Late Prehistoric Fortifications in Europe: Defensive, Symbolic and Territorial Aspects from the Chalcolithic to the Iron Age

Proceedings of the International Colloquium 'FortMetalAges', Guimarães, Portugal



edited by Davide Delfino, Fernando Coimbra, Daniela Cardoso and Gonçalo Cruz



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Prof. Ian Ralston, University of Edinburgh Prof. Luis Berrocal-Rangel, Autonomous University of Madrid Prof. Manuel Fernandez-Gotz, University of Edinburgh Dr Fernando Coimbra, Politechnic Institute of Tomar / Geociences Centre of University of Coimbra Dr Davide Delfino, Geociences Centre of University of Coimbra Dr Gonçalo Cruz, Martin Sarmento Society / University of Minho

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List of Contributors

José Andrés Afonso Marrero is a professor at the Dept. of Prehistory and Archeology of the University of Granada. He was awarded the University of Granada Extraordinary Doctorate Award in History for the academic year 1992-93. His main research interests are: the study of prehistoric lithic flaked technology; the Iberian Peninsula neolithization process; the statistical use of C14 dating to evaluate the chronology of the different societies of Late Prehistory; and archaeological heritage management.

Dpto. Prehistoria y Arqueología, Facultad de Filosofía y Letras, Universidad de Granada. Campus Universitario Cartuja s/n, 18071 Granada, Spain

jaamarre@ugr.es

José Antunes

Martins Sarmento Society. Laboratory of Landscape, Heritage and Territory, University of Minho (Portugal). jose.antunes@msarmento.org

Luis Berrocal-Rangel obtained his PhD in 1992 from the Autonomous University of Madrid, where he is now Professor of European Prehistory and Head of Department. He specializes in Celtic archaeology, mainly of the Celts in the Iberian Peninsula, and in Late Bronze Age and Iron Age architecture. He is Principal Researcher of the project 'Late Prehistory Architecture in the Western Spanish Plateau.' He is member of the European Association of Archaeologists since its foundation in 1993 and became a member of the Real Academia de la Historia of the Kingdom of Spain in 2002. From 2018, he is Vice-president of the Europe Metal Ages Commission of the UISPP. With António C. Silva, he directed surveys and excavations at Ratinhos site from 2003 to 2007.

Department of Prehistory and Archaeology, Universidad Autónoma de Madrid.

Thimo Brestel

From 2007–2012 the author studied 'Pre- and Protohistoric Archaeology' at the Philipps-University of Marburg before his PhD studies at the Philipps-University of Marburg, supervised by Prof. Andreas Müller-Karpe (University of Marburg) and Susanne Sievers (University of Frankfurt). His doctorate (2016) was entitled 'The excavations of the years 1990-2009 in the oppidum of Manching (Bavaria) – Studies on the structure and the fortification of the settlement'. Since 2017 he has been working on the project 'Architecture and stratigraphy of the Late Hallstatt period tumulus at Eberdingen-Hochdorf (Baden-Württemberg)' at the Landesamt für Denkmalpflege Baden-Württemberg in Esslingen. In 2018 he was awarded a travel scholarship by the Roman Germanic Commission (RGK) of the German Archaeological Institute (DAI).

Landesamt für Denkmalpflege Baden-Würrtemberg, Esslingen am Neckar

Juncal Calvo is an architect and she collaborate with the Society of Sciences of Aranzadi. She has done a master in Refurbishment, Restoration and Management of Historical Buildings. Her research is about architectural analysis in the archaeological site. Nowadays she is working with the digitalization of the cartography and with the geographic information systems.

Department of Archaeology. Aranzadi Society of Sciences.

Juan Antonio Cámara Serrano is a professor at the University of Granada Prehistory and Archaeology Department. He received the University of Granada extraordinary award for his graduate degree dissertation in 1994 and for his PhD thesis in 1997. His main research interests are: funerary rituals; the role of ideology in masking and exhibiting hierarchies in European Late Prehistory; prehistoric fortifications and megaliths in southern Iberia and Sardinia. Dpto. Prehistoria y Arqueología, Facultad de Filosofía y Letras, Universidad de Granada. Campus Universitario Cartuja s/n,

18071 Granada,

Spain

jacamara@ugr.es

Jorge Camino Mayor is PhD in Archeology from the University of Alcalá de Henares (Madrid) and works in the Public Administration of the Autonomous Community of Asturias. Among his investigations, mention should be made of the study of Asturian coastal hillforts, excavations in the hillforts of the estuary of Villaviciosa, pioneering works in the understanding of the Roman conquest of Asturias through the Via Carisa, and the study of the Asturica Augusta Legio to Flavionavia via the port of La Mesa. He was the coordinator of the publications *La Carisa and La Mesa: political and military causes of the origin of the Kingdom of Asturias* and the *Astur-Cantabrian Wars*. Universidad de Alcalá Alexandre Canha is a PhD student in University of Coimbra with the dissertation Fortified and Monumentalized Landscapes of the 'Beira-Douro' (3rd to 1st millennium BC) – Architectures, Scenarios and Symbologies. His research interests focus on Poliorcetics and pre-roman defense systems with specific emphasis on Bonze Age and Iron Age. Also, has an interest on Geographic Information Systems (GIS) and Landscape Archaeology. Before, he developed Cultural Heritage studies for Environmental Impact Assessments.

