094–2917 calBC
MAMS-29785	Prado pit SW	Charcoal: middle approx. 30cm depth	4588±23 BP	3494–3137 calBC
CNA4285.1.1	Prado pit W	Faunal bone (ulna): middle of the structure	4390±31 BP	3092–2917 calBC
CNA4286.1.1	Prado ditch	Bone fragments (fauna): ca. 1m above the base	4517±32 BP	3356–3262 calBC
MAMS-30825	Prado pit CS	Charcoal: upper part of the structure	4324±24 BP	3011–2894 calBC
Ly-4500	Azután chamber	Bone	4590±90 BP	3631–3016 calBC
Ly-4578	Azután chamber	Bone	5750±130 BP	4904–4345 calBC
UGRA-288	Azután chamber	Bone	5060±90 BP	4039–3657 calBC
Beta-145277	Azután chamber	Bone	4620±40 BP	3520–3138 calBC

Tab. 13. Comparison of the 4th and 3rd mill. BC ^{14}C-dates of the excavation at El Prado (chapter 6.3.1) and the results of the dolmen of Azután (Bueno 1991; Bueno et al. 2005a; 2005b) shows the close chronological connection of the sites. Calibrated with IntCal 13.

Neolithic and Chalcolithic activities in these areas (*fig. 95*).

The dolmen of La Estrella is located further uphill in the Montes de Toledo to the west of the modern town of La Estrella and in northwestern direction of Aldeanueva de San Bartolomé. Unfortunately, no ^{14}C-dates exist for this megalithic burial mound. But, as mentioned in chapter 3.3, the construction is of the same type as the dolmen of Azután, with a round chamber and an elongated corridor. This type is a common construction type at the end of the 5th and in the first half of the 4th mill. BC. Typological comparisons of the objects found during the excavation of this dolmen lead to the assumption that both megalithic monuments, the one in the mountains and the one in the foothills of the mountains, shared the same main phase of utilisation.

Lastly, a short note on the walled enclosures of the study area: El Castrejón and La Cabeza del Conde. El Castrejón (chapter 5.2.2), situated on the eponymous hill in the southwest of Aldeanueva de San Bartolomé, is nowadays barely covered with soil. The finds were mainly lying on the bare rock. It can be assumed that the pottery eroded to the surface, which would explain its bad preservation and the abraded edges. The survey material mainly consists of pottery. It allowed a dating of the first phase of occupation to the Chalcolithic period. The enclosing stone wall supposedly belongs to this phase as well. Three stone walls are still visible: One encloses the plateau; another is connected to this wall and encloses the middle terrace south of the plateau and a third is situated on the lower terrace below. The survey material found in 2014 was so badly preserved that it was only possible to determine it as prehistoric. Finds of the survey activities in the 1980s made it possible to define a Chalcolithic occupation phase.

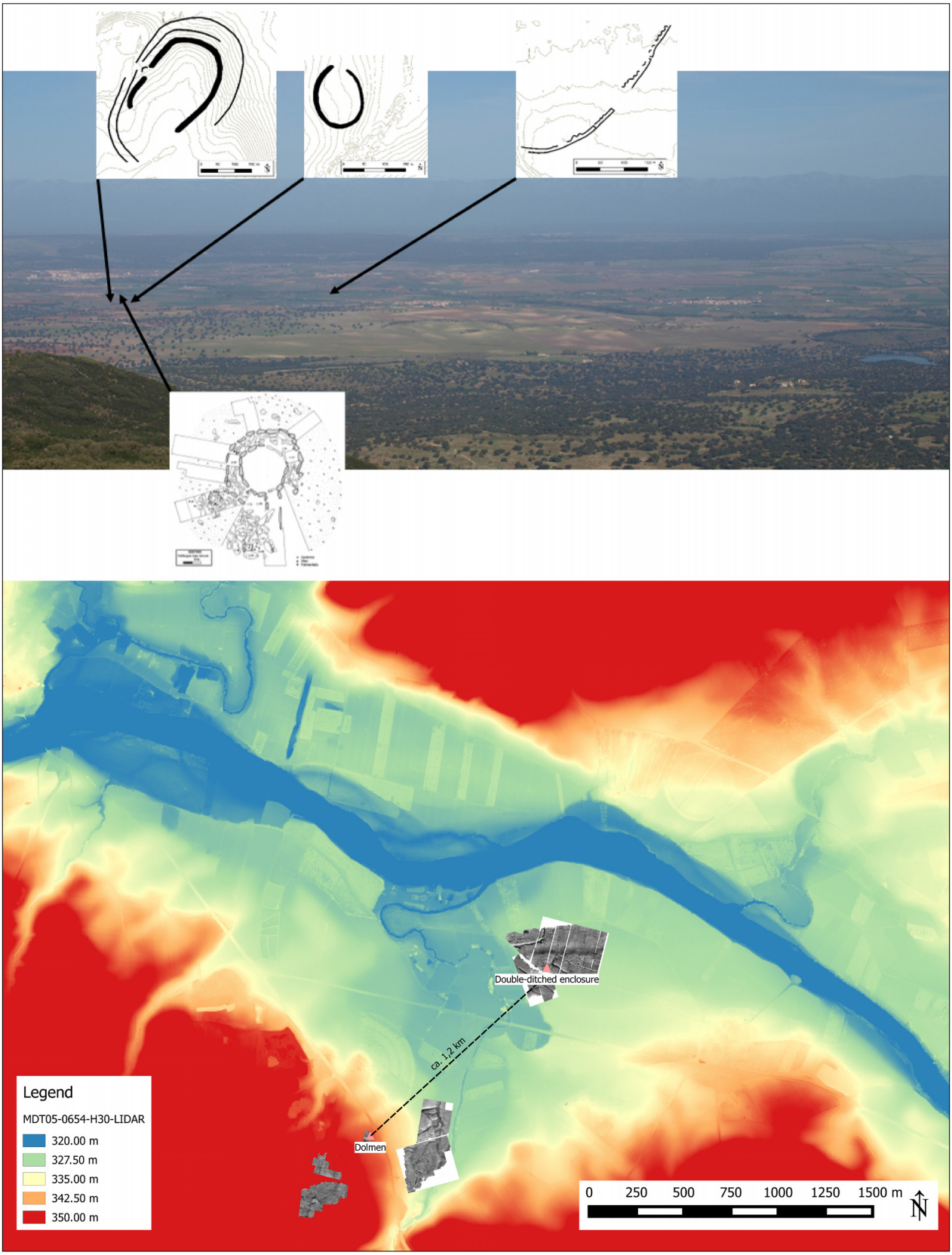


Fig. 95. View from the Sierra Ancha in the Tagus valley. The arrows indicate the location of Los Pedazos, the dolmen, Los Viñones and El Prado (above, from left to right). Illustration of the distances between the four sites. The DEM underlines the location of the dolmen and Los Pedazos on the foothills of the Montes de Toledo as well as Los Viñones and El Prado in the valley of the Tagus River (below).

The walled enclosure of Cabeza del Conde is named for the hill it is situated on. It is part of the Sierra de La Estrella and its position clearly dominates the valley of the Uso River. On the plateau, a natural defence of large granite rocks already existed that only had to be complemented by additional stone walls made of small and middle size stones to enclose the plateau. The first phase probably dates back to the Chalcolithic, including the parts of the walls closing the gaps between the natural enclosure and the majority of the dwellings (chapter 3.3; Carrobles/Méndez-Cabeza 1991, 7–9).

At present, it can only be assumed that the sites were contemporaneous. The dolmen might already have been out of use shortly before the double-ditched enclosure had been built, but there were still visible markers along the way downhill into the valley of the Tagus and the plain of La Campana de Oropesa (or uphill the other way around, depending on the perspective). A certain concurrent use or existence of the sites allows an interpretation as a hierarchy in settlement types between the mountain ranges and the valley. As the walled enclosures are situated close to the metal resources in the mountains and, in the case of El Castrejón, show evidence of copper ore extraction, these walled enclosures can be regarded as metal mining sites focussing on the ore resources in the hinterland. The way into the valley was marked by two collective burial mounds: one in the hills (La Estrella) and another one at the foothills (Azután). Both indicate the way south to the ford across the river. Additionally, they may have served as a reference to the ancestors confirming the claim of a certain group over a territory by stressing the ancestral relations in said territory. The small enclosures in the surrounding of the dolmen of Azután might have had ritual meanings due to their short distance to the megalithic burial. The huge double-ditched enclosure of El Prado in the valley might have connected the copper mining sites in the hills with the sources for clay and agriculture in the valley. It dominated the terraces of the Tagus River, simultaneously controlling the ford and therefore the communication in all directions.

The strong integration and interrelation of social and natural features on different spatial scales shows the complexity we have to deal with (*fig. 96*). A least cost analysis underlines the perfect situation of the different site types along the easiest ways. Taking the Prado enclosure as a starting point, the analysis shows that the resources recorded in the excavated material (dolmen and enclosure) as well as other Neolithic/Chalcolithic sites are within less than a five hour walking distance. Clay and fertile land were in the close surroundings of the double-ditched enclosure. As they were frequently used, an easy accessibility was of importance. Fig. 96 shows that later the traditional drove-ways (*cañadas reales leonesas*) were established along the least cost paths as well.

Every place has its own history but what kind of history did the community living in Azután have? Do, for example, different settlement types imply a different status of the people living there? In summary, it can be said that in the micro region of Azután walled enclosures, small enclosures, megalithic burial mounds and a huge enclosure are to be found. The walled enclosures might have served as a base of the workers for extraction processes in the surrounding area. The collective burials and the small enclosures might define the areas of ritual practice and the huge enclosure might have had distributional purposes. Whereas this might imply a classification of society by their settlement pattern, there are collective burials that may indicate a more egalitarian structure of society. What is clearly visible in the archaeological record is a certain need to enclose spaces. Whether to include or exclude a certain group of people, to defend and protect goods or control communication cannot be decided conclusively based on the current research data.

8.4 The Line – Contact Areas and Potential Conflict

Have there been areas of potential conflict or could the situation between the sites and the fact that people were included or excluded in certain rituals have been cause for disagreement? In the sector division ‘Conflicts’ of SFB 1070, it was agreed upon to focus on social conflicts rather than on active aggressive behaviour history brings

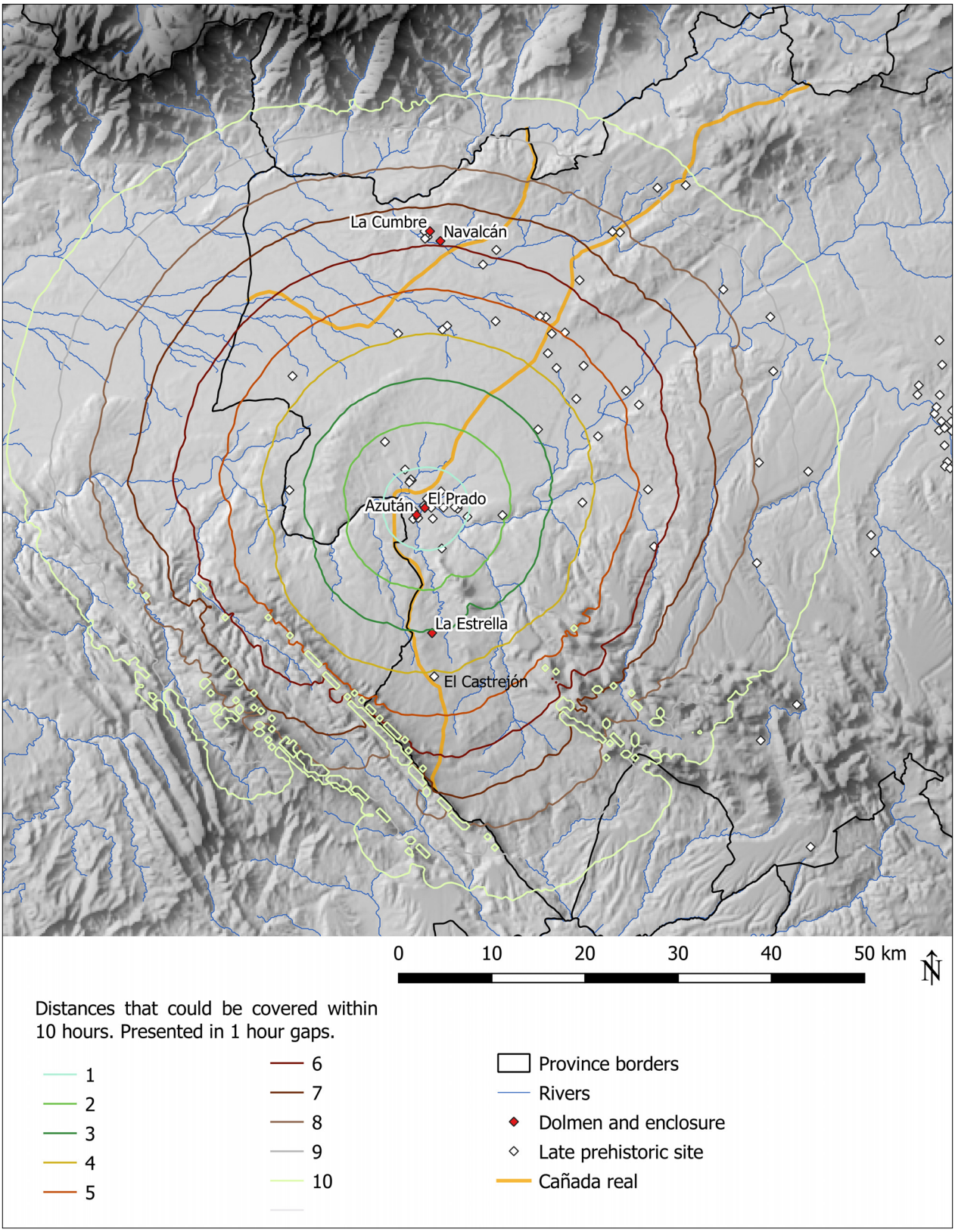


Fig. 96. Least cost calculation using the opening of the double-ditched enclosure partly excavated in 2015 as a starting point. It displays the distance that could be covered within ten hours, taking into account the relief situation. The sites in the valley, the dolmen as well as El Castrejón are aligned along the least cost paths. The detail of the west of the province of Toledo also shows that the later *cañadas reales leonesas* follow these calculated easiest ways (map based on the modified MDT200-TOLEDO © Instituto Geográfico Nacional).

to mind (e. g. wars, colonisation and suppression of groups due to belief or colour of skin). It is difficult to detect conflicts in archaeology that do not manifest themselves in layers of destruction or leave visible marks on human skeletons. Still, the archaeological record of the sites will be investigated for hints on social conflicts or situations that may result in such. Identifying conflicts on the level of individuals will be almost impossible. Therefore, the focus has to be on the level of social groups and communities.

It will be assumed that the territory of the micro region of Azután can be defined as mentioned with sites of different functions depending on their location and the resources in the surroundings. Additionally, if the enclosure of El Prado fulfilled a gateway function and was connecting different areas of production at a critical point of passage, the following question will appear: What kind of social conflicts might result from the close connection between the mountainous hinterland and the valley? Did El Prado as a gateway play a significant role that might have prepared the landscape for exchange and communication with the north? Generally, it has to be kept in mind that territories require some kind of social structure, a social organisation, which is predestined to cause social conflicts because equal treatment of all parts of the community is an utopic assumption. Both territory and social differences are origins of conflicts. The competition for status and power or the competition for space between societies or social groups within a society as well as for fertile land, mineral deposits or sanctuaries will most likely occur and result in conflicts.

As stated on several occasions, the archaeological landscape of Azután reveals impressive new insights for the Later Prehistory of Central Iberia. Areas that were regarded as almost 'deserted' in the 4th and 3rd mill. BC now can be filled with history. It is obvious that earlier theories were based on patchy and limited research and do not reflect the prehistoric reality as shown by the systematic fieldwork conducted for this PhD-study. The architectural variability, the chronology, the types of rituals and the quantity of hypogea in the Valle de las Higueras (Huecas, Toledo) already pointed to social structures of similar complexity as those found in Andalucía and the southwest (Bueno et al. 2016a). Some of the anomalies in the magnetogram of El Prado might hint to structures like the tumuli TVH and Castillejo (*fig. 32*) that were detected in the vicinity of the artificial caves of the Valle de las Higueras. Especially the date deriving from THV corresponds with the dates so far present from El Prado. Two dates from Castillejo are slightly later and the one from the niche points to the end of the Chalcolithic period (*tab. 14*).

As of today, El Prado is the only large ditched enclosure known in Central Iberia. It shows similarities with sites located more than 200km to the southwest. As discussed above, a certain degree of landscape organisation is detectable (Schmitt et al. 2019). The Anguilucha Brook seems to have separated the valley of Azután into an area of the living – the large ditched enclosure with evidence of massive human activity – and an area of the dead with the megalithic burial mound on the foothills of the Montes de Toledo. To the east, where the sun rises, the monument of El Prado with its diverse negative structures shows evidence of a regularly visited place (numerous pits) where people gathered, communicated and may have exchanged goods, maybe even covering long distances to do so. To the west of the brook where the sun sets, the enclosures Los Viñones, Los Pedazos and the dolmen may have created spaces connected to the funerary ritual. Thus, the cardinal point where the site is situated might already indicate its use, as the course of the sun is often a synonym for the life cycle. Maybe a similar pattern can be found in other sites of the same period as well, but further studies in Azután will be needed to strengthen or weaken this idea first. With a deposition of parts of a human skull (mainly *Os frontale*) found during the excavation of 2015 in the filling of the ditch (chapter 6.2.1), the large enclosure El Prado shows a feature that can be found in other enclosures as well. Due to the small size of the excavation trenches and the large dimension of the enclosure with its numerous anomalies, it is likely that more parts of human skeletons were discarded in the filling of the ditch. Some of the anomalies visible in the interior and outside of the enclosure might reveal regular burials as known from many other enclosures also (e. g. Perdigões, La Pijotilla as well as the walled enclosure of Jaraíz de la Vera). Still, this feature does not completely object to a differentiation of

Laboratory code	Structure	Dated material	Uncalibrated date	Calibrated date, 2 σ
CNA3851.1.1	Prado ditch	Charcoal: 80cm above the bottom of the ditch	4560±31 BP	3487–3105 calBC
CNA3853.1.1	Prado pit E	Faunal bone (humerus): top of the structure	4381±30 BP	3090–2914 calBC
CNA3856.1.1	Prado pit E	1st phalange (ovicapridae): top of the structure	4392±31 BP	3090–2914 calBC
CNA3857.1.1	Prado pit E	Femur (ovicapridae): middle of the structure	4421±30 BP	3094–2917 calBC
MAMS-29785	Prado pit SW	Charcoal: middle approx. 30cm depth	4588±23 BP	3494–3137 calBC
CNA4285.1.1	Prado pit W	Faunal bone (ulna): middle of the structure	4390±31 BP	3092–2917 calBC
CNA4286.1.1	Prado ditch	Bone fragments (fauna): ca. 1m above the base	4517±32 BP	3356–3262 calBC
MAMS-30825	Prado pit CS	Charcoal: upper part of the structure	4324±24 BP	3011–2894 calBC
GX-29783	Castillejo M-5	Bone	4050±70 BP	2876–2458 calBC
GX-29784	Castillejo M-15	Bone	4180±50 BP	2896–2621 calBC
Beta-145275	Castillejo niche	Bone	3810±70 BP	2467–2041 calBC
Beta-194602	TVH	Bone	4470±40 BP	3346–3022 calBC

Tab. 14: Comparison of the 4th and 3rd mill. BC ^{14}C-dates of the excavation at El Prado (chapter 6.3.1) and the results of from the tumuli of Huecas (Bueno et al. 2005b; 2009; 2012a) shows the close chronological connection of the sites. Calibrated with IntCal 13.

the landscape in an area of the living and the dead, as potential burials could date to later times (Bell Beaker) or the deceased (or parts of them) were included in social activities that took place within the enclosure. The history of the archaeological structures and the enclosure on the southern terraces of the Tagus middle basin only recently started to come to light. With further research, more and more pieces of Late Prehistory that survived over the millennia will add to the story.

With the research of Bueno and the investigations between 2013 and 2015 of this study (archive work and on-site surveys), enough results have been gathered to justify the assumption of an interaction between the valley and the western part of the Montes de Toledo. Along the *cañada real leonesa oriental* – from south to north – copper mining sites can be found in the hills. Passing the places of the ancestors (dolmen) in the hills and the foothills, the *dehesa*-like landscape of the valley was entered. Based on the finds and radiocarbon dates, a contemporaneity of these sites can be assumed. If they were not used simultaneously, their remains should at least have been visible still. Fertile soil, fresh water supply, abundant ore resources as well as clay, stone and silex sources covered the basic needs for settling here. Megalithic burials, as known from the Extremadura, and enclosures, as known from the Alentejo, point to supra-regional contacts.

After having presented the current state of research in the micro region of Azután, the discussion now returns to the topic of social conflicts. Being confronted with areas of contact and exchange of goods or knowledge might cause resentment and draw a clear-cut line between those parts of a community that are allowed to have those connections and take part in the transfer of knowledge and those who are excluded. Probably not all people were included in the rituals connected to the funerary acts in the dolmen. Those rituals might have served to legitimise and strengthen

the power of a smaller group by reference to the ancestral relations that dominated the community and presumably had a predominant role in society (chapter 2.3.3: Bueno and colleagues; chapter 7.3). Armed conflicts and social conflicts could have emerged if not ensuring this role, for example through the protection of the community, the long-term assurance of sufficient food supply or regularly performed feasts and gatherings to let everyone participate in the prosperity of the leading group, thus establishing good relations to other groups within and outside the community.