Daniela Cardoso, graduated in Conservation and Restoration variant of Landscape Archeology at the Instituto Politécnico de Tomar (Portugal). Did an Erasmus office in Italy under the Socrates programme at Università di Ferrara, Italy, in 2000. (2002), Masters or MAS-Master of Advanced Studies at the Institut de Paléontologie Humaine, Paris, France, in 'Quaternaire: Géologie, Paléontolongie Humaine, Préhistoire'. (2015), PhD in 'Quaternário, Materiais e Culturas' (Quaternary, Materials and Cultures) at the University of Trás-os-Montes and Alto Douro, Portugal. Museum Superior Technician in Sociedade Martins Sarmento, in Educational Service area, as well as guided tours and the promotion of cultural and scientific events. Organizer or collaborator of several international projects, conferences and symposia. Presented lectures by invitation in Portugal, Spain, France and Italy. As integrated researcher of Landscape, Heritage and Territory Laboratory (Lab2pt), focus its research in the post-Paleolithic Rock Art in the Northwest of Portugal and projets related with Tourism and Patrimony.

António Carlos S. Silva has a degree in History from the University of Lisbon (1975). He has been an archaeologist at the Portuguese Ministry of Culture for forty years, currently retired. During his long professional career, he was Director of the Department of Archaeology of the Portuguese Cultural Heritage Institute (IPPC), from 1982 to 1988; Head of the Archaeological Service of Southern Portugal from 1988 to 1990, and General Director of Archaeology of Portugal in 2006. From 1996 to 2002, he managed a large archaeological survey in southern Portugal, the Alqueva Project, where excavations of Ratinhos were carried out, under his direction. He has written several books on archaeological heritage and Palaeolithic art.

Direção Regional de Cultura do Alentejo.

Fernando A. Coimbra, PhD in Prehistory and Archaeology (with Extraordinary Prize from the University of Salamanca), is an archaeologist and rock art researcher. He is Visiting Professor at Polytechnic Institute of Tomar, and an Internal Researcher of the Geosciences Centre (University of Coimbra), Portugal, where he completed his Post-doc research. He is a member of several research projects in Portugal, Italy, Malta and Greece.

Polytechnic Institute of Tomar / Geosciences Center, University of Coimbra

coimbra.rockart@yahoo.com

Gonçalo Cruz, graduated in History and Archaeology by the University of Minho (Braga, Portugal), is permanent archaeologist at the Martins Sarmento Society (Guimarães, Portugal). His works are directly connected with the research and management of the archaeological sites under the administration of the Martins Sarmento Society, namely the Citânia de Briteiros and Castro de Sabroso, as well as the functioning and activity in different nuclei of the Martins Sarmento Museum. The research has been mostly focused in Iron Age settlement and Romanization of Northern Portugal, counting the collaboration in 10 field work campaigns, the coordination of 14 campaigns, with around 40 scientific publications, between papers, chapters and books.

Martins Sarmento Society. Laboratory of Landscape, Heritage and Territory, University of Minho (Portugal). goncalo.cruz@msarmento.org

Oliver Davis

Cardiff University, UK

Davide Delfino, PhD in 'Quaternary: materials and cultures' from the University of Trás-os-Montes e Alto Douro, is an archaeologist specialized in Bronze Age. He's an archaeologist in the Italian Ministry of Cultural Heritage and Activities, visiting professor at the Polytechnic Institute of Tomar (UNESCO Chair in Humanity and Cultural Integrated Landscape Management) and Internal Researcher of the Geosciences Centre (University of Coimbra). Secretary of the UISPP/IUPPS Scientific Commission 'Metal Ages in Europe' from 2015, member of the Italian Institute of Prehistory and Protohistory from 2018, his scientific interests focus on: warfare and landscape occupation in Bronze Age and Iron Age, archaeometallurgy, excavation and study techniques of hill top settlements, archaeological forgeries, problems in disclosure scientific data in museums. Author of about 80 scientific publication in Italian, English, Portuguese, French and Spanish between papers, chapters, books and conference proceeding, has organized several international conference and thematic session in Portugal, Brazil, France and Spain. Has participated in about 20 field work campaigns in Italy, Greece and Portugal and has directed about 10 field work campaigns in Portugal.

Ministero dei Beni e le Attività Culturale e del Turismo, Polo Museale del Molise/Centro de Geociências da Universidade de Coimbra/Instituto Terra e Memória. davdelfino@gmail.com

Angiolo Del Lucchese

Former archaeologist at the Italian Ministry of Cultural Heritage, Superintendence of Archaeology, Fine Arts, and the landscape of Liguria.

Francesca Di Palma is an independent researcher. She graduated from the University of Padua and made her postgraduate studies at the Federico II University of Naples. As a freelance professional archaeologist, she has gained experience abroad, participating in workshops and international projects. For six years she worked on the project 'Protection, study and enhancement of a museum heritage', co-funded by the Italian Ministry of Foreign Affairs and the University of Molise, for census work, data entry, and digital reproduction of the Archaeological Heritage of the Custody of the Holy Land in Jerusalem. She is currently involved in research concerning her region, Molise, where she is studying the fortified wall circuits of the territory. francesca.dipalma87@hotmail.it

Alberto Dorado Alejos is a technician in the Laboratory of Archaeometry in the Department of Prehistory and Archeology at the University of Granada. He is currently writing his PhD thesis on the study of Late Prehistoric ceramics. He is also interested in social, cultural and economic change in the Late Bronze Age in the southeast of the Iberian Peninsula. Dpto. Prehistoria y Arqueología, Facultad de Filosofía y Letras, Universidad de Granada. Campus Universitario Cartuja s/n, 18071 Granada, Spain doradoalejos@ugr.es