Besides the power over a certain territory by a group of people (e.g. a family), this group of people must be able to join special types of significant production techniques during the Late Neolithic and Early Chalcolithic required specialised knowledge. Locating copper ore veins does not only require knowledge of the material the ores are associated with, but also the knowledge of indicator plants that preferably grow in areas with certain minerals. The processing of the ore needs specialised people as well. A similar specialisation is needed for the extraction of clay, the production of pottery and for the stone work to extract the megaliths for burials or stelae just to name a few examples found in the micro region. The erecting of monuments not only needs specialised knowledge on building techniques but also requires the cooperation of many people and the coordination of work. All these examples of specialisation, of groups of people having more power than others and probably an easier access to exchange goods as well as of actions and rituals that included parts of a community and excluded others are potential sources of conflict. These differences within a community may have caused envy, resentment and verbal arguments. Groups of high status but with no leading functions might have tried to gain power over the existing ‘elite’. Specialised craftsmen might have left the community when dissatisfied with the circumstances of living and tried to join other groups. With them their knowledge would have left as well, which left the current elite weakened to a certain extent.

As social conflict is difficult to trace based only on archaeological sites and material culture without written sources, these ideas must remain hypothetical. There is no way to prove them, nor are they the only possible explanations for the evidence, but just serve to make aware of possible scenarios.

9 Black Holes and Revelations

‘Keep you in the dark you know they all pretend.
Keep you in the dark and so it all began.
Send in your skeletons sing as their bones go marching in, again.
They need you buried deep the secrets that you keep are ever ready.
Are you ready?’
(First lines of the song ‘The Pretender’, Foo Fighters)

Although the song ‘The Pretender’ by the Foo Fighters is not about a topic similar to the content discussed within this PhD-study, its first lines reflect issues one is confronted with in Prehistoric Archaeology rather well. Some archaeological sites – some of those which have been defined as central places during the 1980s and 1990s but were only partially studied – have been assigned functions and characteristics that, compared to other sites, made them unique. Studies conducted during more recent decades and the analysis of aerial imagery as well as LiDAR-data revealed more and more sites of similar sizes and layouts. This shed a new light on the position of the so-called central places (chapter 2.3.3 and 8.1). The secrets that were kept or still are kept beneath the ground of the Spanish Central Plateaus (in the case of this study) are ready to be disclosed. The myth of the deserted interior of the peninsula is losing its hold bit by bit due to discoveries made on the southern as well as the northern Meseta.

Knowledge of the Central Iberian prehistoric communities is still more incomplete than our knowledge of the settlement areas of Andalucía or southern Portugal for example. However, the studies on the southern Meseta by Bueno and her team (the studies of Huecas and the toledean dolmen are of special relevance for this study) as well as the archive and fieldwork conducted for this study (chapter 5 and 6) uncovered site types that had previously been unknown in the central area: In the province of Toledo the artificial caves of the Valle de las Higueras (Huecas) built for the dead were discovered. Four dolmens have been recorded in the west of the province. Close to the border to Cáceres, on the territory of the modern village of Azután, a large double-ditched enclosure and several other ditched systems were detected on the southern terraces of the Tagus River. The latter became the key topic of this study, as it is the first and up to now only large-scale enclosure of the Mesetas with a chronology that contradicts the idea that sites of this type diffused from the coastal areas to the interior during the second half of the 4th and beginning of the 3rd mill. BC (chapter 5.4, 6.3.1 and 9.1). Sites similar to the new sites from the central Iberian Peninsula are found in the south and southwest of Iberia as well as in the area around the Portuguese capital Lisbon. A network of routes (chapter 8.2 and 8.3) connected the province of Toledo – including the study area – with the Neolithic and Chalcolithic settlement areas and made the territories of the Tagus middle basin easily accessible. Some of these routes probably are still used today in the form of the *cañadas* and other drove-ways.

9.1 New Born – Enclosures Far from the South

Due to its construction, the newly discovered double-ditched enclosure of El Prado finds its best comparison to sites in the south and southwest of the Iberian Peninsula (chapter 5.4). Enclosures far from the well-known ones in the southwest have been disregarded and not mapped completely by other researches up to now. The aspiration of this study from its very beginning was to focus on areas as well as sites that, hitherto, had been neglected to a certain extent. The research undertaken in the municipality of Azután and the newly discovered enclosures of El Prado, Los Pedazos and Los Viñones (chapter 5.3.3, 5.4 and 6) were taken as a starting point for the consideration of the other enclosures of Iberia.

It has been stressed in chapter 3.2.1. that enclosures are not exclusively a phenomenon of the south and southwest of the Iberian Peninsula. From the 1990s onwards, ditched enclosures were detected in the autonomous communities of Castilla y León, Madrid as well as Valencia (e. g. Delibes

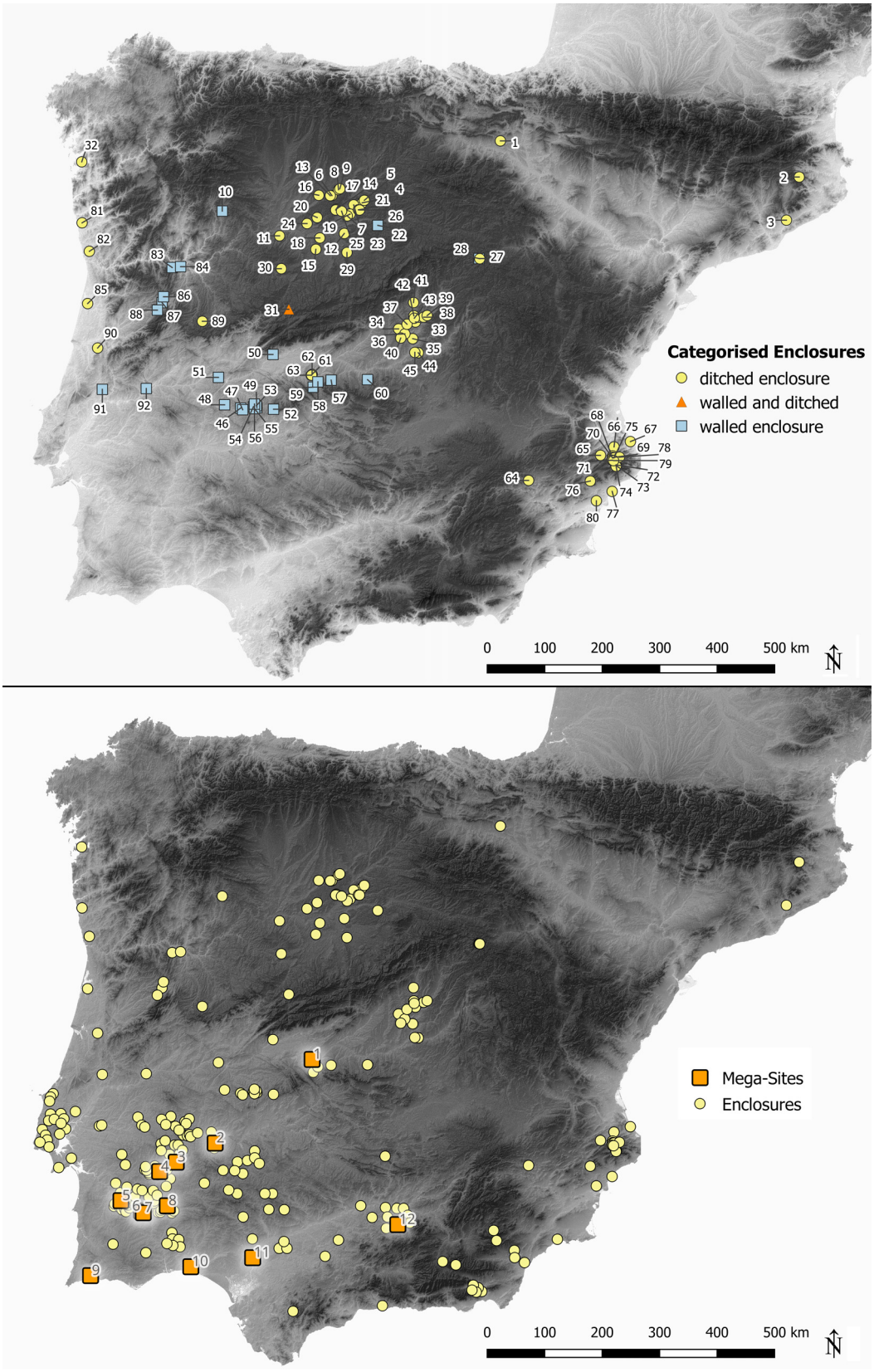


Fig. 97. Map above: newly compiled and so far not yet mapped ditched and walled enclosures of the Iberian Peninsula, excluding the southwest and southeast. Map below: the enclosures of the peninsula. Marked by orange coloured squares are the so-called mega-sites: 1 – El Prado, 2 – La Pijotilla, 3 – San Blás, 4 – Perdigões, 5 – Porto Torrão, 6 – Montes das Cabeceiras, 7 – Salvada, 8 – Vila Verda de Ficalho, 9 – Alcalar, 10 – Papa Uvas, 11 – Marroquíes Bajos, 12 – Valencina de la Concepción (Márquez/Jiménez 2010; Risch et al. 2015; Valera 2022 and 2023. Calculation of the DEM based on the SRTM 90m ASCI-tiles provided by the CGIAR CSI; Reuter et al. 2007 [https://srtm.csi.cgiar.org]).

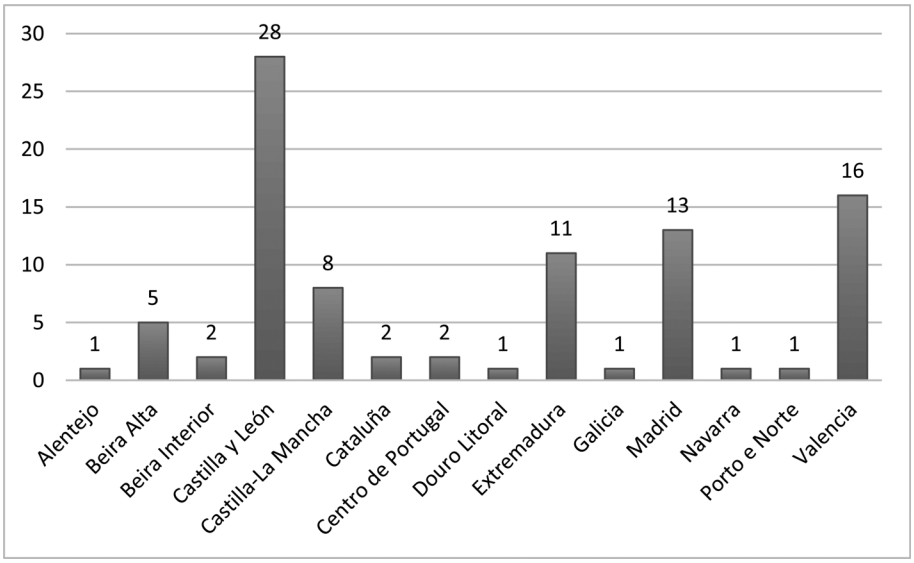


Fig. 99. The number of enclosed sites (y-axis) detected and published in the investigated autonomous communities (x-axis).

et al. 2014; Liesau et al. 2008; Bernabeu et al. 1994) and walled enclosures were found far from the well-known ones in Zamora, Toledo and Cáceres amongst others (*fig. 97a*, see **tab. 21* in the online appendix). Ditched as well as walled enclosures, which are not situated in the south of the peninsula, seem to have had – for the most part – a low impact on the research concerning Iberian Late Prehistory. This may be due to their often unimpressive size compared to sites like La Pijotilla (Hurtado 1991) or Valencina de la Concepción (García et al. 2013) and because of the fact that the majority of the sites of the Mesetas have not been investigated holistically or are just known from survey activities. This digression aims to illustrate the variety of enclosures in the rest of the Iberian Peninsula, which up to now have not been mapped and did not receive much attention. As compilations and comparisons of the southern and southwestern sites of Spain (Márquez/Jiménez 2010) and Portugal (Valera 2023) already exist in exemplary manner, they were only remapped but neither included in this compilation nor numbered, except for the so-called mega-sites (*fig. 97b*).[18] Instead, the compilation focussed on the enclosed sites of northern Portugal and the remaining areas of Spain (excluding Badajoz, Andalucía and Murcia) that have been published until July 2017. As they cannot be discussed in detail, the focus was on statistical values such as how

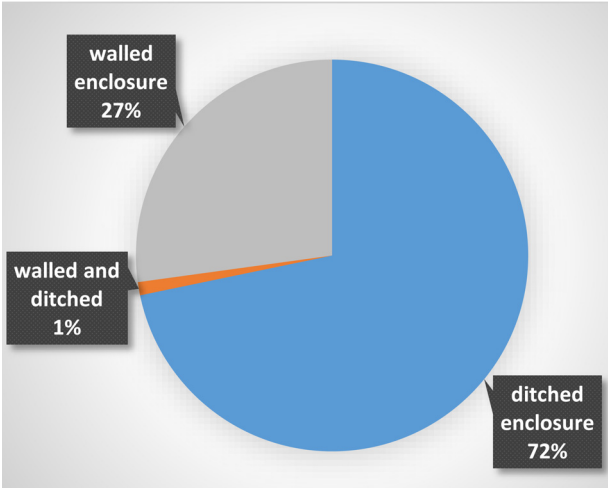


Fig. 98. Diagram showing the percentages of walled, ditched and mixed enclosures.

they were detected, the mean size etc. as well as on construction types and the chronology. All this information as well as the relation to the numbers given on the map can be found in the catalogue and used for further research (chapter 10.6 in the online appendix).

Altogether 92 sites were found in the published studies. Out of those, there were 72% ditched enclosures, 27% walled enclosures and one site showed a combination of wall and ditch (*fig. 98*). This mixed site is El Alto del Quemado in the province of Ávila (*fig. 97a*, number 31).

The distribution of the enclosed sites has some clear foci. The majority of the enclosures was found in the autonomous communities of Castilla y León, Valencia and Madrid (*fig. 99*). This is most likely a result of the research intensity and increased use

18 For detailed descriptions see – amongst others – the publications mentioned above.

Mode of detection	Number of sites
aerial archaeology	16
archaeological survey	17
archaeological survey, aerial archaeology	5
archaeological survey, excavation	5
archaeological survey, excavation, aerial archaeology	1
archaeological survey, geomagnetic survey	2
construction work	4
construction work, excavation	1
excavation	37
geomagnetic survey	1
gravel extraction	1
total	90

Tab. 15. For 90 of the 92 sites information about the mode of detection was available, showing that most of them go back to excavations. Some enclosures were also detected through other or several methods.

of aerial archaeology in Castilla y León. The sites of Madrid and Valencia were mainly detected due to the massive amount of infrastructural work in the surroundings of the Spanish capital as well as the tourism boom along the Mediterranean coast, which is one explanation for the amount of sites found in the province of Alicante (chapter 3.2). The Extremadura – and especially the province of Cáceres – also revealed a comparatively high number of exclusively walled enclosures.

Construction work seems to have been a major factor for the detection of enclosures. For two of the 92 enclosures, the publications provided no information on the detection of the site. The majority of the remaining 90 sites was not known before excavations started. In addition to excavations survey activities, including aerial archaeology, have been useful tools for the detection of enclosures (*tab. 15*). 49 sites have been excavated. The number of rescue and research excavations is more or less balanced. Sometimes excavations commenced as rescue excavations and converted into research projects.

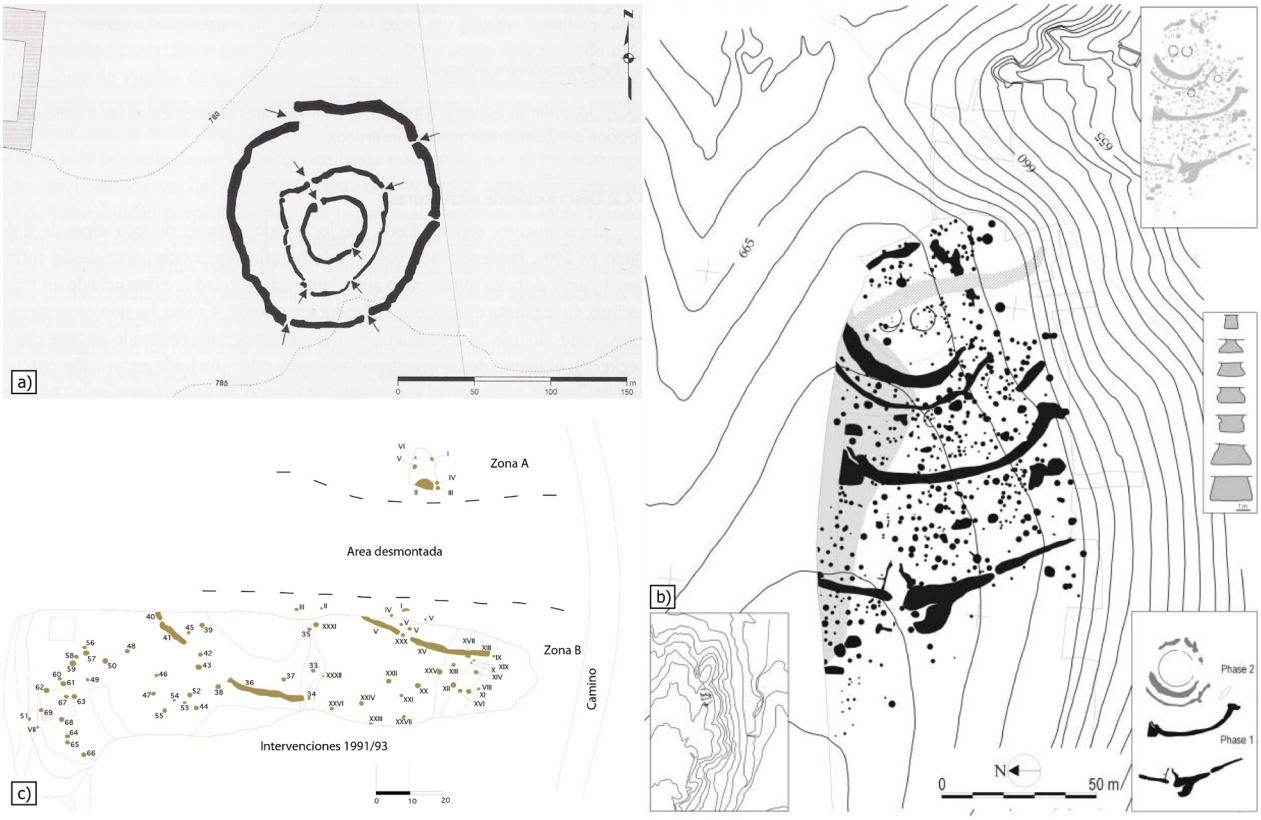


Fig. 100. Compilation of examples for segmented or so-called causewayed enclosures. a) Casetón de la Era (II) – Valladolid, Castilla y León (Delibes et al. 2014, 44, fig. 21). b) Fuente de la Mora – Madrid (Díaz-del-Río 2004, 113). c) Arenal de la Costa – Valencia (Bernabeu et al. 2012, 57).

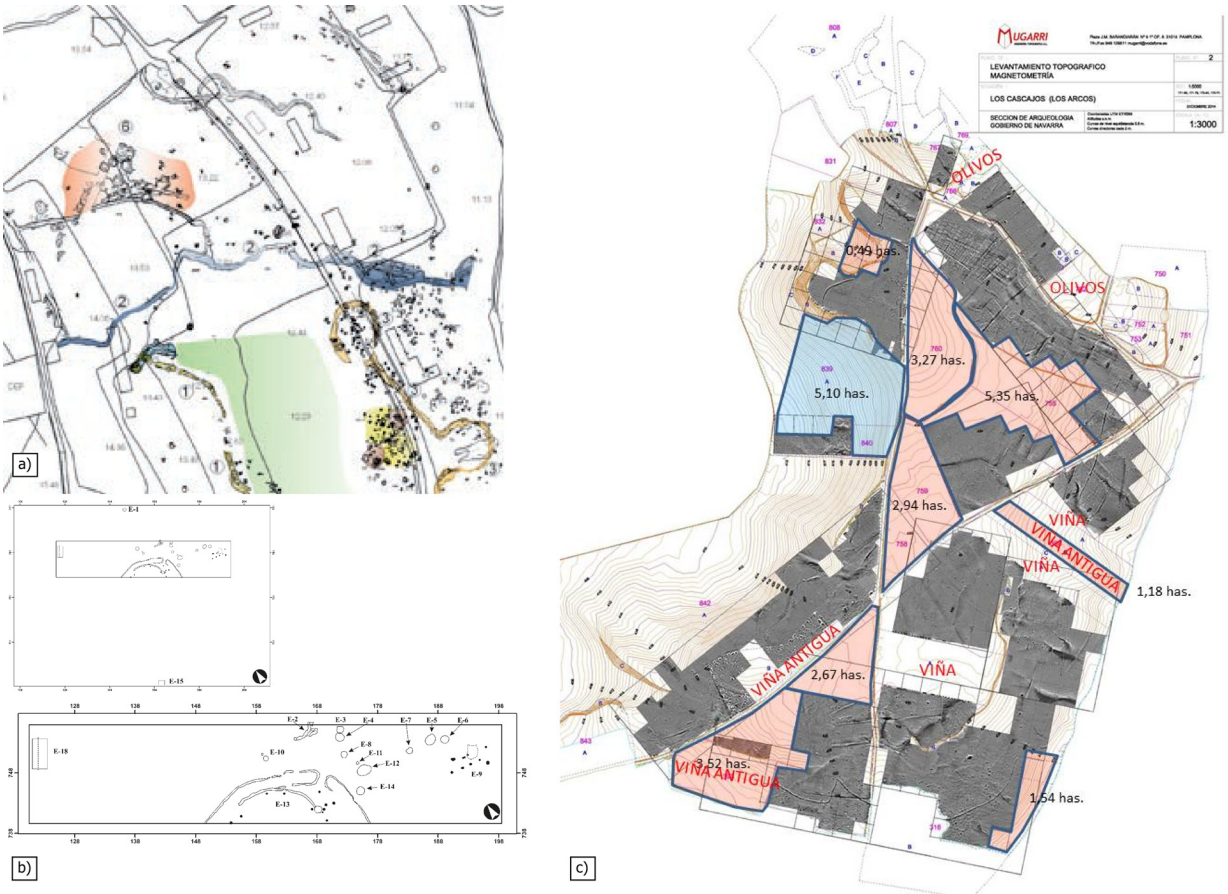


Fig. 101. Ditched sites that revealed parts that can be compared to El Prado as well as one that does not find any comparisons on the Iberian Peninsula so far. a) Tossal de les Basses (Rosser/Fuentes 2007, 12) with sinuous ditches, b) La Revilla del Campo (Rojo et al. 2008a, 254) with short ditches connecting the two parallel running ones and c) Los Cascajos with a plan showing rather bulky, so far incomparable ditches (Becker 2017, fig. 1).

For a long time, the enclosures beyond the south and southwest were thought to be significantly smaller, but sites like El Prado (at least 50ha) and Fonte Quente (Santárem, 20ha) demonstrate that big sites are not restricted to a certain area of the Iberian Peninsula. For 49 of the 92 investigated sites, information on their size was available. At some locations such as Las Pozas (Zamora) or Mas d'Is (Alicante) more than one enclosed construction was found. In general, correct information on the dimension of the enclosures can only be given if a complete or close to complete plan exists, most often made by aerial imagery or geophysical investigations. The average size of all studied enclosed sites amounts to 3.31ha. Disregarding the largest outliers El Prado and Fonte Quente, the size of the remaining 47 sites decreases to only 1.93ha.

The type of construction of the enclosures is often highly variable but seems to focus on segmented enclosures (causewayed). This construction type especially appears in Castilla y León and in Madrid but can also be found in Galicía and Valencia, showing that this type is not a phenomenon of the centre only (*fig. 100*). The small number of available plans of the enclosures does not allow a more detailed description of different construction types and their distribution nor is it likely that the pattern of distribution will not change. Sinuous ditches – initially thought to be restricted to the southwest of the Iberian Peninsula – are now present at the site of El Prado and can be observed at the site of Tossal de les Basses (Alicante) as well (*fig. 101a*). The course of the walls of walled enclosures like Castanheiro do Vento (Guarda) shows that such sinuous constructions were not only used for negative structures. Another ditched enclosure with similarities to the Prado enclosure is La Revilla del Campo (Soria). The two parallel ditches were connected by perpendicular

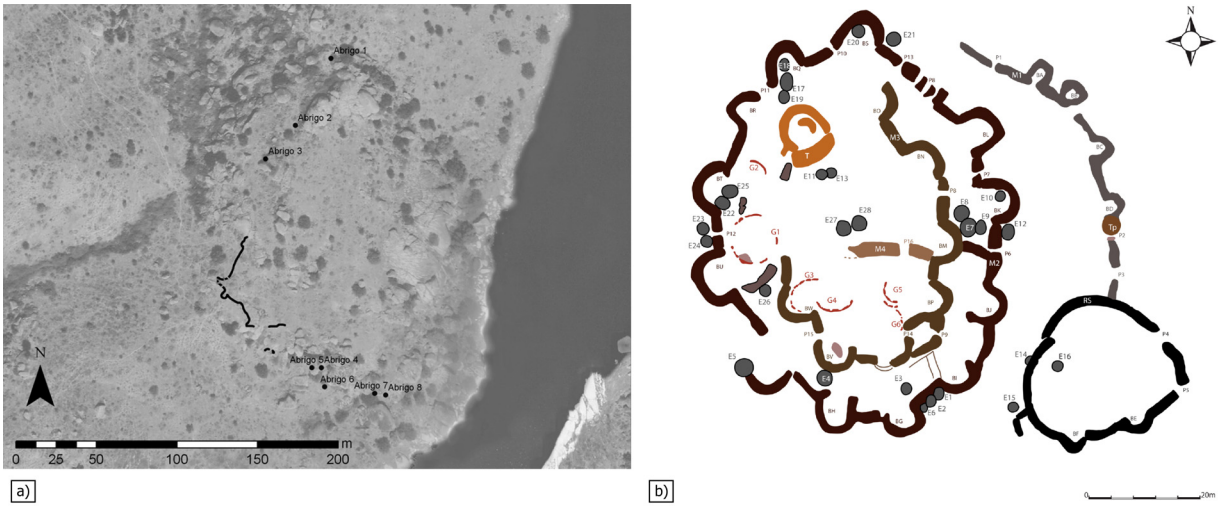


Fig. 102. Walled enclosures exhibit wavy parts such as the constructions of a) El Canchal del Potro (Cerrillo 2011, 151) and b) Castanheiro do Vento (Vale 2010, 58).

(rounded) ditches (*fig. 101b*), suggesting the contemporaneity of the ditches and forming an entrance situation similar to the one of the Prado enclosure. No similarities to the construction of the other ditched enclosures can be found for the site of Los Cascajos (Navarra) at the current state of investigation. The magnetic plan revealed a large site with bulky ditches in some parts (*fig. 101c*) that cannot be observed at any other sites.

Similarities can be observed for the group of walled enclosures as well: The construction of the sinuous walls of Castanheiro do Vento (*fig. 102a*) seems to be of the same type as at the site of El Canchal del Potro (Cáceres). Their locations at hilltops resemble one another, too (*fig. 102b*). The walled enclosures of Los Barruecos (Cáceres) and Castro de Santiago as well as Fraga da Pena (both Guarda) have similarities to those at La Cabeza del Conde (Toledo). At this group of sites, the outcropping granite bedrock was used and connected with drystone walls, which created an enclosed interior space (*fig. 103*).

Generally, segmented enclosures of small sizes were not restricted to Central Spain as well as enclosures of large sizes and sinuous ditches were not restricted to the southwestern part of the peninsula. Also, similar types of walled enclosures could be attested in Guarda, Cáceres and Toledo, which means that they are dispersed over large areas of the peninsula. Due to the absence of exact coordinates, no statements on the location can be given here and it often remains uncertain whether enclosures were situated in the valley, at the foothills of mountains or on hilltops. This is especially the case for sites for which only vague locations are given (e.g. 10km southwest of the town). For this reason, analyses regarding the geological ground the enclosures were constructed on can neither be given nor discussed, as the geology of the Iberian Peninsula is highly variable and some kilometres can make a huge difference in soil conditions (chapter 4.1).

Enclosures in general are not only a phenomenon of the Late Neolithic and Chalcolithic. Some of them date back to the second half of the 6th and the first half of the 5th mill. BC. The oldest ditched enclosures known are La Revilla del Campo (Soria, 5250–5000 BC), Mas d'Is (Alicante, 5450–4850 BC) and Senhora da Alegria (Coimbra, 5468–5309 calBC) in the centre, the east and the west of the peninsula (Bernabeu et al. 2002; 2003; 2006; Rojo et al. 2008a; 2008b; Valera 2013a; 2013b). It is striking that these sites appear contemporaneously, although they were constructed in places far apart. This points to more than one region of origin for ditched enclosures. Two more ditched enclosures of the first half of the 5th mill. have been detected. They are situated in Alicante as well: Los Limoneros II and Tossal de les Basses (Barciela et al. 2014; Bernabeu et al. 2012; Jover/García 2014; Rosser/Fuentes 2007). The oldest walled enclosure in the investigated area, Los Barruecos (Malpartida

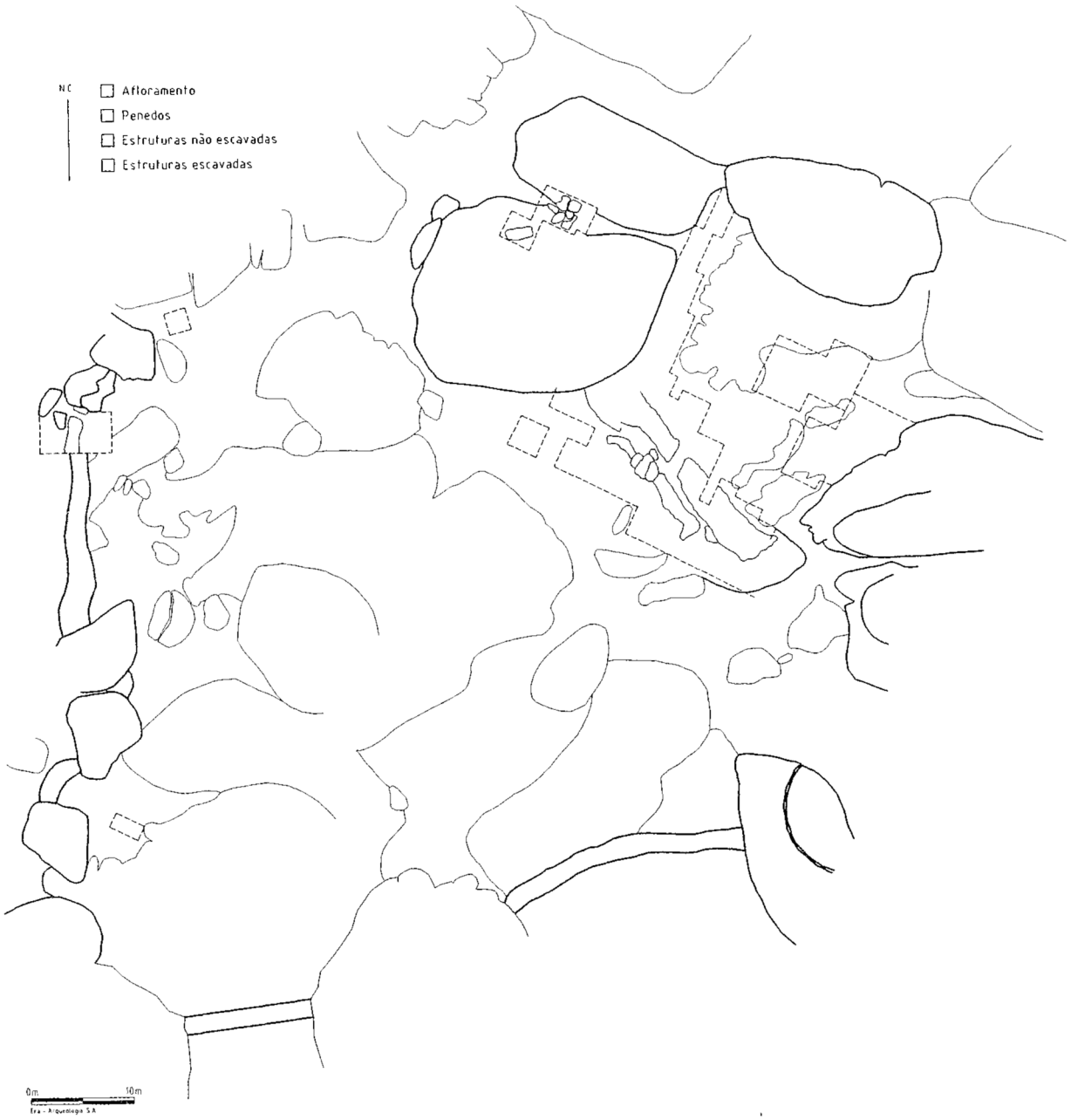


Fig. 103. At Castro de Santiago the outcropping bedrock is connected with drystone walls (grey), thus using the natural situation to form an enclosed space (Valera 2007, 107).

de Cáceres), is located in Cáceres. It dates back to the end of the 6th mill., at around 5200 BC (Sauceda 1991; Cerrillo 2006; Cerrillo et al. 2002). The clear majority of the 71 enclosures investigated here dates back to the 3rd mill. BC. 15 further sites date to the 4th mill. BC and can be found in the provinces of Alicante (7), Cáceres (3), Castelo Branco (1), Toledo (1), Madrid (1), Zamora (1) and Navarra (1). Four of them – the sites in Cáceres and Castelo Branco – are walled enclosures.

This is the current level of knowledge for the excavated and dated sections of the sites. If further and more detailed studies are conducted, it might turn out that some of them have a longer or more complex history.

This digression should serve to give an insight into the state of investigation of sites published until mid 2017 when this compilation of sites has been assembled. New enclosures are detected on a regular basis, increasing the number of known

Neolithic and Chalcolithic walled and ditched enclosures on the Iberian Peninsula. Especially current studies using satellite and aerial imagery as well as large-scale LiDAR-measurements of the modern surface (e.g. López 2016; López/Cerrillo 2016; Valera 2023; Valera/do Pereiro 2013) make significant contributions to the investigation of enclosed sites and will help to achieve a better understanding of their spatial and temporal organisation (in the case where on-site studies can be conducted).

9.2 Come Alive – Reflections on Population Dynamics

The 509 late prehistoric sites of the province of Toledo that have been mapped after the investigation in the archives of the 'Junta de Comunidades de Castilla-La Mancha' (JCCM; chapter 5.1.2) allow the assumption that the prehistoric population must have been quite a lot larger than previously presumed for the southern Meseta. When regarding the sheer size of the Prado enclosure in the west of the province as well as the massive amount of anomalies in the magnetogram that at the moment are interpreted as pits, the population in this area must also have been denser than assumed. The construction of such a huge site could probably only be managed by a large group of people and the number of pits reflect high social activity, although the finds represent a time span of several centuries. The latter is evidenced by the chronological variation of the surface finds as well as the results of the radiocarbon dating (chapter 5.2.2 and 6.3.1).

Reconstructing population densities for certain areas or even complete periods is very challenging and will always result in an interpretation and never in a fact. Such calculations and studies that are based on settlements and the adjacent burial grounds in the best case – excavated completely or in the case of settlements with a complete magnetic plan – should be treated with caution. Sometimes they are based on the settlements only or just one settlement, considering the number of dwellings with insecure numbers of inhabitants for each household. Other studies use the number of buried individuals of a burial ground. Even if both are based on complete plans that show the edges of the extension of the settlement or the burial site, uncertainties remain. The number of individuals for each household always stays a speculation just as the assumption whether the same number of people per square meter lived in each house. There always remains a strong possibility that not all deceased of a community were buried in one and the same cemetery or according to the same ritual (e.g. river burials or the scattering of cremated bones in the surroundings). The massive number of pits within and outside the double-ditched enclosure of El Prado shows a high amount of human activity that probably involved many people. The excavation in 2015 demonstrated the margin of error if the calculation of populations is based on the geomagnetic plan, as the investigated anomaly turned out to not just be one large pit but four pits situated close to each other (chapter 6.2.2). Nonetheless, some considerations made by J. Müller (2017) concerning the agglomeration of people will be addressed. In his opinion, the reconstruction of settlement areas (reconstruction of the settlement landscape) and the reconstruction of sizes of prehistoric populations are closely linked to each other. He assumes that the distribution of people influences the possibilities to control them or makes it more difficult to control them, depending on populations being dispersed or agglomerated. In a densely settled site, the control of 1000 individuals or more is easier than if they spread over a large area with many small settlements or farmsteads. In addition, transport costs should be lower if the population – or the leading political elite – decides to cluster in one spot. In his paper, Müller describes three processes of agglomeration from the Neolithic to the Iron Age located in different areas of Europe, linked to questions of technological and economic changes (Müller 2017, 106–109). Following his line of interpretation, the decrease and increase of populations was dependent both on social and economic changes and not only depending on the general tendency of growth. The appearance or development of new technologies was connected to changes of the social organisation of communities as well as a different formation of social space. Living closer together can lead to clearer and more differentiated social structures (Müller 2017, 111 f.).

What can be assumed for the second half of the 4th mill. and the turn of the millennia in the micro region? Can an increase in population be traced and what might have triggered it? The Chalcolithic is defined by the use of a new material: metal ores (copper). Although especially in the beginning of the Copper Age, the ore was barely used and evidence for its use cannot be found in the dolmens or El Prado. Extraction sites are present in the municipality of Aldeanueva de San Bartolomé and others, even though they cannot be dated to the Chalcolithic with certainty. Other 'new' or rather more productive methods must have led to the agglomeration of social activities on the southern bank of the Tagus. Those – for the micro region already proven methods – may have been the agro-forestal system (*dehesa*) and the use of seasonally available food sources (cultivated and wild) as well as the beginning of a secondary products revolution, when animals were not only used as meat producers but also for their strength and as dairy producers.

When comparing these observations to the ones made by Müller for the site of Okolište in Bosnia-Herzegovina, some similarities can be noticed. Both prehistoric sites were founded on the most fertile grounds of their region and along the important lines of communication in all directions. The size of Okolište appears to be much larger than the average settlement sites of Late Neolithic and Early Chalcolithic of southeast Europe, which are usually less than 2.5ha in size. While ditched enclosures of similar sizes are present on the Iberian Peninsula, the size of El Prado (at least 50ha) at present is outstanding for the central plateaus (average size of other enclosures: less than 2ha) and it is amongst the largest sites of Iberia for the second half of the 4th mill. BC. In the case of Okolište, both the layout of the enclosure as well as the interior space with lined up houses point to a planned construction. Although the interior of the Prado enclosure does not show any structured spaces, the regular course of the double-ditched enclosure allows the assumption of an underlying concept for its construction (Müller 2017, 114 f.). Taken together, the settlement conditions, the massive number of pits as well as the planned layout of the ditches point to a place of agglomeration as well as contact located on fertile ground. This agglomeration of social activity reflected in the numerous structures cannot be seen as evidence for an increase in population during the second half of the 4th mill. BC. The total number of contemporary settlements and burial sites in the area would have to be considered for such a calculation, always keeping in mind the many unknown factors such as undetected sites, the number of inhabitants per dwelling as well as burial practices that cannot be retraced anymore.

9.3 An End Has a Start – Conclusion and Future Perspectives

The new investigations at the southern bank of the Tagus River at the western edge of the province of Toledo provided outstanding results concerning the Chalcolithic communities of the southern Meseta. The territorial study of the whole province, including the mapping of the known late prehistoric sites, painted a picture of the late Neolithic/Chalcolithic of the Tagus middle basin that has been unknown up to now (see chapter 5 and 6). Research conducted on site at El Prado – taking into account the scientific analyses as well – provided a compact sequence of information on chronology and late prehistoric archaeological structures that on the southern Meseta can only be compared to the results of the works of Bueno and her team in Huecas. The generated data in Huecas derived from various sites, whereas the excavation and analyses in Azután all represent the single site of El Prado. It provided new data of considerable interest for the Late Prehistory of the Iberian interior.

Hitherto, the significant location of the Prado enclosure and its adjacent sites became evident. It is a huge diched enclosure, equalled by only a few others far in the south and southwest of the Iberian peninsula. An unexpected discovery that surpassed the initial assumptions of the project by far and – together with the dolmens and sites such as the ones of the municipality of Huecas – demonstrating that the sedentary communities of the interior were in close contact and constant exchange with the coastal areas of the peninsula.

With this study, investigations in Azután end temporarily, but enough potential for future

research has emerged. As this PhD-thesis only could investigate a small part of the enclosure, it cannot answer all questions that arose during the intensive research of the micro region – for example because of the poor preservation of pollen. Amongst other open questions, it must remain undecided whether the double-ditched enclosure stopped at the river or continued on the northern bank including the Tagus. The lifespan of the other ditches and structures of the Prado area remains unknown and insight into a small part of the area was gained only. Apart from that, excavations at the sites of Los Pedazos and Los Viñones should be conducted to falsify or verify the existence of prehistoric structures. A close collaboration with geomorphologists would be reasonable for a better understanding of the formation processes of the prehistoric landscape, aiming at a more holistic approach. These points mentioned above are just a few of the unresolved research issues in the area of the modern village of Azután.

The Prado enclosure – as well as other sites in the vicinity of Azután – offers enough opportunities for further on-site studies. It becomes evident that the west of the province of Toledo has a high potential for prehistoric research. Subsequent projects would be desirable to gain more insight into the past of this impressive landscape. A next step could be the completion of the magnetic plan at least on the southern terraces of the Tagus and to try geomagnetic measuring on the northern terraces in the territory of the modern village of Alcolea de Tajo. If the enclosure continues north of the river, there might be a chance to detect parts of it in Alcolea de Tajo, despite the likely destruction due to the installation of extensive irrigation systems.

Residue analyses on pottery could provide further information on the diet of the community of El Prado and might compensate for the bad preservation of pollen or macro remains (chapter 6.3.3 and 6.3.4). It also might help in creating a better picture of the close environment, as the food probably was cultivated in the close surroundings.

To complete the bigger picture of the province of Toledo and its prehistoric sites, further least cost analyses of sites with a reliable chronology such as Los Castillos de las Herencias and Huecas should be done. Additionally further ^{14}C-dates for already excavated sites should be obtained to get an idea about possible interactions. The cost-distance analyses as well as the dates can serve to give a clearer image of the Late Neolithic and Chalcolithic settlement areas of the southern Meseta and can help to retrace old path networks.

It can be assumed that an area containing relevant resources – especially the salt-rich toledean Mancha – is a blank space on the current archaeological map during the Late Neolithic and Chalcolithic because hardly any archaeological research has been conducted. This and other still existing gaps on the archaeological map of the province of Toledo can certainly be filled with more detailed fieldwork like systematic surveys conducted in the micro region and presented in this PhD thesis. The work does not end here, it just started. Disregarding Central Iberia during prehistoric times would only create an incomplete picture, leading to interpretations such as semi-sedentary communities and an almost deserted interior. As can be seen by the research of the recent decades and this study, intensive fieldwork, excavations and publishing the results can prove this assumption to be wrong and put the centre of the peninsula in perspective.