Manuel Fernández-Götz is Reader and Head of Archaeology at the University of Edinburgh, Executive Board Member of the European Association of Archaeologists, and winner of the Philip Leverhulme Prize in Archaeology. He has authored more than 200 publications on Iron Age societies in central and western Europe, the archaeology of identities, and the archaeology of the Roman conquest. Key publications include the monograph Identity and Power: The Transformation of Iron Age Societies in Northeast Gaul (Amsterdam 2014), and the edited volumes Paths to Complexity: Centralisation and Urbanisation in Iron Age Europe (Oxford 2014) and Eurasia at the Dawn of History: Urbanization and Social Change (New York 2016). He has directed fieldwork at Iron Age and Roman sites in Germany, Spain, the United Kingdom and Croatia. University of Edinburgh School of History, Classics and Archaeology

M.Fernandez-Gotz@ed.ac.uk

Rosario García Giménez has PhD degrees in chemistry, legal history, and physical geography. She is Professor of

Geology and Geochemistry at the Faculty of Sciences of the Autonomous University of Madrid. She specializes in XRD and polarization optical microscopy. Her main research areas are in archaeometry, pozzolanic additions to cement using waste, gemmology, loess, mineralogy, and ceramic materials. She coordinates the 'Applied Geochemistry Clays, Cements, and Ceramics' research group.

Department of Geology and Geochemistry, Universidad Autónoma de Madrid

Leif Hansen is Research Associate of the Archaeological Heritage Department at the State Office for Cultural Heritage Baden-Württemberg. Scientific coordinator of the DFG long-term project 'Settlement and cultural landscape development of the Heuneburg surroundings during the Hallstatt and Early La Tène periods'. Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart Referat 84.1 Berliner Str. 12 73728 Esslingen

leif.hansen@rps.bwl.de

Gary Lock is Emeritus Professor of Archaeology at the University of Oxford. His research interests include landscape archaeology, especially with regard to the use of Geographic Information Systems, and the British Iron Age, particularly hillforts of which he has excavated three in England and one in Wales. Having recently co-edited *Re-Mapping Archaeology* for Routledge, Lock is currently publishing the outcomes of the *Atlas of Hillforts of Britain and Ireland* project with Ian Ralston.

Esperanza Martín Hernández is an archaeologist and topographer, trained in Archeology in León University, where she began her specialisation in the Roman military world, first in ceramic productions and then the whole process of the conquest. For more than 20 years she has been working on different projects, including the current development of interventions in the Carisa War context and the Roman *Lucus Asturum* site. dolabra@dolabra.es

Antxoka Martínez is a PhD in Archaeology. He is specialist in the Iron Age and Roman Military Archaeology, and has done several excavations and surveys in eastern Cantabric area. Nowadays he is an archeologist at the Society of Sciences of Aranzadi and directs the research program at de Iron Age Fortification at Munoaundi (Gipuzkoa, Basque Country) and some other projects in different areas.

Department of Archaeology. Aranzadi Society of Sciences.

Rafael M. Martínez Sánchez is a 'Juan de la Cierva' programme contracted researcher at the Department

of Prehistory and Archeology of the University of Granada. His graduate degree and doctorate are from the University of Córdoba. His PhD thesis focused on the study of the Copper Age beginnings in the Guadalquivir River middle valley. He has centered his research on the study of livestock and fauna of the south Iberian Peninsula in Late Prehistory. He has worked with different research teams at several Neolithic and Copper Age sites in Spain, Portugal, Sicily and Morocco. His most recent research is on the neolithisation of the Maghreb.

Dpto. Prehistoria y Arqueología, Facultad de Filosofía y Letras, Universidad de Granada. Campus Universitario Cartuja s/n, 18071 Granada, Spain rmmartinez@ugr.es

Fernando Molina González is chair professor of the Department of Prehistory and Archeology at the University of Granada. He currently leads the research group 'Grupo de Estudios de la Prehistoria Reciente de Andalucía (GEPRAN – HUM274)'. He has also directed various research and excavation projects at several archaeological sites, including Los Millares, La Cuesta del Negro, and Los Castillejos de Montefrío. His interests include: the origin of metallurgy in the south of the Iberian Peninsula; the study of paleodiets; and the development of social inequality in south Iberian Late Prehistory.

Dpto. Prehistoria y Arqueología, Facultad de Filosofía y Letras, Universidad de Granada. Campus Universitario Cartuja s/n, 18071 Granada, Spain molinag@ugr.es

Caroline von Nicolai studied prehistoric and protohistoric archaeology and ancient history at Humboldt University Berlin, Université Paris 1 Panthéon-Sorbonne and Leipzig University. In 2011, she completed her PhD on 'Visible and invisible boundaries. Deposits associated with Iron Age fortifications in temperate Europe' at Ecole Pratique des Hautes Etudes Paris and Justus-Liebig-University Gießen. Afterwards she worked as a curator and assistant project manager for the Baden-Württemberg State exhibition 'The World of the Celts. Centers of power - Treasures of art' (Stuttgart, 09/15/1012-02/17/2013) at the Baden-Württemberg State Museum of Archaeology. She is currently a Post Doc researcher and Lecturer of prehistoric archaeology at the Institute of Prehistorical and Protohistorical Archaeology and Archaeology of the Roman Provinces at Ludwig Maximilians University Munich.

Dirk Krausse is Head of the Archaeological Heritage Department at the State Office for Cultural Heritage Baden-Württemberg and Associate Professor at the Institute of Prehistory, Early History and Medieval Archaeology of the University of Tübingen. Applicant and scientific director of the DFG long-term project 'Settlement and cultural landscape development of the Heuneburg surroundings during the Hallstatt and Early La Tène periods'.

Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart Referat 84.1 Berliner Str. 12 73728 Esslingen dirk.krausse@rps.bwl.de

Carlos Olaetxea is a PhD in Archaeology. He is specialist in the Iron Age's ceramic technology and has done several excavations and has a lot of works about his research in Gipuzkoa. Nowadays he is the Director of Gordailua Gipuzkoa's Center of Heritage Collections and Head of Service of Gordailua and Museums. Gordailua Gipuzkoa Centre of Heritage Collections.