Bibliography

Albert et al. 2008: R. M. Albert/R. Shahack-Gross/D. Cabanes/A. Gilboa/S. Lev-Yadun/M. Portillo/I. Sharon/E. Boaretto/S. Weiner, Phytolith-rich Layers from the Late Bronze and Iron Ages at Tel Dor (Israel). Mode of Formation and Archaeological Significance. Journal of Archaeological Science 35, 2008, 57–75.

Albert et al. 2016: R. M. Albert/J. A. Ruíz/A. Sans, PhytCore ODB. A New Tool to Improve Efficiency in the Management and Exchange of Information on Phytoliths. Journal of Archaeological Science 68, 2016, 98–105.

Albizuri et al. 2019: S. Albizuri/J. Nadala/P. Martín/J. F. Gibaja/A. M. Cólliga/X. Esteve/X. Oms/M. Martí/R. Pou/D. López-Onaindia/M. E. Subirà, Dogs in Funerary Contexts during the Middle Neolithic in the Northeastern Iberian Peninsula (5th–early 4th Millennium BCE). Journal of Archaeological Science. Reports 24, 2019, 198–207.

Alcalde et al. 2012: G. Alcalde/L. Colominas/E. Pons/M. Saña/C. Tornero, Excavacions arqueològiques al jaciment de La Dou 2010 – 2011 (Sant Esteve d'en Bas, La Garrotxa). In: A. M. Puig (ed.), Onzenes Jornades d'Arqueologia de les Comarques de Girona. Girona, 15 i 16 de juny de 2012 (Girona 2012) 71–78.

Alcalde et al. 2014: G. Alcalde/L. Colominas/V. Navarrete/E. Pons/J. Revelles/R. Rosillo/R. Sala/M. Saña/C. Tornero/O. Vila, Intervencions arqueològiques al jaciment de la Dou 2012-2013 (Sant Esteve d'en Bas, La Garrotxa). In: J. Frigola (ed.), Dotzenes Jornades d'Arqueologia de les Comarques de Girona, Besalú, 2014 (Girona 2014) 65–73.

Almeida/Carvalho 2011: F. Almeida/J. Carvalho, Técnicas não intrusivas na prospecção arqueológica. In: C. M. B. Martins/A. M. S. Bettencourt/J. I. F. P. Martins/J. Carvalho (eds.), Povoamento e Exploracao dos Recursos Mineiros na Europa Atlantica Ocidental (Braga 2011) 503–520.

Alonso et al. 1998: A. Alonso/F. Franco/M. García Anton/G. Garzon/F. Gómez Manzaneque/C. Morla/L. J. Sánchez Hernando, Reconstrucción morfosedimentaria y fitogeográfica del tramo medio del río Jarama (Madrid, España) durante la segunda mitad del Holoceno. Estudio preliminar. Cuadernos do Laboratorio Xeolóxico de Laxe 23, 1998, 71–88.

de Álvaro 1987: E. de Álvaro, La Edad del Cobre en el valle del Tajo. Carpetania 1, 1987, 11–42.

de Álvaro/Pereira 1990: E. de Álvaro/J. Pereira, El Cerro del Bú. In: Diputación provincial de Toledo (ed.), Actas del primer congreso de Arqueologí de la provincia de Toledo (Toledo 1990) 199–212.

de Álvaro/Piñón 1995: E. de Álvaro/F. Piñón, Los Castillos de las Herencias y el poblamiento calcolítico en la Cuenca Media del Tajo. In: Instituto Português do Partimónio Arquitectónico e Arqueológico (ed.), Origens, Estructuras e Relações das Culturas Calcolíticas da Península Ibérica. Actas das I Jornadas Arqueológicas de Torres Vedras 3–5 abril de 1987. Trabalhos de Arqueología 7 (Lisbon 1995) 277–291.

de Álvaro et al. 1988: E. de Álvaro/L. Municipio/F. Piñón, Informe sobre el yacimiento de "Los Castillos" (Las Herencias, Toledo). Un asentamiento calcolítico en la Submeseta Sur. In: Junta de Comunidades de Castilla-La Mancha (ed.), Actas del I Congreso de Historia de Castilla La Mancha. Tomo II. Pueblos y culturas prehistoricas y protohistóricas (1) (Toledo 1988) 181–192.

Andreae 1977: B. Andreae, Agrargeographie. Strukturzonen und Betriebsformen in der Weltlandwirtschaft (Berlin 1977).

Ariño/Rodríguez 1997: E. Ariño/J. Rodríguez, El poblamiento romano y visigodo en el territorio de Salamanca. Datos de una prospección intensiva. Zephyrus 50, 1997, 225–245.

Ariño et al. 2002: E. Ariño/J. Rodríguez/S. Riera, Del romano al medievo. Estructuras de hábitat y evolución del paisaje vegetal en el territorio de Salamanca. Zephyrus 55, 2002, 283–309.

Arnaud 1993: J. M. Arnaud, O povoado calcolitico de Porto Torrão (Ferreira do Alentejo). Síntese das investigações realizadas. Vipasca 2, 1993, 41–60.

Arteaga 2001: O. Arteaga, Fuente Álamo im Territorium von El Argar. In: H. Schubart/V. Pingel/O. Arteaga (eds.), Fuente Álamo. Band 1: Die Grabungen von 1977 bis 1991 in einer bronzezeitlichen Höhensiedlung Andalusiens (Mainz 2001) 161–203.

de Balbín/Bueno 1994: R. de Balbín/P. Bueno, Arte postpaleolítico en Castilla-La Mancha. In: Diputación provincial de Toledo (ed.), La Edad del Bronce en Castilla-La Mancha. Actas del Simposio 1990 (Toledo 1994) 87–109.

Balsera et al. 2015: V. Balsera/J. Bernabeu/M. Costa/P. Díaz-del-Rio/L. García/S. Pardo, The Radiocarbon Chronology of Southern Spain's Late Prehistory (5600–1000 cal BC). A Comparative Review. Oxford Journal of Archaeology 34.2, 2015, 135–156.

Barciela et al. 2014: V. Barciela/G. García/E. López, El yacimiento de Los Limoneros II (Elche). In: F. Jover/P. Torregrosa/G. García (eds.), El Neolítico en el Bajo Vinalopó (Alicante, España). BAR International Series 2646 (Oxford 2014) 51–54.

Barley 1998: N. Barley, Tanz ums Grab (Stuttgart 1998).

Barrio/Olmos 1990: C. Barrio/N. Olmos, Un "idolillo-violin" con perforación central (La Encantada-Layos-Toledo). In: Diputación provincial de Toledo (ed.), Actas del primer congreso de Arqueologí de la provincia de Toledo (Toledo 1990) 512–516.

Barroso et al. 2003: R. Barroso/P. Bueno/R. de Balbín, Primeras producciones metálicas en la cuenca interior del Tajo. Cáceres y Toledo. Estudos Pré-históricos 10, 2003, 87–107.

Barroso et al. 2014: R. Barroso/P. Bueno/R. de Balbín/A. Vazquez/A. González, Nekropolen des 3. Jahrtausends v. Chr. im Zentrum der Iberischen Halbinsel. Madrider Mitteilungen 55, 2014, 1–28.

Barroso et al. 2017: R. Barroso/P. Bueno/R. de Balbín/M. A. Lancharro, Production and Consumption of Salt in the Inland Tagus Valley in Prehistory (Spain). In: M. Bartelheim/P. Bueno/M. Kunst (eds.), Key Resources and Sociocultural Developments in the Iberian Chalcolithic. RessourcenKulturen 6 (Tübingen 2017) 89–105.

Bartelheim 2013: M. Bartelheim, Allgemeine Angaben zum Teilprojekt A 02 Viel Erz und wenig Wasser. Sozio-kultureller Wandel in Verbindung mit Ressourcennutzung in der jüngeren Vorgeschichte der Iberischen Halbinseln ([Unpublished Proposal] Tübingen 2013).

Bartelheim 2016: M. Bartelheim, A 02: Many Ores and Little Water. Socio-Cultural Change in Connection with the Use of Resources in the Later Prehistory of the Iberian Peninsula, last updated 05.05.2016, <https://www.uni-tuebingen.de/en/research/core-research/collaborative-research-centers/sfb-1070/projects/project-division-a-developments/project-a-02.html> (last access: 12.12.2016).

Bartelheim/Krauß 2012: M. Bartelheim/R. Krauß, Sense and Non-Sense of the Term 'Chalcolithic'. In: M. J. Allen/J. Gardiner/A. Sheridan (eds.), Is there a British Chalcolithic? People, Place and Polity in the later 3rd millenium. Prehistoric Society Research Papers No. 4 (Oxford 2012) 85–97.

Bartelheim/Montero 2009: M. Bartelheim/I. Montero, Many Ores and Little Water. The Use of Resources on the Iberian Peninsula during the Bronze Age. In: M. Bartelheim/H. Stäuble (eds.), The Economic Foundations of the European Bronze Age. Forschungen zur Archäometrie und Altertumswissenschaft 4 (Rhaden/Westf. 2009) 5–22.

Barth et al. 2008: F. E. Barth/H. Reschreiter/K. Kowarik, Von der Sau zum Speck. In: A. Kern/K. Kowarik/A. W. Rausch/H. Reschreiter (eds.), Salz – Reich. 7000 Jahre Hallstatt (Wien 2008) 78–79.

Batata/Borges 2013: C. Batata/N. Borges, A importância da Fonte Quente enquanto “Lugar Central” no contexto do povoamento Pré-Histórico do Alto Ribatejo, durante a Pré-História Recente. Arkeos 34, 2013, 161–168.

Becker 1995: H. Becker, From Nanotesla to Picotesla. A new Window for Magnetic Prospecting in Archaeology. Archaeological Prospection 2, 1995, 217–228.

Becker 2000: H. Becker, Geophysikalisch-Archäologische Prospektion in der Umgebung von Ambrona (Prov. Soria) 1998. Madrider Mitteilungen 41, 2000, 43–53.

Becker 2017: H. Becker, Becker Prospections. Recent Projects. Los Cascajos, Navarra, Spain, last updated 27.10.2017, <https://becker-prospection.blogspot.com/2017/10/blog-post.html> (last access: 17.05.2020).

Becker/Flade-Becker 2015: H. Becker/A. S. Flade-Becker, Magnetische Prospektion in Azutan 2014. Technical Report about the Work for the Project A02 of the SFB 1070 Undertaken in Azután (Bad Heilbrunn 2015) [Unpublished Report].

Beer 2012: B. Beer, Kultur und Ethnizität. In: B. Beer/H. Fischer (eds.), Ethnologie. Einführung und Überblick (Berlin 2012) 53–74.

Behre 1981: K. E. Behre, The Interpretation of Anthropogenic Indicators in Pollen Diagrams. Pollen et Spores 23, 1981, 225–245.

Benítez et al. 2009: L. Benítez/P. Bueno/R. Barroso/R. de Balbín/J. A. López (eds.), Arqueología, Medio Ambiente y Obras Públicas. El Valle de Huecas (Huecas, Toledo) (Ciudad Real 2009).

Bernabeu 1993: J. Bernabeu (ed.), El III milenio a.C. en el País Valenciano. Los poblados de Jovades (Concentaina) y Arenal de la Costa (Ontinyent). Saguntum 26 (Valencia 1993).

Bernabeu et al. 1994: J. Bernabeu/J. L. Pascual-Benito/T. Orozco/E. Badal/M. P. Fumanal/O. García, Niuet (L’Alqueria d’Asnar). Poblado del III milenio a.C. Recerques del Museu d’Alcoi 3, 1994, 9–74.

Bernabeu et al. 2002: J. Bernabeu/T. Orozco/A. Díez, El poblamiento neolítico. Desarrollo del paisaje agrario en les valls de L’Alcoi. In: M. Hernández/J. M. Segura (eds.), La Sarga. Arte rupestre y territorio (Alcoi 2002) 171–184.

Bernabeu et al. 2003: J. Bernabeu/T. Orozco/A. Díez/M. Gómez/F. J. Molina, Mas d’Is (Penànguila, Alicante). Aldeas y recintos monumentales del neolítico inicial en el valle del Serpis. Trabajos de Prehistoria 60.2, 2003, 39–59.

Bernabeu et al. 2006: J. Bernabeu/L. Molina/A. Díez/T. Orozco, Inequalities and Power. Three Millennia of Prehistory in Mediterranean Spain (5600–2000 cal BC). In: P. Díaz-del-Río/L. García (eds.), Social Inequality in Iberian Late Prehistory. BAR International Series 1525 (Oxford 2006) 97–116.

Bernabeu et al. 2012: J. Bernabeu/T. Orozco/A. Diez, Mas d’Is y las construcciones con fosos del VI al III milenio cal a.C. MARQ. Arqueología y Museos 5, 2012, 53–72.

Bernbeck 1997: R. Bernbeck, Theorien in der Archäologie. Uni-Taschenbücher 1964 (Tübingen 1997).

Bettencourt et al. 2003: A. M. S. Bettencourt/A. Dinis/C. Cruz/I. S. Silva, O povoamento Calcolítico do alvéolo de Vila Chã, Esposende (Norte de Portugal). Notas a propósito das escavações arqueológicas de Bitarados. Portugalia Nova Série 24, 2003, 29–50.

Blakely 1996: R. J. Blakely, Potential Theory in Gravity and Magnetic Applications (Cambridge 1996).

Blasco 1994: M. C. Blasco (ed.), El horizonte campaniforme de la región de Madrid en el centenario de Ciempozuelos (Madrid 1994).

Blasco et al. 2007: C. Blasco/G. Delibes/J. Baena/C. Liesau/P. Ríos, El poblado calcolítico de Camino de las Yeseras (San Fernando de Henares, Madrid). Un escenario favorable para el estudio de la incidencia campaniforme en el interior peninsular. Trabajos de Prehistoria 64.1, 2007, 151–163.

Blasco et al. 2016: C. Blasco/L. Galindo/V. M. Sánchez/P. Ríos/C. Liesau, Ampliando el registro del Neolítico en el interior peninsular: ocupaciones inéditas en tres yacimientos de la región de Madrid. In: H. Bonet (ed.), Del neolític a l'edat del bronze en el Mediterrani occidental. Estudis en homenage a Bernat Martí Oliver (Valencia 2016) 257–267.

Boaventura 2006: R. Boaventura, Os IV e III milénios a.n.e. na região de Monforte, para além dos mapas com pontos: os casos do cluster de Rabuje e do povoado com fossos de Moreiros 2. Revista Portuguesa de Arqueologia 9.2, 2006, 61–73.

Boaventura/Mataloto 2013: R. Boaventura/R. Mataloto, Entre mortos e vivos. Nótulas acerca da cronologia absoluta do Megalitismo do Sul de Portugal. Revista Portuguesa de Arqueologia 16, 2013, 81–101.

Borrell et al. 2015: F. Borrell/J. Bosch/T. Majó, Life and Death in the Neolithic Variscite Mines at Gavà (Barcelona, Spain). Antiquity 89, 2015, 72–90.

Bosch-Gimpera 1913: P. Bosch-Gimpera, Adquisiciones de la Colecció Vives de Madrid. Annuari de l'Institut d'Estudis Catalans V (14), 1913, 875–876.

Bosch et al. 1996: J. Bosch/A. Estrada/M. J. Noain, Minería neolítica en Gavà (Baix Llobregat, Barcelona). Trabajos de Prehistoria 53.1, 1996, 59–71.

Bourdieu 1983: P. Bourdieu, Ökonomisches Kapital. Kulturelles Kapital. Soziales Kapital. In: R. Kreckel (ed.), Soziale Ungleichheiten (Göttingen 1983) 183–198.

Bourdieu/Waquant 1992: P. Bourdieu/L. J. D. Waquant, An Invitation to Reflexive Sociology (Chicago 1992).

Breuer 2008: T. Breuer, Iberische Halbinsel. Spanien, Portugal. Wissenschaftliche Länderkunde (Darmstadt 2008).

Brockhaus 1993: s.v. Transhumanz. Brockhaus Enzyklopädie in vierundzwanzig Bänden. Neunzehnte, völlig neu bearbeitete Auflage. Band 22: Tep–Ur (Mannheim 1993) 314.

Bronk Ramsey 1993: C. Bronk Ramsey, Analysis of Chronological Information and Radiocarbon Calibration. The Program Oxcal. Archaeological Computing Newsletter 41, 1993, 11–16.

Bronk Ramsey 1995: C. Bronk Ramsey, Radiocarbon Calibration and Analysis of Stratigraphy. The OxCal Program. Radiocarbon 37.2, 1995, 425–430.

Bronk Ramsey 2020: C. Bronk Ramsey, OxCal, last updated 24.08.2020, <https://c14.arch.ox.ac.uk/oxcalhelp/hlp_contents.html> (last access: 18.10.2020).

Bueno 1988: P. Bueno, Los dólmenes de Valencia de Alcántara. Excavaciones Arqueológicas en España 155 (Madrid 1988).

Bueno 1990: P. Bueno, Megalitos en la submeseta sur. La provincia de Toledo. In: Diputación Provincial de Toledo (ed.), Actas del primer congreso de arqueología de la provincia de Toledo (Toledo 1990) 126–162.

Bueno 1991: P. Bueno, Megalitos en la Meseta Sur. Los Dolmenes de Azután y La Estrella (Toledo). Excavaciones Arqueológicas en España 159 (Madrid 1991).

Bueno 2000: P. Bueno, El espacio de la muerte en los grupos neolíticos y calcolíticos de la Extremadura española. Las arquitecturas megalíticas. Extremadura Arqueológica 8, 2000, 35–80.

Bueno et al. 1999a: P. Bueno/R. de Balbín/R. Barroso/J. M. Rojas/R. Villa/R. Félix/S. Rovira, Neolítico y Calcolítico en Huecas (Toledo), el Túmulo de Castillejo, campaña de 1998. Trabajos de Prehistoria 56.2, 1999, 141–160.

Bueno et al. 1999b: P. Bueno/R. de Balbín/R. Barroso/J. Alcolae/R. Villa/A. Moraleda, El Dolmen de Navalcán. El poblamiento megalítico en el Guadyerbas (Toledo 1999).

Bueno et al. 2000: P. Bueno/A. González/S. Rovira, Áreas de habitación de falsa cúpula en la cuenca extremeña del Tajo. Acerca del poblado con necrópolis del Canchal en Jaraíz de la Vera (Cáceres). In: J. Jiménez/J. J. Enríquez (eds.), Extremadura Arqueológica 8. El megalitismo en Extremadura (Homenaje a Elías Diéguez Luengo) (Mérida 2000) 209–242.

Bueno et al. 2002: P. Bueno/R. Barroso/R. de Balbín/M. Campo/F. Etxeberría/A. González/L. Herraste/J. Juan/P. López/J. A. López/B. Sánchez, Áreas habitacionales y funerarias en el Neolítico de la cuenca interior del Tajo. La provincia de Toledo. Trabajos de Prehistoria 59.2, 2002, 65–79.

Bueno et al. 2004: P. Bueno/R. de Balbín/R. Barroso, Application d'une méthode d'analyse du territoire à partir de la situation des marqueurs graphiques à l'intérieur de la Péninsule Ibérique. Le Tage International. L'anthropologie 108, 2004, 653–710.

Bueno et al. 2005a: P. Bueno/R. de Balbín/R. Barroso, El dolmen de Azután (Toledo). Áreas de habitación y áreas funerarias en la cuenca interior del Tajo (Alcalá de Henares 2005).

Bueno et al. 2005b: P. Bueno/R. Barroso/R. de Balbín, Ritual campaniforme, ritual colectivo. La necrópolis de cuevas artificiales del Valle de las Higueras, Huecas, Toledo. Trabajos de Prehistoria 62.2, 2005, 67–90.

Bueno et al. 2005c: P. Bueno/R. Barroso/R. de Balbín/M. Campo/A. González/F. Etxeberria/L. Herrasti/V. Galván/J. Juan-Tresserras/J. A. López/P. López/J. C. Matamala/J. J. Millos/B. Robledo/G. Trancho/B. Sánchez, Alimentación y economía en contextos habitacionales y funerarios del Neolítico meseteño. In: R. Ontañón Peredo/C. García-Moncó Piñeiro/P. Arias Cabal (eds.), Actas del III Congreso del Neolítico en la Península Ibérica. Santander, 5 a 8 de octubre de 2003 (Santander 2005) 83–92.

Bueno et al. 2006: P. Bueno/R. Barroso/R. de Balbín, Agricultores y metalúrgicos en la Meseta sur. In: J. Pereira (ed.), Prehistoria y Protohistoria de la Meseta Sur (Castilla-La Mancha). Biblioteca Añil 31 (Ciudad Real 2006) 57–76.

Bueno et al. 2009: P. Bueno/R. Barroso/R. de Balbín, Agricultores y metalúrgicos en el Valle de Hucas. In: L. Benítez/P. Bueno/R. Barroso/R. de Balbín/J. A. López (eds.), Arqueología, Medio Ambiente y Obras Públicas. El Valle de Huecas (Huecas, Toledo) (Ciudad Real 2009) 35–71.

Bueno et al. 2010: P. Bueno/R. Barroso/R. de Balbín, Megalitos en la cuenca interior del Tajo. MUNIBE 32, 2010, 152–187.

Bueno et al. 2011: P. Bueno/R. Barroso/R. de Balbín, Entre lo visible y lo invisible. Registros funerarios de la Prehistoria reciente de la Meseta Sur. In: P. Bueno/A. Gilman/C. Martín/F. J. Sánchez (eds.), Arqueología, Sociedad, territorio y paisaje. Estudios sobre prehistoria reciente, protohistoria y transición al mundo romano en homenaje a Mª Dolores Fernández Posse. Biblioteca Praehistórica hispana 28 (Madrid 2011) 53–73.

Bueno et al. 2012a: P. Bueno/R. Barroso/R. de Balbin, 5.000 años atrás. Primeros agricultores y metalúrgicos del Valle de Huecas (Huecas, Toledo) (Toledo 2012).

Bueno et al. 2012b: P. Bueno/R. Barroso/R. de Balbín, Les grottes artificielles et le Campaniformes à l'intérieur de la péninsule ibérique: la nécropole de Valle de las Higueras. In: M. Sohn/J. Vaquer (eds.), Sépultures collectives et mobiliers funéraires de la fin du Néolithique en Europe occidentale. Archives d'Écologie Préhistorique (Toulouse 2012) 359–381.

Bueno et al. 2013: P. Bueno/R. Barroso/R. de Balbín, Interior Regions and Places of Collective Memory: The Megalithism of the Interior Basin of the Tagus, Iberian Peninsula. A Reflection After Reading the Tara Project, In: M. O'Sullivan/Ch. Scarre/M. Doyle (eds.), Tara – From the Past to the Future. Towards a New Research Agenda. Wordwell LTD and School of Archaeology (Dublin 2013) 484–502.

Bueno et al. 2015: P. Bueno/R. Barroso/R. de Balbín, Graphic Programmes as Ideological Construction of the Megaliths. The South of the Iberian Peninsula as Case Study. In: L. Rocha/P. Bueno/G. Branco (eds.), Death as Archaeology of Transition. Thoughts and Materials. Papers from the II International Conference of Transition Archaeology. Death Archaeology 29th April–1st May 2013. BAR International Series 2708 (Oxford 2015) 51–69.

Bueno et al. 2016a: P. Bueno/R. Barroso/R. de Balbín, Between East and West. Megaliths in the Centre of the Iberian Peninsula. In: L. Laporte/C. Scarre (eds.), The Megalithic Architectures of Europe (Oxford 2016) 157–166.

Bueno et al. 2016b: P. Bueno/R. Barroso/R. de Balbín/A. González/O. Cambra-Moo/O. García/C. Odriozola-Lloret/O. López/S. Escalante/M. A. Lancharro-Gutiérrez/José M. López-Fraile, Pasados releídos. El dolmen del Portillo de las Cortes. Guadalajara/MAN. Boletín del Museo Arqueológico Nacional 34, 2016, 9–28.

Bueno et al. 2017: P. Bueno/R. Barroso/R. de Balbín, Ancestors' Images as Marks of the Past. The Dolmen of Azután, Toledo (Spain). In: M. Bartelheim/P. Bueno/M. Kunst (eds.), Key Resources and Sociocultural Developments in the Iberian Chalcolithic. RessourcenKulturen 6 (Tübingen 2017) 23–36.

Burghardt 1971: A. F. Burghardt, A Hypothesis about Gateway Cities. Annals of the Association of American Geographers 61.2, 1971, 269–285.

Caballero 1981: A. Caballero, Las pinturas rupestres esquemáticas de "La Chorrera" (Los Yebenes, Toledo). In: Dirección General de Bellas Artes, Archivos y Bibliotecas (ed.), Altamira Symposium (Madrid 1981) 469–474.

Cabanes et al. 2011: D. Cabanes/S. Weiner/R. Shahack-Gross, Stability of Phytoliths in the Archaeological Record. A Dissolution Study of Modern and Fossil Phytoliths. Journal of Archaeological Science 38, 2011, 2480–2490.

Calado/Rocha 2007: M. Calado/L. Rocha, As primeiras sociedades camponesas no Alentejo Central. A evoluçao do povoamento. In: E. Cerrillo/J. Valadés (eds.), Los primeros campesinos de La Raya. Aportaciones recientes al conocimiento del neolítico y calcolítico en Extremadura y Alentejo. Actas de las Jornadas de Arqueología del Museo de Cáceres. Memorias 6 (Cáceres 2007) 29–46.

Cámara/Molina 2006: J. A. Cámara/F. Molina, Selection of Data, Determinism and Scientific Relevance in Interpretations of Social Development in the Late Prehistory of the Iberian Southeast. In: P. Díaz-del-Río/L. García (eds.), Social Inequality in Iberian Late Prehistory. BAR International Series 1525 (Oxford 2006) 21–35.

Cardoso 2008: J. M. Cardoso, Escavação Arqueológica no sítio Pré-Histórico da Forca (Barca, Maia). Actas das I Jornadas Arqueológicas da Bacia do Rio Leça. Matesinus 6, 2008, 30–69.

Cardoso/Bettencourt 2008: J. L. Cardoso/A. M. S. Bettencourt, Caça e pastorícia no calcolítico do NW de Portugal. O caso da Estação Arqueológica de Bitarados. Estudos do Quaternário 5, 2008, 79–86.

Carrión 2012: J. S. Carrión (ed.), Paleoflora y Paleovegetación de la Península Ibérica e Islas Baleares. Plioceno-Cuaternario (Murcia 2012).

Carrobles/Méndez-Cabeza 1991: J. Carrobles/M. Méndez-Cabeza, Introducción al estudio del Calcolítico en la Jara toledana. Anales toledanos 28, 1991, 7–23.

Carrobles et al. 1994: J. Carrobles/K. Muñoz/S. Rodríguez, Poblamiento durante la edad del Bronce en la Cuenca Media del Tajo. In: Diputación provincial de Toledo (ed.), La Edad del Bronce en Castilla-La Mancha. Actas del Simposio; 1990 (Toledo 1994) 173–200.

Castaños 1992: P. M. Castaños, Estudio arqueozoológico de la fauna del Cerro de la Horca (Plasenzuela, Cáceres). Archaeofauna 1, 1992, 127–146.

Castro et al. 1996: P. V. Castro/V. Lull/R. Micó, Cronología de la prehistoria reciente de la Península Ibérica y Baleares (c. 2800–900 cal ANE). BAR International Series 652 (Oxford 1996).

de Cedello 1907: El Conde de Cedello, Catino protohistórico de Burujón (provincia de Toledo). Boletín de la Real Academia de la Historia 50, 1907, 463–464.

Cerrillo 2005: E. Cerrillo, Los primeros grupos neolíticos de la cuenca extremeña del Tajo. BAR International Series 1393 (Oxford 2005).

Cerrillo 2006: E. Cerrillo (ed.), Los Barruecos: Primeros resultados sobre el poblamiento neolítico de la cuenca extremeña del Tajo. Memorias de Arqueología Extremeña 6 (Merida 2006).

Cerrillo 2011: E. Cerrillo, Planteamiento y nuevos datos para la interpretación de los paisajes prehistóricos del sector extremeño del Tajo: El área de Alconétar. Zephyrus 68, 2011, 139–161.

Cerrillo et al. 2002: E. Cerrillo/A. Prada/A. González/F. J. Heras, La secuencia cultural de las primeras sociedades productoras en Extremadura: Una datación absoluta del yacimiento de los Barruecos (Malpartida de Cáceres, Cáceres). Tabajos de Prehistoria 59.2, 2002, 101–111.

Chapman 2008: R. Chapman, Producing Inequalities. Regional Sequences in Later Prehistoric Southern Spain. Journal of World Prehistory 21, 2008, 195–260.

Chrispeels et al. 1994: M. J. Chrispeels/D. E. Sadava/B. Mulligan, Plants, Genes, and Agriculture (Boston 1994).

Christaller 1933: W. Christaller, Die zentralen Orte in Süddeutschland – Eine ökonomisch-geographische Untersuchung über die Gesetzmäßigkeiten der Verbreitung und Entwicklung der Siedlungen mit städtischer Funktion (Jena 1933).

Christaller 1968: W. Christaller, Die zentralen Orte in Süddeutschland. Eine ökonomisch-geographische Untersuchung über die Gesetzmäßigkeiten der Verbreitung und Entwicklung der Siedlungen mit städtischer Funktion. Reprint of edition 1933, Jena (Darmstadt 1968).

Cirujano/Medina 2002: S. Cirujano/L. Medina, Plantas acuáticas de las lagunas y humedales de Castilla-La Mancha (Madrid 2002).

Consuegra et al. 2004: S. Consuegra/M. M. Gallego/N. Castañeda, Minería neolítica de sílex de Casa Montero (Vicálvaro, Madrid). Trabajos de Prehistora 61.2, 2004, 127–140.

Costa et al. 2011: M. E. Costa/L. García/M. Murillo-Barroso/R. Parrilla/D. W. Wheatley, Artefactos elaborados en rocas raras en los contextos funerarios del IV–II milenios cal ANE en el sur de España. Una revisión. Menga. Revista de Prehistoria de Andalucía 1, 2011, 253–293.

Crumley 1979: C. L. Crumley, Three Locational Models. An Epistemological Assessment for Anthropology and Archaeology. Advances in Archaeological Method and Theory 2, 1979, 141–173.

Daza 2017: A. Daza, Preliminary Studies of Late Prehistoric Dog (Canis lupus f. Familiaris Linnaeus, 1758) Remains from the Iberian Peninsula. Osteometric and 2D Geometric Morphometric Approaches. Papers from the Institute of Archaeology 27.1, 2017, 1–21.

Delibes 1995: G. Delibes, Neolítico y Edad del Bronce. In: J. C. Alba (ed.), Historia de Zamora. Tomo I. De los Orígenes al final del Medievo (Zamora 1995) 47–100.

Delibes/Montero 1999: G. Delibes/I. Montero (eds.), Las primeras etapas metalúrgicas en la Península Ibérica. 2. Estudios regionales (Madrid 1999).

Delibes et al. 1987: G. Delibes/M. Alonso/M. Rojo, Los sepulcros colectivos del Duero Medio y las Loras y su conexión con el foco dolménico riojano. El megalistismo en la Península Ibérica (Madrid 1987) 181–197.

Delibes et al. 1995: G. Delibes/J. I. Herrán/J. Santiago/J. del Val, Evidence for Social Complexity in the Copper Age of the Northern Meseta. In: K. T. Lillios (ed.), The Origins of Complex Societies in Late Prehistoric Iberia. International Monographs in Prehistory. Archaeological Series 8 (Ann Arbor 1995) 44–63.

Delibes et al. 2009a: G. Delibes/M. Crespo/J. Fernández/J. I. Herrán/J. A. Rodríguez, Un recinto de fosos calcolítico en el valle medio del Duero: El Casetón de la Era (Villalba de los Alcores, Valladolid). In: Comunidad de Madrid (ed.), Actas de las IV Jornadas de Patrimonio Arqueológico de la Comunidad de Madrid (Madrid 2009) 239–247.

Delibes et al. 2009b: G. Delibes/M. Crespo/J. Fernández/J. I. Herrán/J. A. Rodríguez, ¿Stonehenge en Tierra de Campos? Excavaciones en el yacimiento de la Edad del Cobre de El Casetón de la Era (Villalba de los Alcores, Valladolid). In: Ayuntamiento de Valladolid (ed.), Conocer Valladolid. II Curso de Patrimonio Cultural 2008/09 (Valladolid 2009) 15–33.

Delibes et al. 2014: G. Delibes/M. García/J. del Olmo/J. Santiago (eds.), Recintos de fosos calcolíticos del Valle Medio del Duero. Arqueología aérea y espacial (Valladolid 2014).

Denecke 1973: D. Denecke, Der geographische Stadtbegriff und die räumlich-funktionale Betrachtungsweise bei Siedlungstypen mit zentraler Bedeutung in Anwendung auf historische Siedlungsepochen. In: H. Jankuhn/W. Schlesinger/H. Steuer (eds.), Vor- und Frühformen der europäischen Stadt im Mittelalter. Bericht über ein Symposium in Reinhausen bei Göttingen in der Zeit vom 18. bis 24. April 1972. Abhandlungen der Akademie der Wissenschaften in Göttingen. Philologisch-Historische Klasse 3. Folge 83/84 (Göttingen 1973) 33–55.

Díaz-Andreu et al. 1992: M. Díaz-Andreu/C. Liesau/A. Castaño, El poblado calcolítico de la Loma de Chiclana (Vallecas, Madrid). Excavaciones de urgencia realizadas en 1987. Arqueología, Paleontología y Etnología 3, 1992, 31–116.

Díaz-del-Río 2001: P. Díaz-del-Río, La formación del paisaje agrario: Madrid en el III y II milenios BC. Arqueología, Paleontología y Etnografía 9 (Madrid 2001).

Díaz-del-Río 2003: P. Díaz-del-Río, Recintos de fosos del III milenio AC en la Meseta Peninsular. Trabajos de Prehistoria 60.2, 2003, 61–78.

Díaz-del-Río 2004: P. Díaz-del-Río, III Millennium BC Ditched Enclosures in Central Iberia. Oxford Journal of Archaeology 23, 2004, 107–121.

Díaz-del-Rio 2006: P. Díaz-del-Rio, An Appraisal of Social Inequalities in Central Iberia (c. 5300–1600 CAL BC). In: P. Díaz-del-Río/L. García (eds.), Social Inequality in Iberian Late Prehistory. BAR International Series 1525 (Oxford 2006) 67–79.

Díaz-del-Rio 2008: P. Díaz-del-Rio, El contexto social de las agregaciones de población durante el Calcolítico peninsular. ERA-Arqueologia 8, 2008, 128–137.

Díaz-Zorita 2013: M. Díaz-Zorita, The Copper Age in South-West Spain. A Bioarchaeological Approach to Prehistoric Social Organisation (Durham 2013).

Díez et al. 2010: A. Díez/J. Bernabeu/T. Orozco/N. La Roca, Las campañas de excavación de 2010 y 2011 en el Mas d'Is (Penànguila, Alicante). Saguntum PLAV 42, 2010, 105–109.

Drosdowski et al. 1990: G. Drosdowski/W. Müller/W. Scholze-Stubenrecht/M. Wermke (eds.), s.v. Transhumant. Transhumanz, die. Duden, Band 5: Das Fremdwörterbuch (Mannheim 1990) 788.

Duden 2017: Duden Deutsches Universalwörterbuch, Ressource, die, last updated 2020, <https://www.duden.de/rechtschreibung/Ressource> (last access: 01.05.2017).

Dvorská 2001: J. Dvorská, Experimentales Brennen von Keramik. Eine naturwissenschaftliche Studie. Experimentální výpaly keramiky. Přírodovědná studie. Archeologické rozhledy 53, 2001, 45–58.

Eggert 2008: M. K. H. Eggert, Prähistorische Archäologie. Konzepte und Methoden (Tübingen 2008).

Ellis 2000: L. Ellis, Archaeological Method and Theory. An Encyclopedia. Garland Reference Library of the Humanities 1707 (New York 2000).

ENADISMA 1972: ENADISMA, Instituto Geológico y Minero de España, Mapas de rocas industriales, E. 1:200.000. Talavera de la Reina. Hoja 4–7 y memoria 52 (Madrid 1972).

Enríquez/García 2011: J. J. Enríquez/M. García, Excavaciones arqueológicas en los yacimientos calcolíticos de Torrequemado y Torreorgaz (Cáceres). In: P. Bueno/E. Cerrillo/A. Gonzalez, From the Origins. The Prehistory of the Inner Tagus Region. BAR International Series 2219 (Oxford 2011) 219–232.

Escudero et al. 2017: J. Escudero/M. Díaz-Zorita/M. Bartelheim/L. García, Chalcolithic Enclosures in the Lower Guadalquivir Basin. La Loma Del Real Tesoro (Carmona, Seville, Spain) and Its Resources. In: M. Bartelheim/P. Bueno/M. Kunst (eds.), Key Resources and Sociocultural Developments in the Iberian Chalcolithic. RessourcenKulturen 6 (Tübingen 2017) 257–272.

Evangelista/Valera 2019: L. S. Evangelista/A. C. Valera, Segmenting and Depositing: The Manipulation of the Human Body in Ditched Enclosures seen from Perdigões. In: A. C. Valera (ed.), Fragmentation and Depositions in Pre- and Protohistoric Portugal. Lisbon, 14 October 2017 (Lisbon 2019) 47–69.

Evershed et al. 2008: R. P. Evershed/S. Payne/A. G. Sherratt/M. S. Copley/J. Coolidge/D. Urem-Kotsu/K. Kotsakis/M. Özdoğan/A. E. Özdoğan/O. Nieuwenhuyse/P. M. M. G. Akkermans/D. Bailey/R.-R. Andeescu/S. Campbell/S. Farid/I. Hodder/N. Yalman/M. Özbaşaran/E. Bıçakcı/Y. Garfinkel/T. Levy/M. M. Burton, Earliest Date for Milk Use in the Near East and Southeastern Europe Linked to Cattle Herding. Nature 455, 2008, 528–531.

Ezquerra 2009: F. J. Ezquerra, Los sistemas de dehesa en la península ibérica: Reflexiones acerca de su génesis, historia, dinámica y gestión. In: Junta de Castilla y León (ed.), 5° Congreso Forestal Español. Montes y sociedad: Saber qué hacer (Ávila 2009) 2–14.

Fabián 2006: J. F. Fabián, El IV y III Milenio AC en el Valle Amblés (Ávila). Arqueología en Castilla y León 5 (Valladolid 2006).

Fassbinder 2007: J. Fassbinder, Unter Acker und Wadi. Magnetometerprospektion in der Archäologie. In: G. A. Wagner (ed.), Einführung in die Archäometrie (2007) 53–73.

Fita 1897: F. Fita, La cerámica de Ciempozuelos y edad de la piedra pilimentada. Nueva estación prehistórica en la confluencia del Tajo y del Gébalo. Boletín de la Real Academia de la Historia 30, 1897, 448.

Flores/Garrido 2014: R. Flores/R. Garrido, Campaniforme y conflicto social: Evidencias del yacimiento de Humanejos (Parla, Madrid). In: Comunidad de Madrid (ed.), Actas de las novenas jornadas de Patrimonio Arqueológico en la Comunidad de Madrid. Organizada por la Dirección General de Patrimonio Histórico en el Museo Arqueológico Regional de la Comunidad de Madrid durante los días 15 y 16 de noviembre de 2012 (Madrid 2014) 159–167.

Fortó et al. 2006: A. Fortó/P. Martínez/V. Muñoz, Ca l'Estrada (Canovelles, Vallès Oriental): Un exemple d'ocupació de la plana vallesana des de la prehistòria a l'alta edat mitjana. Tribuna d'Arqueologia 2004–2005, 2006, 45–70.

Fortó et al. 2008: A. Fortó/P. Martínez/V. Muñoz, Las Estructuras de combustión de grandes dimensiones de Ca l'Estrada en el Neolítico europeo. In: M. S. Hernández/J. A. Soler/J. A. López (eds.), IV congreso del Neolítico peninsular. 27–30 de noviembre de 2006. Tomo I (Alicante 2008) 306–314.

Galán/Martín 2009: E. Galán/A. M. Martín, Megalitismo y zonas de paso en la cuenca extremeña del Tajo. Zephyrus 44, 2009, 193–205.

Galop/López 2002: D. Y. Galop/J. A. López, Histoire agraire et paléoenvironnement. Les apports de la palynologie et des microfossiles non-polliniques. Trabalhos de Antropologia e Etnologia 42.1–2, 2002, 161–164.

García 2010: G. García, El yacimiento de Fuente de Isso (Hellín) y el poblamiento Neolítico en la provincia de Albacete. Serie 1, Estudios 193 (Albacete 2010).

García 2011: M. García, La Ocupación del Valle del Duero en la prehistoria reciente: Los recintos de fosos. In: V. Mayoral/S. Celestino (eds.), Tecnologías de información geográfica y análisis arqueológico del territorio. Actas del V Simposio Internacional de Arqueología de Mérida. Anejos de Archivo Español de Arqueología LIX (Mérida 2011) 161–166.

García 2012: M. García, Jarama. Terrazas del tramo medio del río Jarama, Madrid. Holoceno (9590–3240 años cal. BP). In: J. S. Carrión (ed.), Paleoflora y Paleovegetación de la Península Ibérica e Islas Baleares. Plioceno-Cuaternario (Murcia 2012) 548–549.

García 2013: M. García, Las Pozas (Casaseca de las Chanas, Zamora). Dos nuevos recintos de fosos calcolíticos en el Valle del Duero. Trabajos de Prehistoria 70.1, 2013, 175–184.

García 2015: M. García, Poblamiento y sociedad en el valle medio del Duero durante la Edad de los Metales (ca. 2800–450 cal. ANE). Un estudio de arqueología del paisaje (Valladolid 2015).

García/Gutiérrez 1990: T. García/M. N. 3.4 El área central (Puebla de Montalbán-Cebolla). In: Diputación provincial de Toledo (ed.), Actas del primer congreso de Arqueologí de la provincia de Toledo (Toledo 1990) 36–39.

García/Sesma 2001: J. García/J. Sesma, Los Cascajos (Los Arcos, Navarra). Intervenciones 1996–1999. Trabajos de arqueología Navarra 15, 2001, 299–306.

García et al. 2008a: O. García/J. Bernabeu/C. M. Barton, Programa de prospección geofísica, microsondeos y catas para la caracterización de un gran foso del IV milenio cal AC en Alt del Punxó (Muro de L'Alcoi, Alacant). Trabajos de Prehistoria 65.1, 2008, 143–154.

García et al. 2008b: R.-L. García/F. Sánchez/A. Vicente/J. M. Rojas/J. Pérez, El yacimiento calcolítico "Valladares I (P.K 0+150)". Asentamiento calcolítico en el valle medio del Tajo. Arse. Boletín del Centro Arqueológico Saguntino 42, 2008, 127–152.

García et al. 2013: L. García/J. M. Vargas/V. Hurtado/T. Ruiz/R. Cruz-Auñón (eds.), El Asentamiento Prehistórico de Valencina de la Concepción, Sevilla. Investigación y tutela en el 150 aniversario del descubrimiento de La Pastora. Serie Historia y Geografía 243 (Sevilla 2013).