Xabier Peñalver is a PhD in Archaeology and works in the Department of Prehistoric Archeology of the Aranzadi Society of Sciences. Nowadays he has working in different sites like the paleolithic cave at Praileaitz I (Deba) or an Iron Age's hilforts like Basagain (Anoeta). He has a lot of works about the research and the divulgation of his surveys.

Department of Archaeology. Aranzadi Society of Sciences.

Gabriel R. Pereira

CITCEM – Centro de Investigação Transdisciplinar Cultura, Espaço e Memória (University of Oporto); Projeto de Investigação PROBA- Proto-história da Bacia do Antuã

pereira.gr@gmail.com.

Javier Prieto Domínguez is Bachelor in History by the University of Deusto Bilbao in 2013 and has just completed the Master of Archeology and Heritage of the Autonomous University of Madrid (UAM). He is an archeologist at the Society of Sciences of Aranzadi, training as a specialist in the Iron Age, taking part in various excavations and prospectings in Gipuzkoa.

Department of Archaeology. Aranzadi Society of Sciences.

Ian Ralston is Abercromby Professor of Archaeology at the University of Edinburgh. He has worked on the European Iron Age, notably its settlement record, and has excavated at Mont Beuvray in Burgundy and Levroux and Bourges in Berry, France. He has also written extensively on Scottish archaeological topics

c.v.nicolai@vfpa.fak12.uni-muenchen.de

covering all periods from the Mesolithic to the Vikings. Ralston is currently publishing the outcomes of the *Atlas of Hillforts of Britain and Ireland* project with Gary Lock.

Andy Reymann is archaeologist and working as PostDoc at the LOEWE-Project 'Prehistoric Conflict research: Bronze Age Hillforts between Taunus and Carpathian Mountains' at the Goethe University Frankfurt (Germany). His main research topics are ethno-archaeological studies in the field of conflict research and prehistoric violence and the study of prehistoc religions and rituals.'

Goethe University-Frankfurt-am-Main.

Paolo Rondini is Postdoctoral Fellow at the University of Pavia, where he completed his Ph.D. in Archaeology with research on the central Italian Alps during protohistory. His main field of research is Bronze and Iron Age northern Italy, along with specific interests in Bronze Age central Italy and the upper Adriatic region, as well as the iconography of Copper Age engraved monoliths. Since 2012 he has been co-directing several archaeological excavations and research projects, such as Verucchio, Scarceta di Manciano, Ossimo-Pat and the 'Quattro Dossi' Project, set in Valle Camonica.

Lucía Ruano is a PhD researcher at the Autonomous University of Madrid, specializing in the Iron Age of the northern Iberian Peninsula. Her research seeks to use architecture and the use of space to understand long-term processes of change and continuity, as well as to acquire tools from other disciplines, such as ethnography, to better understand aspects of daily life. Department of Prehistory and Archaeology, Universidad Autónoma de Madrid

Sonia San Jose is an archeologist at the Society of Sciences of Aranzadi. She's a specialist in the Iron Age, and she has done several excavations and prospectings in diferent sites in Gipuzkoa, like Munoaundi (Azkoitia-Azpeitia). Nowadays she manages the Archeological collection from Gipuzkoa in Gordailua Gipuzkoa's Center of Heritage Collections and she is doing a Phd in archaeometallurgical studies at the University of Basque Country.

Department of Archaeology. Aranzadi Society of Sciences.

ssanjose@gmx.com

Niall Sharples

Cardiff University, UK

António Manuel S. P. Silva

CITCEM – Centro de Investigação Transdisciplinar Cultura, Espaço e Memória (University of Oporto); Projeto de Investigação PROBA- Proto-história da Bacia do Antuã

amspsilva@hotmail.com.

Liliana Spanedda's PhD thesis (2007) is on the Bronze Age in the Orosei Gulf (Sardinia, Italy), for which she received the Granada University Extraordinary Award in Humanities. Her researches include landscape analysis of southern Iberian and Sardinian Late Prehistoric sites, prehistoric rock art using D-Stretch, and statistical analysis on radiocarbon dates. Contact: Dpto. Prehistoria y Arqueología, Facultad de Filosofía y Letras, Universidad de Granada. Campus Universitario Cartuja s/n, 18071 Granada, Spain spanedda@ugr.es

Roberto Tarpini is Research Associate of the Archaeological Heritage Department at the State Office for Cultural Heritage Baden-Württemberg. Scientific collaborator of the DFG long-term project 'Settlement and cultural landscape development of the Heuneburg surroundings during the Hallstatt and Early La Tène periods'.

Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart Referat 84.1 Berliner Str. 12 73728 Esslingen roberto.tarpini@rps.bwl.de

Lorenzo Zamboni is Adjunct Professor at the University of Pavia, where he obtained his Ph.D. in Archaeology with research on the Greek and Etruscan settlement of Spina. Since 2012 he is co-director of the archaeological excavation at Iron Age Verucchio. Several books and articles published to date cover a wide range of settlement, material, funerary, and theoretical aspects, mainly concerning human presence in northern and central Italy between the Final Bronze Age and the Roman conquest.