García-Moncó 2008: C. García-Moncó, De Brennan a Bogart. Un mayor papel protagonista para el perro entre las primeras sociedades productoras de la Península Ibérica. In: M. S. Hernández/J. A. Soler/J. A. López (eds.), Actas del IV Congreso del Neolítico Peninsular. 27–30 de noviembre de 2006. Tomo I (Alicante 2008) 411–417.

Garrido-Pena 1994: R. Garrido-Pena, El fenómeno campaniforme en la región de Madrid. Estudios de Prehistoria y Arqueología Madrileñas 9, 1994, 67–90.

Garrido-Pena 2000: R. Garrido-Pena, El campaniforme en la Meseta Central de la Península Ibérica (c. 2500–2000 AC.) BAR International Series 892 (Oxford 2000).

Garrido-Pena 2006: R. Garrido-Pena, Transegalitarian Societies. An Ethnoarchaeological Model for the Analysis of Copper Age Bell Beaker Using Groups in Central Iberia. In: P. Díaz-del-Río/L. García (eds.), Social Inequality in Iberian Late Prehistory. BAR International Series 1525 (Oxford 2006) 81–96.

Gibbons/Moreno 2002: W. Gibbons/T. Moreno, The Geology of Spain (London 2002).

Gianotti/Cereijo 2005: C. Gianotti/C. C. Cereijo, Neolítico Final: Montenegro. Testemuña da ocupación humana durante i Neolítico Final e o período alto-medieval na península do Marrazo. In: F. C. Boado/E. Cabrejas (eds.), Obras públicas e patrimonio. Estudo arqueolóxico do corredor do Morrazo. Traballos de Arqueoloxía e Patrimonio 35 (Santiago de Compostela 2005) 50–54.

Gianotti et al. 2011: C. Gianotti/P. Mañana-Borrazás/F. Criado-Boado/E. López-Romero, Deconstructing Neolithic Monumental Space: The Montenegro Enclosure in Galicia (Northwest Iberia). Cambridge Archaeological Journal 21.3, 2011, 391–406.

Giddens 1984: A. Giddens, The Constitution of Society. Outline of the Theory of Structuration (Oxford 1984).

Gómez et al. 2011: M. Gómez/G. Pérez/Y. Carrión, El espacio de la ocupación prehistórica. In: G. Pérez/J. Bernabeu/Y. Carrión/O. García/L. Molina/M. Gómez (eds.), La Vital (Gandía, Valencia). Vida y muerte en la desembocadura del Serpis durante el III y el I milenio a.C. Serie de Trabajos Varios 113 (Valencia 2011) 53–82.

González 1992: A. González, Excavaciones en el Poblado Calcolítico de las Cabrerizas (La Cumbre, Cáceres). Avance para su Estudio. CHDE Trujillo. Asociación Cultural Coloquios Históricos de Extremadura 1992, last updated 2020, <https://www.chdetrujillo.com/excavaciones-en-el-poblado-calcolitico-de-las-cabrerizas-la-cumbre-caceres-avance-para-su-estudio/> (last access: 29.06.2017).

González et al. 1988: A. González/M. de Alvarado/L. Municio/F. Piñon, El poblado de El Cerro de la Horca (Plasenzuela, Cáceres). Datos para la secuencia del Neolítico tardio y de la Edad del Cobre en la Alta Extremadura. Trabajos de Prehistoria 45, 1988, 87–102.

González et al. 1991: A. González/J. Castillo/M. Hernández, La Secuencis estratigráfica en los yacimientos calcolíticos del área de Plasenzuela (Cáceres). In: J. J. Enríquez/A. Rodríguez (eds.), Extremadura Arqueológica 2. I Jornadas de prehistoria y arqueología en Extremadura (1986–1990) (Mérida-Cáceres 1991) 11–26.

González et al. 2008: A. González/E. Cerrillo/J. A. López/L. López, El yacimiento de Sierra de la Pepa (La Cumbre, Cáceres). Apuntes sobre el proceso transicional del Neolítico final al Calcolítico en Extremadura. In: M. S. Hernández/J. A. Soler/J. A. López (eds.), IV Congreso del Neolítico peninsular. 27–30 de noviembre de 2006. Tomo II (Alicante 2008) 340–347.

González 1934: M. González, Excavaciones en Ocaña. Tipografía de archivos. Junta Superior del Tesoro Artístico 130 (Toledo 1934).

Gómez-Manzaneque 2012: F. Gómez-Manzaneque, Gredos. Sistema Central, Ávila. Holoceno (6420–780 años cal. BP). In: J. S. Carrión (ed.), Paleoflora y Paleovegetación de la Península Ibérica e Islas Baleares. Plioceno-Cuaternario (Murcia 2012) 424–426.

Greenblatt 2002: E. Greenblatt, Work/Life Balance. Wisdom or Whining. Organizational Dynamics 31.2, 2002, 177–193.

Gringmuth-Dallmer 1996: E. Gringmuth-Dallmer, Kulturlandschaftsmuster und Siedlungssysteme. Siedlungsforschung. Archäologie – Geschichte – Geographie 14, 1996, 7–31.

Gudeman 2005: S. Gudeman, Community and Economy: Economy's base. In: J. G. Carrier (ed.) A Handbook of Economic Anthropology (Cheltenham 2005) 94–106.

Guerra et al. 2012: E. Guerra/P. J. Cruz/J. F. Fabián/P. Zapatero/S. López, El marco cronológico de la neolitización en el sector suroccidental de la submeseta norte española: Dataciones absolutas del yacimiento de La Atalaya (Muñopepe, Ávila). In: M. Borrell/F. Borrell/J. Bosch/X. Clop/M. Molist (eds.), Redes en el Neolítico. Circulación e Intercambio de Materias, Productos e Ideas en el Mediterráneo Occidental (VII–III milenio aC) (Gavá, Bellaterra, 2–4 de Febrero de 2011) (Gava 2012) 517–523.

Guerra et al. 2015: E. Guerra/P. J. Cruz/J. F. Fabián/P. Zapatero/S. López, Reflexiones sobre los inicios del Neolítico en el SO de la Submeseta Norte española a partir de los documentos de La Atalaya (Muñopepe, Ávila). In: V. Gonçalves/M. Diniz/A. N. Sousa (eds.), Actas do 5 Congresso do Neolítico Peninsular (Universidade de Lisboa, 7–9 Abril 2011) (Lisbon 2015) 323–331.

Gusi I Jener 1991: F. Gusi I Jener, La geografía del paisaje y el territorio cultural de Los Millares. Tabajos de Prehistoria 48, 1991, 165–185.

Hardenberg et al. 2017: R. Hardenberg/M. Bartelheim/J. Staecker, The 'Resource Turn'. A Sociocultural Perspective on Resources. In: A. K. Scholz/M. Bartelheim/R. Hardenberg/J. Staecker (eds.), Resource-Cultures. Sociocultural Dynamics and the Use of Resources. Theories, Methods, Perspectives. RessourcenKulturen 5 (Tübingen 2017) 13–23.

Harding 2013: A. Harding, Salt in Prehistoric Europe (Leiden 2013).

Harrison 1974: R. J. Harrison, Ireland and Spain in the Early Bronze Age. Journal of the Royal Society of Antiquaries of Ireland 104, 1974, 52–73.

Harrison 1985: R. J. Harrison, The 'Policultivo Ganadero', or the Secondary Products Revolution in Spanish Agriculture, 5000–1000 BC. Proceedings of the Prehistoric Society 51.1, 1985, 75–102.

Harrison/Mederos 2000: R. J. Harrison/A. Mederos, Patronage and Clientship. A Model for the Atlantic Final Bronze Age in the Iberian Peninsula. In: C. F. E. Pare (ed.), Metals Make the World Go Round (Oxford 2000) 133–150.

Harrison/Moreno 1985: R. J. Harrison/G. Moreno, El policultivo ganadero o la revolución de los productos secundarios. Trabajos de Prehistoria 42, 1985, 51–82.

Hayden 1995: B. Hayden, Pathways to Power: Principles for Creating Socioeconomic Inequalities. In: T. D. Price/G. M. Feinman (eds.), Foundations of Social Inequality (New York 1995) 15–86.

Herrán et al. 1993: J. I. Herrán/J. C. Iglesias/M. Moratinos, De nuevo sobre las industrias con foliáceos: Fuente de Las Pocillas (Mucientes, Valladolid). Boletín del Seminario de Estudios de Arte y Arqueología LIX, 1993, 47–68.

Higgs 1976: E. S. Higgs, The History of European Agriculture – The Uplands. Philosophical Transactions of the Royal Society of London B. Biological Sciences 275, 1976, 159–173.

Hillier et al. 2008: M. L. Hillier/R. Boaventura/M. Richards, Diet and Mobility of Late Neolithic Populations of Central-South Portugal. Isotopic Analysis of Human Remains from the Lisbon and the Alentejo Regions of Portugal. Apontamentos de Arqueologia e Património 1, 2008, 29–34.

Hirth 1978: K. G. Hirth, Interregional Trade and the Formation of Prehistoric Gateway Communities. American Antiquity 43.1,1978, 35–45.

Hurtado 1980: V. Hurtado, Los ídolos calcolíticos de "La Pijotilla" (Badajoz). Zephyrus 30–31, 1980, 165–203.

Hurtado 1991: V. Hurtado, Informe de las excavaciones de urgencia en "La Pijotilla". Campaña de 1990. Extremadura Arqueológica 2, 1991, 45–67.

Hurtado 1995: V. Hurtado, Interpretación sobre la dinámica cultural en la cuenca media del Guadiana (IV–II milenios A.N.E). Extremadura Arqueológica 5, 1995, 53–80.

Hurtado 1999: V. Hurtado, Los inicios de la complejización social y el campaniforme en Extremadura. SPAL 8, 1999, 47–83.

Hurtado 2004: V. Hurtado, El asentamiento fortificado de San Blas (Cheles, Badajoz). III milenio ANE. Trabajos de Prehistoria, 61.1, 2004, 141–155.

Hurtado 2008: V. Hurtado, Los recintos con fosos en la Cuenca Media del Guadiana. ERA-Arqueologia 8, 2008, 182–197.

Hurtado 2010: V. Hurtado, The Ditched Enclosures of the Middle Guadiana Basin. In: J. E. Mateus/P. Queiroz/A. Buarque/A. R. Cruz/A. C. Valera/L. Shaw Evangelista/L. Carozza/D. Galop/M. Magny/J. Guilaine/C. Fidalgo/L. Oosterbeek (eds.), Ancient Cultural Landscapes in South Europe – Their Ecological Setting and Evolution: Session C11. Gardeners from South America: Session C22. Agro-Pastoralism and Early Metallurgy Sessions: Session S04. The Idea of Enclosure in Recent Iberian Prehistory: Session WS29. Rhytmes et causalites des dynamiques de l'anthropisation en Europe entre 6500 ET 500 BC: hypotheses socio-culturelles et/ou climatiques: Session C88. Union Internationale des sciences préhistoriques et protohistoriques. International Union for Prehistoric and Protohistorique Sciences. Proceedings of the XV World Congress (Lisbon, 4–9 September 2006). Actes du XV Congrès Mondial (Lisbonne, 4–9 Septembre 2006) Vol. 36. BAR International Series 2124 (Oxford 2010) 109–122.

Hurtado/de Amores 1982: V. Hurtado/F. de Amores, Relaciones culturales entre el sudeste frances y La Pijotilla (Badajoz) en el Calcolítico: Las pastilla repujadas y el campaniforme cordado. Habis 13, 1982, 189–210.

Hurtado/Hunt 1999: V. Hurtado/M. Hunt, Extremadura. In: G. Delibes/I. Montero (eds.), Las primeras etapas metalúrgicas en la Península Ibérica. II estudios regionales (Madrid 1999) 241–274.

Joffre et al. 1988: R. Joffre/J. Vacher/C. de los Llanos/G. Long, The Dehesa: An Agrosilvopastoral System of the Mediterranean Region with Special Reference to the Sierra Morena Area of Spain. Agroforestry Systems 6, 1988, 71–96.

Joffre et al. 1999: R. Joffre/S. Rambal/J. P. Ratte, The Dehesa System of Southern Spain and Portugal as a Natural Ecosystem Mimic. Agroforestry Systems 45, 1999, 57–79.

Jorge 1999: S. O. Jorge, Castelo Velho de Freixo de Numão (Vila Nova de Foz Côa, Portugal). Geschichte der Interpretationsversuche. Madrider Mitteilungen 40, 1999, 80–96.

Jorge 2003: S. O. Jorge, Cenografias monumentais pré-históricas: tópicos para uma reflexão. In: V. O. Jorge (ed.), Arquitectando Espaços: Da Natureza à Metapolis (Porto 2003) 63–84.

Jorge 2004: S. O. Jorge, O sítio como mediador de sentido. Castelo Velho de Freixo de Numão: Um recinto monumental pré-histórico do Norte de Portugal. In: F. R. da Silva (ed.), Estudos em Homenagem a Luís António de Oliveira Ramos (Porto 2004) 583–611.

Jorge/Rubinos 2002: S. O. Jorge/A. Rubinos, Cronologia Absoluta de Castelo Velho de Freixo de Numão. Os Dados e os Problemas. Côavisã. Cultura e Ciêcia 4, 2002, 95–111.

Jorge et al. 2002: V. O. Jorge/J. M. Cardoso/A. S. Coixão/L. S. Pereira, Castanheiro do Vento and the Significance of Monumental Copper and Bronze Age Sites in Northern Portugal. In: C. Scarre (ed.) Monuments and Landscape in Atlantic Europe. Perception and Society during the Neolithic and Early Bronze Age (London 2002) 36–50.

Jorge et al. 2003: V. O. Jorge/J. M. Cardoso/L. S. Pereira/A. S. Coixão, O Recinto Pré-histórico de Castanheiro do Vento (Horta do Douro, Vila Nova de Foz Côa): Balanço sucinto das pesquisas realizadas de 1998 a 2003. Portugalia Nova Série 24, 2003, 5–24.

Jover/García 2014: F. J. Jover/G. García, 22. Del VI al III milenio BC: la configuración de nuevos espacios sociales en el valle del Vinalopó. In: F. J. Jover/P. Torregrosa/G. García (eds.), El Neolítico en el Bajo Vinalopó (Alicante, España). BAR International Series 2646 (Oxford 2014) 259–272.

Jover et al. 2000/2001: F. J. Jover/M. Soler/M. A. Esquembre/A. M. Poveda, La Torreta-El Monastil (Elda, Alicante): Un nuevo asentamiento calcolítico en la cuenca del río Vinalopó. Lucentum 19–20, 2000/2001, 27–38.

Katz et al. 2010: O. Katz/D. Cabanes/S. Weiner/A. M. Maeir/E. Boaretto/R. Shahack-Gross, Rapid Phytolith Extraction for Analysis of Phytolith Concentrations and Assemblages during an Excavation. An Application at Tell es-Safi/Gath, Israel. Journal of Archaeological Science 37, 2010, 1557–1563.

Klein 1920: J. Klein, The Mesta. A Study in Spanish Economic History 1273–1836 (Cambridge 1920).

Knitter 2013: D. Knitter, Central Places and the Environment. Investigations of an Interdependent Relationship (Berlin 2013).

Kunst 2001: M. Kunst, Die Kupferzeit der Iberischen Halbinsel. In: M. Blech/M. Koch/M. Kunst (eds.), Denkmäler der Frühzeit. Hispania Antiqua (Mainz 2001) 67–99.

Kunst 2013: M. Kunst, Zambujal (Torres Vedras, Lisboa). Relatório das escavações de 2002. Revista Portuguesa de Arqueologia 16, 2013, 103–131.

Kunst et al. 2014: M. Kunst/J. L. Cardoso/A. Waterman, Human Bones from Chalcolithic Walled Enclosures of Portuguese Estremadura: The Examples of Zambujal and Leceia. In: A. C. Valera (ed.), Recent Prehistoric Enclosures and Funerary Practices in Europe. Proceedings of the International Meeting held at the Gulbenkian Foundation (Lisbon, Portugal, November 2012). BAR International Series 2676 (Oxford 2014) 83–98.

Küßner/Schüler 2014: M. Küßner/T. Schüler, Ein Marschlager in Thüringen. Antike Welt 45.4, 2014, 4.

Lago et al. 1998: M. Lago/C. Duarte/A. Valera/J. Albergaria/F. Almeida/A. Carvalho, Povoado dos Perdigões (Reguengos de Mosaraz). Dados preliminares dos trabalhos arqueológicos realizados em 1997. Revista portuguesa de Arqueología 1.1, 1998, 45–152.

Leisner 1965: V. Leisner, Die Megalithgräber der Iberischen Halbinsel. Der Westen. Band 3. Madrider Forschungen 1 (Berlin 1965).

Leisner/Leisner 1943: G. Leisner/V. Leisner, Die Megalithgräber der Iberischen Halbinsel. Der Süden. Römisch Germanische Forschungen 17 (Berlin 1943).

Leisner/Leisner 1956: G. Leisner/V. Leisner, Die Megalithgräber der Iberischen Halbinsel. Der Westen. Band 1. Madrider Forschungen 1 (Berlin 1956).

Leisner/Leisner 1959: G. Leisner/V. Leisner, Die Megalithgräber der Iberischen Halbinsel. Der Westen. Band 2. Madrider Forschungen 1 (Berlin 1959).

Leisner et al. 1961: V. Leisner/G. Zbyszewski/O. da Veiga Ferreira, Les Grottes Artificielles de Casal do Pardo (Palmela) et la Culture du Vase Campaniforme. Serviços Geológicos de Portugal, Memória N. S. 8 (Lisbon 1961).

Lexico 2020: Lexico, Mesta, last updated 2020, <https://www.lexico.com/definition/mesta> (last access: 28.02.2020).

Liesau 2009: C. Liesau, Ganadería y caza entre los primeros habitantes del Valle de Huecas. In: L. Benítez/P. Bueno/R. Barroso/R. de Balbín/J. A. López (eds.), Arqueología, Medio Ambiente y Obras Públicas. El Valle de Huecas (Huecas, Toledo) (Ciudad Real 2009) 109–116.

Liesau et al. 2008: C. Liesau/C. Blasco/P. Ríos/J. Vega/R. Menduiña/J. F. Blanco/J. Baena/T. Herrera/A. Petri/J. L. Gómez, Un espacio compartido por vivos y muertos: El poblado calcolítico de fosos de Camino de las Yeseras (San Fernando de Henares, Madrid). Complutum 19, 2008, 97–120.

Liesau et al. 2013: C. Liesau/A. Daza/L. Llorente/A. Morales, More Questions than Answers: The Singular Animal Deposits from Camino de Las Yeseras (Chalcolithic, Madrid, Spain). Anthropozoologica 48.2, 2013, 277–286.

Lopes/Boaventura 1997: C. Lopes/R. Boaventura, O povoamento pré-histórico dos 4º–3º milénios na região [de] Monforte: o estado da questão. In: Fundacion Rei Afonso Henriques (ed.), II Congreso de Arqueología Peninsular. Zamora, del 24 al 27 de septiembre de 1996. Vol. 2: Neolítico, Calcolítico y Bronce (Zamora 1997) 381–387.

López 1994: S. López, El Alto del Quemado, poblado calcolítico fortificado en el SO de la Meseta Norte Española. Trabalhos de Arqueología da EAM 2, 1994, 201–214.

López 2016: A. López, Recintos de fosos neolíticos y calcolíticos en la cuenca media del Guadiana. EL papel de la fotografía aérea y las tecnologías de información geográfica (TIG). ARPI. Arqueología y Prehistoria del Interior Peninsular 5, 2016, 47–60.

López 2012a: J. A. López, Valle Amblés. Sierra de Ávila, Ávila. Holoceno medio (6760– ca. 3130 años cal. BP). In: J. S. Carrión (ed.), Paleoflora y Paleovegetación de la Península Ibérica e Islas Baleares. Plioceno-Cuaternario (Murcia 2012) 427–432.

López 2012b: J. A. López, Cerro de la Horca. Plasenzuela, Cáceres. Holoceno (4730 años cal. BP). In: J. S. Carrión (ed.), Paleoflora y Paleovegetación de la Península Ibérica e Islas Baleares. Plioceno-Cuaternario (Murcia 2012) 553.

López 2012c: J. A. López, Los Barruecos. Malpartida, Cáceres. Holoceno (6080–c. 4600 años BP). In: J. S. Carrión (ed.), Paleoflora y Paleovegetación de la Península Ibérica e Islas Baleares. Plioceno-Cuaternario (Murcia 2012) 554–555.

López 2012d: J. A. López, Valle de Huecas. Río Tajo, Huecas, Toledo. Holoceno medio (6530–4220 años cal. BP). In: J. S. Carrión (ed.), Paleoflora y Paleovegetación de la Península Ibérica e Islas Baleares. Plioceno-Cuaternario (Murcia 2012) 587–589.

López 2012e: J. A. López, Azután. Cuenca interior del Tajo, Azután, Toledo. Holoceno (6560–5270 años cal. BP). In: J. S. Carrión (ed.), Paleoflora y Paleovegetación de la Península Ibérica e Islas Baleares. Plioceno-Cuaternario (Murcia 2012) 585–586.

López/Cerrillo 2016: A. López/E. Cerrillo, Arqueología aérea y fuentes de datos libres. Posibilidades y límites. Revista OtArq – Otras Arqueologías 1, 2016, 181–193.

López/López 2000: P. López/J. A. López, Análisis polínico del Dolmen de Azután. Revista Española de Micropaleontología 32.1, 2000, 107–114.

López/López 2005: J. A. López/P. López, IX.I Análisis palinológicos en el dolmen de Azután (Toledo). Una aproximación a los inicios de la agricultura y la ganadería en la Meseta Sur. In: P. Bueno/R. de Balbín/R. Barroso, El dolmen de Azután (Toledo). Áreas de habitación y áreas funerarias en la cuenca interior del Tajo. IX. Datos para la reconstrucción paleoambiental y económica (Alcalá de Henares 2005) 225–243.

López et al. 1998: J. A. López/B. van Geel/S. Farbos-Textier/M. F. Diot, Remarques paléoécologiques à propos de quelques palynomorphes non-polliniques provenant de sédiments quaternaires en France. Revue de Paléobiologie 17.2, 1998, 445–459.

López et al. 2000: J. A. López/B. van Geel/M. Martín, Aplicación de los microfósiles no polínicos en Palinología Arqueológica. In: V. O. Jorge (ed.), Contributos das Ciências e das Technologias para a Arqueologia da Península Ibérica. Actas 3º Congresso de Arqueologia Peninsular, vol. IX, Vila-Real, Portugal, setembro de 1999 (Porto 2000) 11–20.

López et al. 2003: J. A. López/M. Dorado/F. Burjachs/M. B. Ruiz/P. López/J. F. Fabián, Paleoambiente y paleoeconomía durante la Prehistoria en el Valle Amblés (Ávila). Polen 13, 2003, 129–141.

López et al. 2005: M. López/M. Escolá/J. Fernández/L. González/J. Morín/F. Sánchez/D. Urbina, Los asentamientos humanos. De la Prehistoria a la Edad Moderna. In: J. Morín (ed.), Descubriendo el pasado. Los trabajos de Arqueología en la Autovía de los Viñedos. Tramo I (Toledo-Consuegra) (Toledo 2005) 25–36.

López et al. 2007a: J. A. López/P. López/L. López/E. Cerrillo/A. González/A. Prada, Origen prehistórico de la dehesa en Extremadura. Una perspectiva paleoambiental. Revista de estudios extremeños 63.1, 2007, 493–509.

López et al. 2007b: J. A. López/A. Gónzalez/E. Cerrillo, Paleoambiente y paleoeconomía durante el Neolítico antiguo y el Calcolítico en Extremadura: Análisis arqueopalinológico del yacimiento del Cerro de la Horca (Plasenzuela, Cáceres, España). Zephyrus 60, 2007, 145–153.

López et al. 2009: J. A. López/L. López/S. Pérez, Historia de la vegetación y paleoambiente del Valle de Huecas. In: L. Benítez/P. Bueno/R. Barroso/R. de Balbín/J. A. López (eds.), Arqueología, Medio Ambiente y Obras Públicas. El Valle de Huecas (Huecas, Toledo) (Ciudad Real 2009) 89–108.

López et al. 2014: G. López/J. Carrobles/J. Morín, Las Primeras trasformaciones en el paisaje: El poblamiento en la prehistoria reciente en el área cigarralera. In: J. Carrobles/J. Morín (eds.), Los paisajes culturales de la ciudad de Toledo: Los cigarrales. Dehesas, espacios irrigados, torres, cigarrales y trincheras. BAR International Series 2638 (Oxford 2014) 61–74.

Lull et al. 2010: V. Lull/R. Micó/C. Rihuete/R. Risch, Metal and Social Relations of Production in the 3rd and 2nd Millennia BCE in the Southeast of the Iberian Peninsula. Trabajos de Prehistoria 67, 2010, 323–347.

Madella et al. 2005: M. Madella/A. Alexandre/T. Ball, International Code for Phytolith Nomenclature 1.0. Annals of Botany 96, 2005, 253–260.

Maldonado et al. 2005: F. J. Maldonado/V. Roch/J. M. Rubiales/C. Morla/I. García-Amorena, Caracterización y significación de los yacimientos paleobotánicos (paleoxililógicos) de la Sierra de Gredos. IV Congreso Forestal Español, (Zaragoza-Spain), Actas 2005 (no information).

Márquez/Jiménez 2010: J. E. Márquez/V. Jiménez, Recintos de Fosos. Genealogía y significado de una tradición en la Prehistoria suroeste de la Península Ibérica (IV–III milenios AC) (Málaga 2010).

Martínez et al. 2012: V. Martínez/O. López/E. Moreno, El poblado calcolítico de El Juncal (Getafe, Madrid). Actas de las novenas jornadas de Patrimonio Arqueológico en la Comunidad de Madrid 9, 2012, 149–158.

Martín/Delibes 1975: R. Martín/G. Delibes, Hallazgos arqueológicos en la provincia de Zamora (II). Boletín del Seminario de Estudios de Arte y Arqueología 50–51, 1975, 445–476.

Mataloto/Boaventura 2009: R. Mataloto/R. Boaventura, Entre vivos e mortos nos IV e III milénios a.n.e. do Sul de Portugal. Um balanço relativo do povoamento com base em datações pelo radiocarbono. Revista Portuguesa de Arqueologia 12.2, 2009, 31–77.

McKenzie 1967: R. D. McKenzie, The Metropolitan Community (1967 New York).

Molina et al. 2004: F. Molina/J. A. Cámara/J. Capel/T. Nájera/L. Sáez, Los Millares y la periodización de la prehistoria reciente del sureste. In: Fundación Cueva de Nerja (ed.), II–III Simposios de Prehistoria. Cueva de Nerja (Nerja 2004) 142–158.

Montero/Murillo 2017: I. Montero/M. Murillo, Los inicios de la metalurgia en la prehistria europea. Índice Histórico Español 130, 2017, 129–153.

Montero et al. 1990: I. Montero/S. Rodríguez/J. M. Rojas, Arqueometalurgía de la provincia de Toledo. Minería y recursos minerales de cobre (Toledo 1990).

Morales 2006: A. Morales, Los Barruecos (Malpartida de Cáceres): Una fauna neolítica a cielo abierto. In: E. Cerrillo (ed.), Los Barruecos: Primeros resultados sobre el poblamiento neolítico de la cuenca extremeña del Tajo. Memorias de Arqueología Extremeña 6 (Merida 2006) 111–131.

Morán/Parreira 2003: E. Morán/R. Parreira, O povoado calcolítico de Alcalar (Portimão) na paisagem cultural do Alvor no III milénio antes da nossa era. In: S. O. Jorge (ed.), Recintos murados da Pré-História Recente (Porto/Coimbra 2003) 305–327.

Morán/Parreira 2009: E. Morán/R. Parreira, La exhibición del poder en el megalitismo del Suroeste Peninsular: Tres casos de estúdio en el extremo sur de Portugal. Cuadernos de Prehistoria y Arqueologia de la Universidad de Granada 19, 2009, 139–162.

Moreno et al. 2011: E. Moreno/V. Martínez/O. López, El Juncal (Getafe, Madrid). Nuevo recinto de foso en la Comunidad de Madrid, < https://www.academia.edu/> (last access: 29.03.2016).

Morgado et al. 2016: A. Morgado/J. A. Lozano/L. García/M. Luciañez/C. P. Odriozola/D. Lamarca/Á. Fernández Flores, The Allure of Rock Crystal in Copper Age Southern Iberia: Technical Skill and Distinguished Objects from Valencina de la Concepción (Seville, Spain). Quaternary International 424, 2016, 232–249.

Mulholland/Rapp 1992: S. C. Mulholland/G. J. Rapp, Phytolith Systematics. An Introduction. In: J. G. Rapp/S. C. Mulholland (eds.), Phytolith Systematics. Emerging Issues (New York 1992) 1–13.

Müller 2017: J. Müller, From the Neolithic to the Iron Age – Demography and Social Agglomeration. The Development of Centralized Control? In: M. Fernández-Götz/D. Krausse (eds.), Eurasia at the Dawn of History. Urbanization and Social Change (Cambridge 2017) 106–124.

Müller et al. 2019: J. Müller/M. Hinz/M. Wunderlich (eds.), Megalith. Societies. Landscapes. Early Monumentality and Social Differentiation in Neolithic Europe. Proceedings of the International Conference “Megaliths – Societies – Landscapes. Early Monumentality and Social Differentiation in Neolithic Europe” (16th–20th June 2015) in Kiel, Volume 1–3 (Bonn 2019).

Müller-Christ 2011: G. Müller-Christ, Sustainable Management. Coping with the Dilemmas of Resource-Oriented Management (Heidelberg 2011).

Muñoz 2008: J. J. Muñoz, Las salinas de Consabura (Consuegra, Toledo). In: J. Mangas/M. A. Novillo (eds.), El territorio de las ciudades romanas (Madrid 2008) 527–549.

Muñoz 1993: K. Muñoz, El poblamiento desde el Calcolítico a la primera Edad del Hierro en el valle medio del río Tajo. Complutum 4, 1993, 321–336.

Muñoz 1998: K. Muñoz, El poblamiento desde el neolítico final a la primera edad del hierro en la cuenca media del río Tajo (Madrid 1998).

Muñoz 1999: K. Muñoz, La prehistoria reciente en el Tajo central (cal. V-I milenio A.C.). Complutum 10, 1999, 91-122.

Muñoz/García 1999: K. Muñoz/T. García, Hacia una caracterización de la Edad del Cobre en la cuenca media del Tajo. Anales Toledanos 37, 1999, 9–28.

Muñoz et al. 1995: K. Muñoz/T. García/D. Izquierdo, Aportaciones al estudio de la Edad del Cobre en la cuenca media del río Tajo. Boletín del Seminarios de Estudio de Arte y Arqueología 61, 1995, 31–50.

Muralha et al. 2005: J. Muralha/A. M. Vale/V. O. Jorge/L. S. Pereira/G. L. Velho, Sítio pré-histórico de Castanheiro do Vento (Horta do Douro, Vila Nova de Foz Côa): Principais conclusões das escavações de 2005. Portugalia Nova Série 26, 2005, 41–52.

Murillo/Martinón-Torres 2012: M. Murillo/M. Martinón-Torres, Amber Sources and Trade in the Prehistory of the Iberian Peninsula. European Journal of Archaeology 15, 2012, 187–216.

Murillo/Montero 2017: M. Murillo/I. Montero, The Social Value of Things. Amber and Copper in the Iberian Chalcolithic. In: M. Bartelheim/P. Bueno/M. Kunst (eds.), Key Resources and Sociocultural Developments in the Iberian Chalcolithic. RessourcenKulturen 6 (Tübingen 2017) 273–290.

Murrieta-Flores 2012: P. Murrieta-Flores, Understanding Human Movement through Spatial Technologies. The Role of Natural Areas of Transit in the Late Prehistory of South-Western Iberia. Trabajos de Prehistoria 69.1, 2012, 103–122.

Nakoinz 2012: O. Nakoinz, Models of Centrality. In: W. Bebermeier/R. Hebenstreit/E. Kaiser/J. Krause (eds.), Landscape Archaeology Conference (LAC 2012), eTopoi. Journal for Ancient Studies, Special Volume 3 (Berlin 2012) 217–223.

Nakoinz 2013: O. Nakoinz, Archäologische Kulturgeographie der ältereisenzeitlichen Zentralorte Südwestdeutschlands. Universitätsforschungen zur prähistorischen Archäologie 224 (Bonn 2013).

Nakoinz 2019: O. Nakoinz, Zentralität. Theorie, Methoden und Fallbeispiele zur Analyse zentraler Orte. Berlin Studies of the Ancient World 56 (Berlin 2019).

Neubauer 2001: W. Neubauer, Magnetische Prospektion in der Archäologie. Mitteilungen der Prähistorischen Kommission 44 (Wien 2001).

Nocete 1989: F. Nocete, El espacio de la coerción. La transición al Estado en las campiñas del alto Guadalquivir (España) 3000–1500 aC. BAR International Series 492 (Oxford 1989).

Nocete 2001: F. Nocete, Tercer milenio antes de nuestra era. Relaciones y contradicciones centro/periferia en el Valle del Guadalquivir (Barcelona 2001).

Odriozola et al. 2008: C. P. Odriozola/V. Hurtdao/M. I. Dias/M. I. Prudêncio, Datación por técnicas luminiscentes de la tumba 3 y el conjunto campaniforme de La Pijotilla (Badajoz, España). In: S. Rovira/M. García-Heras/M. Gener/I. Montero (eds.), VII congreso ibérico de arqueometría. Madrid, 8–10 de octubre 2007 (Madrid 2008) 211–225.

Odriozola et al. 2017: C. P. Odriozola/R. Villalobos/P. Bueno/R. Barrosa/R. Flores/P. Díaz-del-Río, Late Prehistoriy Body Ornaments. Exchange and Social Dynamics in the Middle Tagus Basin. In: M. Bartelheim/P. Bueno/M. Kunst (eds.), Key Resources and Sociocultural Developments in the Iberian Chalcolithic. RessourcenKulturen 6 (Tübingen 2017) 59–87.

del Olmo 1999: J. del Olmo, Arqueología Aérea en Castilla y León. Revista de Arqueología 215, 1999, 44–49.

Oosterbeek 1994: L. Oosterbeek, Echoes from the East: The Western Network – North Ribatejo (Portugal). An Insight to Unequal and Combined Development, 7000–2000 BC (London 1994).

Orozco et al. 2008: T. Orozco/J. Bernabeu/L. Molina/A. Diez, Los recintos Neolíticos como expresión de poder en el Mediterráneo Peninsular. Era arquelogia 8, 2008, 172–181.

Pacheco/Pérez 2007: C. Pacheco/R. Pérez, Memoria de Aldeanueva de San Bartolomé (Toledo 2007) [Unpublished Report].

Pacheco et al. 2010/2011: C. Pacheco/M. Isidro/A. Escobar/S. de la Llave. El poblamiento calcolítico en Talavera de la Reina: El yacimiento de Cabañuelas. Una aportación a la prehistoria reciente del valle del Tajo. Cuaderna 18–19, 2010/2011, 7–36.

Pacione 2009: M. Pacione, Urban Geography. A Global Perspective (London 2009).

do Paço/Sangmeister 1956: A. do Paço/E. Sangmeister, Vila Nova de São Pedro eine befestigte Siedlung der Kupferzeit in Portugal. Germania 34, 1956, 211–230.

Papantoniou/Vionis 2019: G. Papantoniou/A. K. Vionis (eds.), Central Places and Un-Central Landscapes. Political Economies and Natural Resources in the Longue Durée (Basel 2019).

Pascual 1989: J. L. Pascual, El foso de Marges Alts (Muro, Alcant). In: Universidad de Zaragoza (ed.), Crónic del XIX Congreso Arqueológico Nacional. Ponencias y comunicaciones. Vol. 1 (Zaragoza 1989) 227–238.

Pascual et al. 1993: J. L. Pascual/J. Bernabeu/J. Pascual, Los yacimientos y las estructuras. In: J. Bernabeu (ed.), El III milenio a.C. en el País Valenciano. Los poblados de Jovades (Cocentaina, Alacant) y Arenal de la Costa (Ontinyent, Valencia). Saguntum PLAV 26 (Valencia 1993) 25–46.

Pascual et al. 2005: J. Pascual/M. Barberà/A. Ribera, Camí de Missena (La Pobla del Duc): Un interesante yacimiento del III milenio en el País Valenciano. Actas III Congreso del Neolítico en la Península Ibérica (Santander 2005) 803–814.

Pearson 2000: M. P. Pearson, The Archaeology of Death and Burial (Texas 2000).

Perestrelo/Osório 2005: M. S. G. Perestrelo/M. Osório, Pré-História recente na região da Guarda – alguns subsídios. Côavisão. Cultura e Ciência 7, 2005, 207–231.

Piñón et al. 1984: F. Piñón/P. Bueno/J. Pereira, La estación de arte rupestre esquemático de La Zorrera (Mora). Anales Toledanos 19, 1984, 9–36.

Polvorinos et al. 2002: A. Polvorinos/V. Hurtado/M. J. Hernandez/J. Almarza, Arqueometría de cerámicas de la tumba 3 del yacimiento calcolítico de La Pijotilla (Badajoz). In: IV Congreso Nacional de Arqueometría. Valencia, del 15 al 17 de octubre 2001 (Valencia 2002) 1–8.

Pucher 2008: E. Pucher, Knochen verraten prähistorische Schinkenproduktion. In: A. Kern/K. Kowarik/A. W. Rausch/H. Reschreiter (eds.), Salz – Reich. 7000 Jahre Hallstatt (Wien 2008) 74–77.

Redondo/Martín 2010: E. Redondo/M. Martín, La excavación arqueológica del yacimiento El Tonto, en Olías del Rey-Mocejón (Toledo). In: A. Madrigal/M. Perlines (eds.), Toledo 2007. Actas de las II Jornadas de Arqueología de Castilla-La Mancha (Toledo 2010) 428–457.

Regev et al. 2015: L. Regev/D. Cabanes/R. Homsher/A. Kleiman/S. Weiner/I. Finkelstein/R. Shahack-Gross, Geoarchaeological Investigation in a Domestic Iron Age Quarter, Tel Megiddo, Israel. Bulletin of the American Schools of Oriental Research 374, 2015, 135–157.

Reimer et al. 2013: P. J. Reimer/E. Bard/A. Bayliss/J. W. Beck/P. G. Blackwell/C. B. Ramsey/C. E. Buck/H. Cheng/R. L. Edwards/M. Friedrich/P. M. Grootes/T. P. Guilderson/H. Haflidason/I. Hajdas/C. Hatté/T. J. Heaton/D. L. Hoffmann/A. G. Hogg/K. A. Hughen/K. F. Kaiser/B. Kromer/S. W. Manning/M. Niu/R. W. Reimer/D. A. Richards/E. M. Scott/J. R. Southon/R. A. Staff/C. S. M. Turney/J. van der Plicht, IntCal13 and MARINE13 Radiocarbon Age Calibration Curves 0–50,000 years calBP. Radiocarbon 55.4, 2013, 1869–1887.

Reuter et al. 2007: H. I. Reuter/A. Nelson/A. Jarvis, An Evaluation of Void Filling Interpolation Methods for SRTM Data. International Journal of Geographicel Information Science 21.9, 2007, 983–1008.

Revuelta 1980: M. Revuelta, Los hallazgos de Pantoja en el Museo de Santa Cruz. Toletum 10, 1980, 9–52.

Ribeiro 1878: C. Ribeiro, Noticia de algumas estaçoes e monumentos prehistoricos. I–Notícia da estação humana de Licêa. Memoria apresentada à Academia Real das Sciencias de Lisboa. Typographia da Academia 21 (Lisbon 1878).

Ríos 2011: P. Ríos, El medio físico. Análisis preliminar de los recursos naturales del III milenio a.C. en la región den Madrid. In: C. Blasco/C. Liesau/P. Ríos (eds.), Yacimientos calcolíticos con campaniforme de la región de Madrid: Nuevos estudios. Patrimonio Arqueológico de Madrid 6 (Madrid 2011) 31–69.

Risch et al. 2015: R. Risch/V. Lull/R. Micó/C. Rihuete, Transitions and Conflict at the End of the 3rd Millennium BC in South Iberia. In: H. Meller/H. W. Arz/R. Jung/R. Risch (eds.), 22oo BC – Ein Klimasturz als Ursache für den Zerfall der Alten Welt? 7. Mitteldeutscher Archäologentag vom 23. Bis 26. Oktober 2014 in Halle (Saale). 2200 BC – A Climatic Breakdown as a Cause for the Collapse of the Old World? 7th Archaeological Conference of Central Germany October 23–26, 2014 in Halle (Saale) (Halle 2015) 365–407.

Rodrigues 2015: A. F. Rodrigues, O sítio da Ponte da Azambuja 2 (Portel, Évora) e a emergência dos recintos de fossos no SW peninsular nos finais do 4º milénio A.N.E. (Faro 2015).

Rodríguez 2005: J. A. Rodríguez, Estudio secuencial de la Edad del Bronce en la ribera del Duero (provincia de Valladolid) (Valladolid 2005).

Rodríguez 2008: J. A. Rodríguez, Estudio secuencial de la Edad del Bronce en la Ribera del Duero (provincia de Valladolid). Arqueología en Castilla y León 7 (Valladolid 2008).

Rodríguez/Moral 2007: J. A. Rodríguez/S. Moral, Algunas notas acerca del poblamiento campaniforme en el sector vallisoletano de la Ribera del Duero. Zephyrus 60, 2007, 181–194.

Rojas 1987a: J. M. Rojas, La Huerta del Diablo: Un posible asentamiento calcolítico con muralla circular. Trabajos de Prehistoria 44, 1987, 271–282.

Rojas 1987b: J. M. Rojas, Los menhires de “La Tochá” (Orgaz-Arisgotas). Carpetania 1, 1987, 237–245.

Rojas 1988: J. M. Rojas, Relación habitat-economia en el mundo campaniforme toledano. In: Servicio de Publicaciones de la Junta de Comunidades de Castilla-La Mancha (ed.), Primer Congreso de Historia de Castilla-La Mancha. Tomo 2. Pueblos y culturas prehistóricas y protohistóricas (1) (Talavera de la Reina 1988) 199–206.

Rojas/Rodríguez 1990: J. M. Rojas/S. Rodríguez, El Guijo: Aportaciones al estudio del Calcolítico y la Edad del Bronce en la cuenca media del Tajo. In: Diputación provincial de Toledo (ed.), Actas del primer congreso de Arqueología de la provincia de Toledo (Toledo 1990) 163–198.

Rojas 1999: J. M. Rojas, Cerámica prehistórica en Talavera y su comarca. Visión de conjunto. Boletin de la Sociedad Española de Cerámica y Vidrio 38.4, 1999, 297–306.

Rojo et al. 2005: M. A. Rojo/M. Kunst/R. Garrido-Pena/I. García-Martínez/G. Morán (eds.), Un desafío a la eternidad. Tumbas monumentales del Valle de Ambrona. Arqueología en Castilla y León 14 (Soria 2005).