Late Prehistoric Fortifications in Europe: Defensive, symbolic and territorial aspects from the Chalcolithic to the Iron Age

Davide Delfino, Fernando Coimbra, Gonçalo Cruz and Daniela Cardoso

In large parts of Europe, walls, fences, berms or ditches around settlements or ritual places became increasingly significant from the Chalcolithic to the Iron Age. Several features have been discovered, relieved and interpreted since the 19th century, giving rise to various terminologies used according to the European regions and the archaeological evidence found: Causewayed camp used in the UK (a site with surrounding banks and/or ditches, with entrances, usually not a settlement); Causewayed enclosure used in the UK (a site with surrounding banks and/or ditches, with entrances, usually not a settlement); Crab's claw used in Italy and France (a site surrounded by ditches with 'crab-claw'-like entrances); Ditched enclosure used in the UK (a site surrounded by ditches, usually with entrances); Earthwork used generically in many regions (any feature, such as a bank, which involves the movement of earth); Einhegung used in central Europe (literally an 'enclosure,' a general term used for sites with encircling features); Enceinte used in western Europe (ditch or fortification surrounding a site); Enclosure used generically in many regions (general term for any feature surrounding a site); Erdwerke used in central Europe (any feature, such as a bank, which involves the movement of earth); Fortification used generically in many regions (interpretive term implying a defensive purpose for an enclosure, usually involving a palisade); Grabenwerke used in central Europe (ditch surrounding a site); Henge used in the UK (upright stones or wood with spaces surrounding an area, usually with no settlement); Hillfort used generically in many regions (elevated settlement surrounded by ditches); Interrupted ditches used in north-western Europe (discontinuous ditches with many 'entrances'); Kreisgrabenanlagen used in central Europe (circular ditches, fortifications, and sometimes henges); Kreispalisadenanlagen used in central Europe (a fence of closely arranged wooden posts surrounding a site); Palisade used generically in many regions (a fence of closely arranged wooden posts surrounding a site); Rondel used in central Europe (site surrounded by multiple concentric ditches, usually not a settlement); and System ditches used in northern Europe (discontinuous ditches with many 'entrances') (Parkinson, Duffy 2007: 102). To this

list may be added *casteddi*, used in Corsica (a village perched on a hill surrounded by a drystone wall), *castellari* used in Liguria (a terraced village perched on a hill), *castellieri* used in north-eastern Italy and along the coast of Croatia (a fortified settlement on a hill surrounded by embankment and palisade or drywall), *oppida* used for the fortified towns of the Celtic world, and *castro*, *citânia* or *cividade*, mainly in the northwest of the Iberian Peninsula.

In the Chalcolithic, some examples of different architectures and use of structures are located in Great Britain, with settlements surrounded by ditches and embankments, such as Avebury; in France there are multiple ditches surrounding an empty area at Camp Durand (Parkinson, Duffy 2007: 103); in the south-west of the Iberian Peninsula we have fortified settlements with drywalls and towers, e.g. Los Millares (Molina, Camara 2005) and Zambujal (Kunst 2003), or ditched enclosures with graves, as at Perdigões (Valera, Silva, Márquez Romero 2014) or in the Guadalquivir basin (Escudero Carillo *et al.* 2016).

The Bronze Age also has examples of different types of enclosures around settlements or attendance sites, or really fortified settlements. There are walled sites, such as the *nuraghe* in Sardinia, the *casteddi* in Corsica, the motillas of the central Iberian Peninsula. Sites with ramparts and ditches are known in southern Portugal, e.g. Outeiro do Circo, or in central-northern France, e.g. Villiers-sur-Seine – or the most famous example: Fort Harrouard (this one with occupation that goes before and beyond the Bronze Age). There are the well-known hillforts of Great Britain and Ireland - Mooghaum, Dun Aoenghasa, Maiden Castle - occupied until the Late Iron Age. Switzerland has its villages on stilts, such as Cortaillod-est, partially surrounded by timber palisades. Villages completely surrounded by timber palisades are found in south-western Germany, e.g. Siedlung Forschner. Other variants include the walled hilltop settlements in the hills of central Germany, e.g. Stallberg, and the large tell-village in the Hungarian plain with inner palisades, like Jaszdosza-Kapolnaholm, or surrounded by ditch, rampart and palisade, like Santana. Ditch and palisade settlements are found in

Poland and the eastern Carpathians (e.g. Bruszczewo), and dammed villages exist in northern Italy, such as the *Terramare* or the *Castellieri*, and also there are terraced villages in Liguria and Provence known as *castellari*.

For the Iron Age, the *oppida* feature extensively – Maiden Castle (UK), Bibracte (France), Monte Bernorio (Castilla y Leon, Spain), San Cibrán das Lás (Orense, Galicia, Spain), Citânia de Briteiros, and Citânia de Sanfins (both in northern Portugal). Other, smaller, *castros* from the Iberian Peninsula, besides defensive walls, had sharpened stakes (*chevaux-de-frise*) to prevent attacks of organised groups (on foot or on horseback). In the Portuguese region of Trás-os-Montes, so far, there are 38 examples alone of this form of protective system (Redentor 2003).

In the northwest of the Iberian Peninsula, from the 4th century BC onwards, the number of fortified settlements increases significantly (Carballo Arceo, González Ruibal 2003) and thus far, in the region of Galicia alone, some 5000 *castros* are referenced (González Ruibal, pers. comm.).

Interpretation of 'enclosures' appears more problematic for the periods of the Chalcolithic, Bronze, and Early Iron Ages, for which we have only archaeological data, lacking of course the classical historical sources we have for Iron Age II. But the latter also has its problems. Fierce debates have being going on for decades now about the role of enclosures (i.e. were they mainly military, or mainly symbolic, or constituting essentially some sort of territorial demarcation?). Each of these interpretations necessarily lead on from the role of a single site to the structure of the whole ancient community (Parkinson, Duffy 2007: 115), and each site demonstrates its uniqueness, demanding an individual research strategy (Jaeger 2016: 151). On the different ways of interpreting the enclosures, Parkinson and Duffy (2007: 116) significantly wrote:

'Finally, the issue of warfare and the potential use of enclosures as fortifications mimics a general pattern in archaeology, anthropology, and military history that has led to a more reasonable and realistic understanding of violence and warfare in different cultural contexts.'