Rojo et al. 2008a: M. A. Rojo/R. Garrido-Pena/I. García/M. Kunst, Los recintos del poblado del Neolítico antiguo de la Revilla del Campo (Ambrona, Soria). In: M. S. Hernández/J. A. Soler/J. A. López (eds.), IV Congreso del Neolítico Peninsular, 27–20 de noviembre de 2006 (Alicante 2008) 252–258.

Rojo et al. 2008b: M. Rojo/R. Garrido/I. García-Martínez, Everyday Routines or Special Ritual Events? Bell Beakers in Domestic Contexts of Inner Iberia. In: M. Baioni/V. Leonini/D. Lo Vetro/F. Martini/R. Poggiani Keller/L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting “Archéologie et Gobelets” (Florence-Siena-Villanuova sul Clisi, May 12–15, 2006) (Firenze 2008) 321–326.

Rosser/Fuentes 2007: P. Rosser/C. Fuentes, El yacimiento arqueológico Tossal de les Basses. Seis mil años de historia de Alicante (Alicante 2007).

Rubio et al. 2009: M. Rubio/M. I. Rubio/F. J. Rubio, El poblado calcolítico del Castillejo de la Caballería del Muerto, Herguijuela (Cáceres). In: Asociación Cultural Coloquios Históricos de Extremadura (ed.), Coloquios Históricos de Extremadura 38. Dedicados a la Guerra de la Independencia en Extremadura. Trujillo del 22 al 28 de septiembre de 2008 (Trujillo 2009) 707–726.

Ruiz 1975: F. Ruiz, Una necrópolis de la Edad de Bronce en Yuncos (Toldeo). Sautuola 2, 1975, 117–133.

Ruiz et al. 1990: M. B. Ruiz/R. Vicente/M. Dorado/T. Martín, Datos polínicos e hidrológicos de un humedal localizado en el extremo occidental del Valle de Amblés (Ávila). In: J. M. Recio (ed.), Jornadas de Geografía Física y Análisis Medio Ambiental (Córdoba 1990) 129–137.

Sählhof et al. 2012: M. Sählhof/J. Sigl/C. Vetterling, Ausgrabungsarbeit am Schnitt. In: J. Sigl/C. Vetterling (eds.), Grabungsleitfaden (Darmstadt 2012) 18–65.

Sánchez 2005: B. Sánchez, IX.3. Análisis de los restos faunísticos. In: P. Bueno/R. de Balbín/R. Barroso, El dolmen de Azután (Toledo). Áreas de habitación y áreas funerarias en la cuenca interior del Tajo. IX. Datos para la reconstrucción paleoambiental y económica (Alcalá de Henares 2005) 242–243.

Sangmeister/Schubart 1965: E. Sangmeister/H. Schubart, Grabungen in der kupferzeitlichen Befestigung von Zambujal/Portugal 1964. Madrider Mitteilungen 6, 1965, 39–64.

Santos et al. 2014: R. Santos/P. Rebelo/N. Neto/A. Vieira/J. Rebuje/F. Rodrigues/A. F. Carvalho, Intervenção arqueológica em Porto Torrão, Ferreira do Alentejo (2008–2010): Resultados preliminares e programa de estudos. In: A. C. Silva/F. T. Regala/M. Martinho (eds.), 4.º colóquio de arqueologia do Alqueva. O Plano de Rega (2002–2010). Memórias d'Odiana 2.ª Série. Estudos Arqueológicos do Alqueva (Évora 2014) 74–82.

Sasse 2005: B. Sasse, Spanien und Portugal. In: J. Hoops (ed.), Reallexikon der germanischen Altertumskunde. Band 29 (Skírnismál/Stiklestadt 2005) 285–321.

Sauceda 1991: M. I. Sauceda, La secuencia cultural de 'Los Barruecos'. Malpartida de Cáceres (Cáceres). In: J. J. Enríquez/A. Rodríguez (eds.), Extremadura Arqueológica 2. I Jornadas de prehistoria y arqueología en Extremadura (1986–1990) (Mérida-Cáceres 1991) 27–44.

Schenk/Eichfeld 2006: W. Schenk/I. Eichfeld, Viehhaltung und Weidewirtschaft. In: H. Beck/D. Greuenich/H. Steuer (eds.), Reallexikon der Germanischen Altertumskunde. Von Johannes Hoops. Zweite, völlig neu bearbeitete und stark erweiterte Auflage. Band 32: Vä–Vulgarecht (Berlin 2006).

Schlee 2006: G. Schlee, Wie Feindbilder entstehen. Eine Theorie religiöser und ethnischer Konflikte (München 2006).

Schmitt 2017: F. Schmitt, Enclose Where the River Flows. New Investigations on the Southern Meseta and the Ditched Enclosures of Azután (Toledo). In: M. Bartelheim/P. Bueno/M. Kunst (eds.), Key Resources and Sociocultural Developments in the Iberian Chalcolithic. RessourcenKulturen 6 (Tübingen 2017) 37–57.

Schmitt 2018: F. Schmitt, Nouvelles recherches dans la microrégion d'Azután (Tolède, Espagne) en 2014 et 2015. L'enceinte à fossé « El Prado » dans la moyenne vallée du Tage. In: O. Lemercier/I. Sénépart/M. Besse/C. Mordant (eds.), Habitations et habitat du Néolithique à l'âge du Bronze en France et ses marges. Actes des IIe Rencontres Nord/Sud de Préhistoire récente, Dijon, 19–21 novembre 2015 (Toulouse 2018) 365–369.

Schmitt et al. 2019: F. Schmitt/P. Bueno/M. Bartelheim, Just Passing by? Investigating in the Territory of the Megalith Builders of the Southern European Plains. The Case of Azután, Toledo. In: J. Müller/M. Hinz/M. Wunderlich (eds.), Megalith. Societies. Landscapes. Early Monumentality and Social Differentiation in Neolithic Europe. Proceedings of the international conference "Megaliths – Societies – Landscapes. Early Monumentality and Social Differentiation in Neolithic Europe" (16th–20th June 2015) in Kiel. Volume 2 (Bonn 2019) 601–619.

Schuhmacher 2011: T. X. Schuhmacher, Elfenbein des Chalkolithikums und der Frühen Bronzezeit auf der Iberischen Halbinsel. Ergebnisse eines interdisziplinären Forschungsprojekts. In: A. Banerjee/C. Eckmann (eds.), Elfenbein und Archäologie, INCENTIVS-Tagungsbeiträge 2004–2007. Römisch-Germanisches Zentralmuseum, Tagungen 7 (Mainz 2011) 91–122.

Schuhmacher 2017: T. X. Schuhmacher, Ivory Exchange Networks in the Chalcolithic of the Westerrn Mediterranean. In: M. Bartelheim/P. Bueno/M. Kunst (eds.), Key Resources and Sociocultural Developments in the Iberian Chalcolithic. RessourcenKulturen 6 (Tübingen 2017) 291–312.

SFB 1070 ResourceCultures 2016: SFB 1070 ResourceCultures, Conceptual Introduction Collaborative Research Centre 1070 (CRC or SFB) 'ResourceCultures', last updated 02.11.2016, <https://www.uni-tuebingen.de/index.php?eID=tx_nawsecuredl&u=0&g=0&t=1481640840&hash=12a055bb30be3210514c56971bbbecd9763d1e7d&file=fileadmin/Uni_Tuebingen/SFB/SFB_1070/dokumente/allgemein/Conceptual_Introduction_CRC_1070_ResourceCultures.pdf> (last access: 12.12.2016).

Sherratt 1981: A. Sherratt, Plough and Pastoralism. Aspects of the Secondary Products Revolution. In: I. Hodder/G. Isaac/N. Hammond (eds.), Pattern of the Past. Studies in Honour of David Clarke (Cambridge 1981) 261–305.

Silva/Gomes 2022: A. M. S. P. Silva/S. Gomes, Agra do Crasto, Aveiro. Arqueología e Geofísica (Aveiro 2022).

Siret/Siret 1887: H. Siret/L. Siret, Les premiers âges du métal dans le sud-est de l'Espagne. Résultats de fouilles faites par les auteurs de 1881 á 1887. Texte et album (Bruxelles 1887).

Soares 1988: J. Soares, O povoado da Charneca de Fratel e o Neolítico Final–Calcolítico da Região Ródão–Nisa. Notícia Preliminar. Alto Tejo 2, 1988, 3–6.

Storberg 2002: J. Storberg, The Evolution of Capital Theory. A Critique of a Theory of Social Capital and Implications for HRD. Human Resource Development Review 1.4, 2002, 468–499.

Stuiver/Polach 1977: M. Stuiver/H. A. Polach, Discussion. Reporting of ^{14}C Data. Radiocarbon 19.3, 1977, 355–363.

Taylor et al. 2010: P. J. Taylor/M. Hoyler/R. Verbruggen, External Urban Relational Process. Introducing Central Flow Theory to Complement Central Place Theory. Urban Studies 47.13, 2010, 2803–2818.

Toffolo 2017: M. Toffolo, Report on Phytolith Analysis (Tübingen 2017). Unpublished Report.

Torra/Serrano 2010: M. Torra/E. Serrano, Excavación arqueológica de los yacimientos calcolíticos de Media Legua y Viña Rosa (Olías del Rey, Toledo). In: A. Madrigal/M. Perlines (eds.), Toledo 2007. Actas de las II Jornadas de Arqueología de Castilla-La Mancha (Toledo 2010) 458–475.

Trachsel 2008: M. Trachsel, Ur- und Frühgeschichte. Quellen, Methoden, Ziele (Zürich 2008).

Tresserras/Matamala 2005: J. J. Tresserras/J. Matamala, IX.2. Estudios de residuos microscópicos y compuestos orgánicos en utillaje de molido y análisis de contenido de vasijas cerámicas. In: P. Bueno/R. de Balbín/R. Barroso (eds.), El dolmen de Azután (Toledo). Áreas de habitación y áreas funerarias en la cuenca interior del Tajo. IX. Datos para la reconstrucción paleoambiental y económica (Alcalá de Henares 2005) 235–241.

Tubino 1868: F. M. Tubino, Estudios prehistóricos (Madrid 1868).

Twiss et al. 1969: P. C. Twiss/E. Suess/R. M. Smith, Morphological Classification of Grass Phytoliths. Soil Science Society of America 33, 1969, 109–115.

Ullmann 1980: E. L. Ullmann, Geography as Spatial Interaction (Seattle 1980).

Uribelarrea et al. 2009: D. Uribelarrea/O. López/V. Martínez, Geoarqueología del Valle de Huecas. In: L. Benítez/P. Bueno/R. Barroso/R. de Balbín/J. A. López (eds.), Arqueología, Medio Ambiente y Obras Públicas. El Valle de Huecas (Huecas, Toledo) (Ciudad Real 2009) 117–136.

del Val 1992: J. del Val, El yacimiento calcolítico precampaniforme de Las Pozas, en Casasecas de las Chanas, Zamora. Boletín del Seminario de Estudios de Arte y Arqueología 58, 1992, 47–63.

Vale 2008/2009: A. M. Vale, Castanheiro do Vento (Horta do Douro, Villa Nova de Foz Côa). Alguns apontamentos acerca do dispositivo arquitectónico. Portugalia Nova Série 29–30, 2008/2009, 43–60.

Vale 2010: A. M. Vale, O sítio arqueológico de Castanheiro do Vento (V. N. de Foz Côa, Nordeste de Portugal). Estudo comparativo de um conjunto particular de elementos arquitectónicos. Gallaecia, Revista de Arqueoloxía e Antigüidade 29, 2010, 45–62.

Vale 2011: A. M. Vale, Modalidades de produção de espaços no contexto de uma colina monumentalizada: O sítio pré-histórico de Castanheiro do Vento, Vila Nova de Foz Côa (Porto 2011).

Valera 1997: A. C. Valera, O Castro de Santiago (Fornos de Algodres, Guarda). Aspectos da calcolitização da bacia do alto Mondego. Textos Monográficos 1 (Lisbon 1997).

Valera 2000a: A. C. Valera, O fenómeno campaniforme no Interior Centro de Portugal: O contexto da Fraga da Pena. In: V. O. Jorge (ed.), 3º Congresso de Arqueología Peninsular: UTAD, Vila Real, Portugal, setembro de 1999. Vol. 4: Pré-história recente da Península Ibérica (Vila Real 2000) 269–290.

Valera 2000b: A. C. Valera, Pensar o tempo: Critérios para uma periodizaçãoda Pré-História recente da bacia interior do Mondego. In: ADECAP (ed.), 3º Congresso de Arqueología Peninsular: UTAD, Vila Real, Portugal, setembro de 1999 (Porto 2000) 147–160.

Valera 2007: A. C. Valera, Dinâmias locais de identidade: Estruturação de um espaço no 3° milénio AC (Fornos de Algodres, Guarda) (Braga 2007).

Valera 2008: A. C. Valera, O Novo Recinto de Fossos Calcolítico de Xancra (Cuba, Beja). Apontamentos de Arqueologia e Património 2, 2008, 23–26.

Valera 2011a: A. C. Valera, 0006 – Perdigões complex of enclosures, last updated 17.05.2011, <https://portugueseenclosures.blogspot.de/2011/05/0006-perdigoes-complex-of-enclosures.html> (last access: 26.01.2020).

Valera 2011b: A. C. Valera, 0029 – Porto Torrão ditched enclosure, last updated 14.06.2011, <https://portugueseenclosures.blogspot.de/2011/06/0029-porto-torrao-ditched-enclosure.html> (last access: 09.02.2020).

Valera 2012a: A.C. Valera, Mind the Gap. Neolithic and Chalcolithic Enclosures of South Portugal. In: A. Gibson (ed.), Enclosing the Neolithic. Recent Studies in Britain and Europe. BAR International Series 2440 (Oxford 2012) 165–183.

Valera 2012b: A. C. Valera, Fossos sinuosos na Pré-História Recente do Sul de Portugal: Ensaio de análise crítica. In: M. De Deus (ed.), Actas do V Encontro de Arqueologia do Sudoeste Peninsular (Almodôvar 2012) 25–38.

Valera 2012c: A. C. Valera, 0072 – Águas Frias ditched enclosure, last updated 17.01.2012, <https://portugueseenclosures.blogspot.de/2012/01/0072-aguas-frias-ditched-enclosure.html> (last access: 09.02.2020).

Valera 2012d: A. C. Valera, 0119 – And a new (BIG) one, last updated 31.10.2012, <https://portugueseenclosures.blogspot.de/2012/10/0119-and-new-big-one.html> (last access: 09.02.2020).

Valera 2013a: A. C. Valera, Recintos de fossos da Pré-História Recente em Portugal. Investigação, discursos, salvaguarda e divulgação. Almadan Segunda Série 18, 2013, 93–110.

Valera 2013b: A. C. Valera, Cronologia dos recintos de fossos da Pré-História Recente em território português. In: J. M. Arnaud/A. Martins/C. Neve (eds.), Arqueologia em Portugal 150 anos. Actas do I congresso da Associação dos Arqueólogos Portugueses, Lisboa, AAP, (Lisbon 2013) 335–343.

Valera 2013c: A. C. Valera, 0144 – An amazing 'twin' in Alentejo, last updated 17.01.2013, <https://portugueseenclosures.blogspot.de/2013/01/0143-another-amazing-twin-in-alentejo.html> (last access: 09.02.2020).

Valera 2013d: A. C. Valera, Cronologia absoluta dos fossos 1 e 2 do Porto Torrão e o problema d datação de estructuras negativas "tipo fosso". Apontamentos de Arqueologia e Património 9, 2013, 7–11.

Valera 2017: A. C. Valera, 0365 – Dramatic and continued, last updated 02.04.2017, <https://portugueseenclosures.blogspot.de/2017/04/0365-dramatic-and-continuous.html> (last access: 09.02.2020).

Valera 2019: A. C. Valera (ed.), Fragmentation and Deposition in Pre- and Proto-Historic Portugal (Lisbon, 14 October 2017) (Lisbon 2019).

Valera 2022: A. C. Valera, 0448 – Actualising the Map of Ditched Enclosures, last updated 13.03.2022, <https://portugueseenclosures.blogspot.com/2022/03/0448-actualising-map-of-ditched.html> (last access: 04.05.2024).

Valera 2023: A. C. Valera, Portuguese Prehistoric Enclosures, last updated 06.02.2023, <https://portugueseenclosures.blogspot.com/> (last access: 20.04.2024).

Valera/Filipe 2004: A. C. Valera/I. Filipe, O povoado do Porto Torrão (Ferreira do Alentejo). Novos dados e novas problemáticas no contexto da calcolitizaçã do Sudoeste peninsular. ERA-Arqueología 6, 2004, 29–61.

Valera/do Pereiro 2013: A. C. Valera/T. do Pereiro, Novos recintos de fossos no sul de Portugal: O Google Earth como ferramenta de prospecção sistemática. In: J. M. Arnaud/A. Martins/C. Neves (eds.), Arqueologia em Portugal. 150 anos (Lisbon 2013) 345–350.

Valera/do Pereiro 2015: A. C. Valera/T. do Pereiro, Os recintos de fossos da Salvada e Monte das Cabeceiras 2 (Beja, Portugal). In: N. Medina (ed.), VII Encontro de Arqueologia del Suroeste Peninsular. Aroche-Serpa 29, 30 de Noviembre y 1 de diciembre de 2013 (Aroche 2015) 17–27.

Valera/Rebuge 2008: A. C. Valera/J. Rebuge, Datação B-OSL para o fosso 1 do sítio calcolítico da Forca (Maia). Apontamentos de Arqueologia e Património 1, 2008, 11–12.

Valera et al. 2013: A. C. Valera/H. Becker/R. Boaventura, Moreiros 2 (Arronches, Portalegre). Geofisica e cronología dos recintos interiores. Apontamentos de Arqueologia e Património 9, 2013, 37–46.

Valera et al. 2014a: A. C. Valera/A. M. Silva/J. E. Márquez, The Temporality of Perdigões Enclosures: Absolute Chronology of Structures and Social Practices. SPAL 23, 2014, 11–26.

Valera et al. 2014b: A. C. Valera/H. Santos/M. Figueiredo/R. Granja, Contextos funerários na periferia do Porto Torrão: Cardim 6 e Carrascal 2. In: A. C. Silva/F. T. Regala/M. Martinho (eds.), 4.º colóquio de arqueologia do Alqueva. O Plano de Rega (2002–2010). Memórias d'Odiana 2.ª Série. Estudos Arqueológicos do Alqueva (Évora 2014) 83–95.

Valiente 2005/2006: S. Valiente, Algunos datos sobre la explotación de sal desde la prehistoria hasta la edad media, en la zona sur de Madrid y en el límite con Toledo. Boletín. Asociación Española de Amigos de la Arqueología 44, 2005/2006, 49–62.

Vallespí et al. 1987: E. Vallespí/A. Ciudad/R. García/J. Ramos, Conjuntos líticos del eneolítico y bronce de la provincia de Toledo, en el Museo de Santa Cruz. Carpetania 1, 1987, 69–89.

da Veiga 1886–1891: S. P. M. Estácio da Veiga, Paleoethnologia. Antiguidades monumentaes do Algarve. Tempos prehistoricos. Vol. I–IV (Lisbon 1886–1891).

Vilanova y Piera 1884: J. Vilanova y Piera, Du Cuivre et du bronze en Espagne et de la période qui les a précéds. In: Congrès international d'anthropologie et d'archéologie préhistoriques. Compte-rendu de la neuvième session à Lisbonne 1880 (Lisbon 1884) 352–357.

Villalobos 2016: R. Villalobos, Una aproximación cuantitativa al trabajo destinado a la arquitectura monumental en la Prehistoria Reciente de la meseta norte española. SPAL 25, 2016, 43–66.

Wieland 1999: G. Wieland, Keltische Viereckschanzen. Einem Rätsel auf der Spur (Stuttgart 1999).

Wolf/Faust 2015: D. Wolf/D. Faust, Western Mediterranean Environmental Changes: Evidences from Fluvial Archives. Quaternary Science Reviews 122, 2015, 30–50.

Zöbl 1982: D. Zöbl, Die Transhumanz (Wanderschafhaltung) der europäischen Mittelmeerländer im Mittelalter in historischer, geographischer und volkskundlicher Sicht. Berliner geographische Studien 10 (Berlin 1982).

RESSOURCENKULTUREN 35

‘PASS THE MOUNTAINS, FOLLOW THE MEGALITHS AND THERE YOU ARE!‘

Our knowledge of the Central Iberian prehistoric communities is still worse than that of those in Andalucía or southern Portugal. Recent work on the southern Meseta uncovered site types previously unknown in the central area: On the territory of the modern village of Azután, a large double-ditched enclosure (El Prado) and several other ditched systems were detected on the terraces of the Tagus River. El Prado became the key topic of this study, as it is the only large enclosure of the Mesetas with a chronology contradicting the idea of a diffusion of such sites from the coastal areas.

New investigations revealed outstanding results about the Chalcolithic communities of the southern Meseta. The territorial study of the whole province, including the mapping of the known late prehistoric sites, painted a new picture of the late Neolithic/Chalcolithic of the Tagus middle basin. On-site research at El Prado – taking into account scientific analyses as well – provided new data on chronology and late prehistoric archaeological structures comparable on the southern Meseta only to the results of Primitiva Bueno and her team in Huecas.

The unexpected results from El Prado surpassed the initial expectations by far, proving that the sedentary communities of the interior were in close contact and constant exchange with the coastal areas of the peninsula.

rk SFB 1070 RessourcenKulturen

ISBN 978-3-98945-040-0

TÜBINGEN UNIVERSITY PRESS