Symbolic interpretations have been advanced since the oldest ditch enclosures, which embrace the final part of the Neolithic and the Chalcolithic, as links to terrestrial and celestial landscape relationships (Valera 2012), or as a variability reflecting social change (Dias del Rio 2004), or as practical-symbolic structures of territorial control (Gascò 2009: 18).

A defensive interpretation is also applicable for some Chalcolithic examples of true fortified villages in the Iberian Peninsula (Mederos Martín 2009: 35-40), and through the Bronze Age too, as various examples of hillforts in central Europe testify (Hansen, Krause 2018). And, in the general panorama, the old definition of 'boom des fortifications' expressed by Brun and Mordant (1988) for the 'barbaric Europe' between the Final Bronze Age and Early Iron Age, still rings true.

Generally, there is a chronological hiatus in the existence of enclosures between the Neolithic/ Chalcolithic and the Final Bronze Age/Iron Age, as in southern France (Gascò 2009: 19), while in the Iberian Peninsula the phenomenon continues throughout the Chalcolithic/Early Iron Age, with just rare examples of continuity in the same settlements (Lull et al. 2014). On the other hand, in northern Italy, dammed settlements proliferate from the Middle Bronze to the Late Bronze Ages (Bernabò Brea, Cardarelli, Cremaschi 1997), with a partial permanence until the beginning of the Late Bronze Age (Cupitò et al. 2012), until the Iron Age, compared to a diffuse continuity in the same settlements with Bronze Age enclosures in the Britannic Islands (O' Brian, O' Dryscol 2017; Harding 2012), France (Gascò 2009), central Europe (Hansen, Krause 2018), and in the Iberian Peninsula.

In the north-western corner of Iberia, there are sites established in the Late Bronze Age that had a continuous occupation to the end of Iron Age, i.e. to the phase of the first contacts with the Romans. This seems to be the case at Citânia de São Julião, and Castro do Barbudo, with continuous occupation reaching through the 1st millennium BC (Martins 1990). In the last two centuries BC, different sites that were established in the Late Bronze Age were reoccupied, their strategic positions being an important criterion for the location of large and impressive *oppida*, regarded as the first urban experiences in this territory (González-Ruibal 2006-07).

Continuing in the north-western corner of Iberia, the hillforts from the Late Bronze/Early Iron Ages were located in places with natural defensive conditions. In the Late Iron Age, they appear at lower altitudes, near better lands for agriculture, but having as a disadvantage worse natural conditions for protection, and having therefore the need for an apparent investment increase in the construction of defensive solutions, tending to modify terrain configurations rather than adapting to the natural conditions (Parcero Oubiña 2002: 200-223).

This could mean a defensive function for their walls, although, in certain cases, protection was not the most important aspect, but rather the symbolic demonstration of power and high status to impress 'foreign' communities (Ruiz Zapatero, 2003). Interestingly, some Bronze Age settlements from the Portuguese Middle Tagus region have no walls, as we find in some examples from the Municipality of Abrantes (Delfino *et al.* 2014) and neighbouring Chamusca (Coimbra, in press). Could this mean low conflict levels in this particular area, as Cardoso (2002) argues, with these settlements being controlled by elites of high prestige, responsible for social cohesion and the stability of the populations?

As we have seen, the European scenario in terms of fortifications and enclosures in the Metal Ages is very uneven, above all in the Chalcolithic and Bronze Age, both from the point of view of the progress of researches in each region, and from the different applied interpretative models and discovered chronologies.

It is appropriate to add here that the analysis of enclosures also benefits from cross-archaeological, ethnographic and historical researches, as demonstrated by Parkinson and Duffy (2007: 117-124) when they compared the data from Europe, Mesoamerica, and the southern United States.

A turning point in the study of fences, as was observed more than 15 years ago by Parkinson and Duffy (2007: 125), can be argued for the creation of interpretative models trying to understand the occurrences of various features on geographical and temporal scales, and, more broadly, by the use of cross-cultural and explicit comparative frameworks in their interpretations. A warning about the ease of error in interpreting certain architectural manifestations as endogenous or exogenous phenomena was pointed out by Guilaine, relative to the Iberian south-east in the Chalcolithic (Guilaine, Zammit 2001: 260). However, an interpretative model in this sense also needs to be based on more data that can be updated, and this requires periodic sharing of information between different researchers working on sites in different regions. (And that they challenge, not simply follow, the different schools of thought, reasoning in an open way.

The Colloquium 'FortMetalAges, organised by the Scientific Commission 'Metal Ages in Europe' of the International Union of Prehistoric and Protohistoric Sciences as part of its scientific program, was designed precisely in these terms, embracing as many European regions and researchers as possible, to discuss open questions, present new data and provide a comparative framework by bringing together a wide range of scholars working on different periods and regions, with the aim of creating a broad and neutral environment for shared discussion on enclosures and fortifications in the Metal Ages. And, if possible, this should be repeated periodically to give continuity to the sharing of data and the discussion of models.

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My home is my castle? Thoughts about the archaeological axiom of the distinction of fortified and unfortified sites, referring to ethnographical records

Andy Reymann

Abstract

In archaeological research, a categorical distinction between fortified and unfortified settlements has been established and preserved for a long time. In the usual methodological approaches this scheme is accompanied by the assumption that sites with complex fortifications had an important meaning. They were considered strategically more highly ranked in the settlement hierarchy of the surrounding landscape, connecting other settlement types and places by being central to all regional human activities. The established elites, to which the archaeologists of the last hundred years referred to as 'kings', 'warlords', 'Fürsten', 'priest-chiefs', 'big men', and so on, were thought to have had their established reign controlled from these spots. A massive amount of theoretical literature was published that tried to simulate possible models, trying to explain those constellations. If one takes a closer look at settlement organisations and the type of fortification constructions in the ethnographical record, two conclusions can be drawn: that the term fortification cannot only be restricted to those phenomenon that are normally classified under this topic by archaeologists, and that fortifications are not always erected by a restricted and privileged community of 'elites'.

Keywords: conflict research, fortifications, ethnographical analogies, warfare, defensive architecture

Introduction and the wide range of the term 'fortification'

'Yet for centuries, scholars [...] also have looked for more general processes or conditions that help to explain major evolutionary transitions, such as the emergence of inequality, the institutionalization of leadership, and the rise of urban centers. The bulk of scholarly attention has been focused on parallels or similarities in the transitions from one region to another, while questions and investigations to address differences or variation generally have been accorded less emphasis.'¹

As demonstrated by Feinman in the quote above, archaeological approaches to different source categories regularly compare investigated material. This is quite ambitious as one of the main goals of archaeology aims to understand human behavior in the past to have a better understanding of human behavior overall. However, a stereotypical classification of investigated materials holds pitfalls, as differences and variations are normally ignored. Atypical observations tend to be classified as simple as 'something that has nothing to do with the subject we speak about'.

This problematic phenomenon appears also in the field of the investigation of prehistoric fortified sites. In this field, commonly subsumed under the term 'settlement archaeology', settlement sites are commonly classified either as 'fortified' or 'unfortified'. Unfortified sites are simply places without ditches, walls, ramparts and similar architectural structures. Fortified sites are commonly seen as places where specialised craftsmanship and purposeful activities were undertaken, and where the social elite would dwell. Statistical observation revealed that, especially in the metal ages, places with well-built fortifications had to be constructed in a labour-intensive way, compared to the mass of small, unfortified sites. This results in a huge amount of work involving the efforts of many people: both their time and resources were necessary for the construction. Some individuals had to organise the efforts of the community. The Bronze Age researcher Albrecht Jockenhövel states that 'only by a greater community realizable constructions [demonstrate, A.R.] a more firm society compared to those of earlier times,² meaning a society where elites organised the building of monuments and instructed all bigger tasks.

Turning away from the question of social organisation, the term 'fortification' itself is a vague concept, with a much wider meaning than commonly assumed. Basically, the word fortification derives from the Latin verb 'fortifico', which means making something strong. It correlates to the Middle High German 'Vestung'. The fortification is therefore just a place, which has been artificially improved in reference to its defenses, so that a fortification can be seen as...

¹ Feinman 2017: 460-461.

² Jockenhövel 1997: 7. Translated by the author.

.... basically a site, predestined by its topographical position and artificially transformed to improve the ability of a defender to fight against possible attackers.

As shown by this simple definition, it fits not only to the massive fortifications of modern times, not only to the impressive walls of ancient sites like Troy, or other Mediterranean fortifications which have been the main focus of investigation of past archaeological projects,³ but also to those places that show no, or nearly no, signs of artificial modifications. This problem has already been emphasised in the Anglo-American research, connected to the level of potential warfare in the past.⁴ This conviction has been preserved in middle European archaeology, that only massive fortifications were an 'effective' defense against opponents and that only those types of structures were therefore built with an intentional defensive function. Looking closer at the ethnographic record, it can easily be proven that there are different forms of fortifications. They are closely connected to the ways of war and have not always been constructed by highly hierarchical, elite-guided societies.

A brief typology of fortifications

In archaeology, a distinct spectrum of architectonical elements is normally perceived as being part of a fortification. The archaeologist Mariya Ivanova lists under this term, in her work on southern European fortifications, ditches, walls, ramparts, glacis, stockades, bastions, towers and gates⁵ as the most important components and describes in detail the different aspects, functions and ways of construction.⁶ In a similar approach, Keely, Fontana and Quick tried to show the interplay of the defensibility of a prehistoric site and its usability in daily life, listing different architectonical devices of fortifications, such as ditches, gates, etc., as well as their diverse manifestations in the past.⁷

Although these are only two examples in a wide field of archaeological investigations of ancient fortifications, a more detailed examination of fortified settlements is seldom made. A classification of fortifications in more or less complex types is missing.

7 Keely, Fontana, Quick 2007.

Therefore, we can try to classify fortifications by subdividing them into categories, rating them by the degree in which humans artificially changed their natural topography. Four categories are used here:

- 1. No, or nearly no, artificial modifications
- 2. Small artificial modifications
- 3. Medium artificial modifications
- 4. Massive artificial modifications

No, or nearly no, artificial modifications

Starting with the first category, there are many examples in the ethnographic field for such forms of fortifications. It can easily be retraced that very often people chose a settlement site for its access to natural resources, such as food, water and other useful commodities. The aspect of defensibility was extremely important too – if not for the position of the settlement itself, then by choosing a secondary site nearby as refuge, as is described, e.g., for Eskimo-Aleutian groups:

'Defense was one of the factors taken into account in settlement location. Small settlements were often situated behind beach ridges, along the coast, or in willow thickets, inland. Larger settlements were located on points of land that could be approached by foot from only one direction during the period of open water, or near lakes where approaching forces could be easily seen approaching at all times of year.'⁸

While this example only mentions coastlands and dense vegetation, other groups around the world show similar reflections when choosing their settlement sites. For the Jivaro of South America, as one among many examples, it is reported, that explicitly defensible positions were chosen when new houses were built.⁹ The usage of the topography here is not only an aspect for the settlement location itself, but also for the interaction between different settlements. If groups were involved in potential conflicts, buffer zones between their settlements were constructed and kept. Those zones normally used special features of the topography, such as mountains, swamps and other features, to keep a distance and their existence changed the methods of the warfare strategy practised.¹⁰

Another notable region for finding examples for the use of a defensible topography without artificially modifying it is along the northwest coast of the American continent, specifically west Canada. Many of the well-studied societies in this region, for example

³ For a short summary compare Ivanova 2008: 20-21.

⁴ 'People who are engaged in frequent war employ a variety of defensive measures, some more costly than others. [...] Because such defensive efforts are costly, they are directly related to the kind of threat that looms: how severe, of what kind, at what scale.' (Arkush 2011: 60).

⁵ See Ivanova 2008: 112ff.

⁶ This term is no *ad hoc* word creation, as for example the German association for fortification research ('Deutsche Gesellschaft für Festungsforschung', short DGF) focuses especially on different aspects of fortifications from late medieval to modern constructions. For further information see: http://festungsforschung.de/startseite/ (accessed 19 October 2019).

⁸ Burch 2007: 17.

⁹ 'They [the settlements of the Jivaro, A.R.] are usually located in defensible positions overlooking the headwaters of tributary streams [...]' (Redmond 1984: 8).

¹⁰ See Redmond 1994: 10.



Figure 1: Settlement at Kings Island, as photographed by Allen Shattuck in 1888 (http://vilda. alaska.edu/cdm/ref/ collection/cdmg21/ id/2679).

Alaska State Library - Historical Collections

the Haida, Kwawakawak or Tlingit, are known for their fierce warriors. Those societies used their rich fishing grounds to establish a sedentary way of life, relying on a staple food subsistence with a highly complex social organisational structure. Although examples for more complex fortifications are reported for those regions, there are also several sites that were especially used because of their natural features as refuge islands or refuge rocks in times of danger (Figure 2). Of course, the threshold of the category 'small artificial modifications' here is low. For example, Cannonball Island, a site of the Quileute, was used as a defensive position, and oral tradition names it as 'a multipurpose site used to spot whales and other maritime animals, as a lookout for enemies, and as refuge during times of attack'.¹¹ On the contrary, the Tlingit Site on Admiralty Island was used also in the function of a refuge, but was classified as a 'fort', due to an artificial modification.¹² While many Tlingit sites like those along the northwest Pacific coast were usually built using natural defendable sites, such as islands or rocky headlands, some sites also received artificial modifications to improve their effectivity. On Admiralty Island, archaeological surveys revealed at one place an artificial dam beneath the water surface which enabled people to cross the river without boat.¹³

For possible attackers, the water surrounding this island was a natural line of defense and the vegetation at this and similar places was never cleared, so that defenders had cover and could easily hide, making the spot a perfect refuge in times of danger.

Small-scale artificial modifications

As already mentioned, there is a thin line between the first and second categories of fortifications; therefore, we come to the point where only small artificial modifications of the landscape can already change the defensibility of a site. The Kwawakawak of the Pacific northwest coast, for example, often built their settlements using natural slopes: the village on Kings Island is one of those sites (Figure 1).¹⁴ The houses were constructed on small artificial platforms dug into the hillside. While the settlement was not accessible from the hilltop itself, the only access to the village was possible from the riverside and the canoe landing places there. In that way, the houses could be used as defensive positions in case of an attack, giving the defenders a height advantage and an effective covering against enemy attack.

Another important example for the category between no and low level modifications of the topography of a site are lookouts, level modifications of site topography

¹¹ Moss/Erlandson 1992: 84.

¹² See Moss and Erlandson 1992 for the descriptions of different sites on Admiralty Island.

 $^{^{\}scriptscriptstyle 13}\;$ Moss and Erlandson 1992: 74.

¹⁴ See Mackie 2010.



Figure 2: The Tlingit Fort Daax Haat Kanadaa (49-SIT-244), in the background the rocky archaeological site of Yaay Shanoow (49-SIT-132) (Admiralty Island, Alaska, USA. Prof. Madonna Moss, July 1991).

are lookouts, especially among the Canadian indigenous populations. For example, reports exist which describe not only stockades, surrounding most of the villages of the Salish coast, but also the parallel existence of complex line-of-sight-settlement arrangements, combining fortified winter settlements and unfortified summer settlements. In particularly the Lillooet and the Stó:lo, both part of the Coast Salish speaking community and inhabiting parts of the Frasor Canyon, are well studied with reference to settlement structures and fortifications.¹⁵ In particular, the settlement system of the Lillooet, living in the area of the Fraser Canyon, has been examined very intensively over recent years. This forager society uses an intensive staple subsistence and shows interesting signs for a trans-egalitarian organisation that used region-wide cooperative systems to fortify their settlements, gather food, build houses, and wage war against other or against their enemies. Their settlement arrangement shows traces of a simultaneous usage of fortified and unfortified sites connected by natural places with adequate visibility, allowing the residents of this region to secure the canyon, relying on lookouts for their guarding and warning systems.

Lookouts were not the only natural features where the vegetation had been mostly cleared. There are also many examples of artificial creations of lookout points. North of Fort Kitwanga there was a Coast Salish lookout point described by Prince that had been artificially constructed:

'This site is atop a very steep, narrow ridge, barely wide enough to stand on.... This extreme topography was purposely altered at great effort to make it habitable. The crest of the ridge was terraced down to make a small platform, 5 m x 5.5 m, with a hearth in the center.... The position and limited size of this platform are more indicative of a lookout site. It has no easy route of access to the water's edge below, but it has a 340-degree view-shed of the shoreline, including a clear view of the north part of the lake, and of the channel to the south, through which approaching canoes would have to pass.¹⁶

Beside stockades, the Stó:lo used a combination of stone walls and lookouts.¹⁷ If mapped, like in this case for coast Salish defensive networks by Bill Angelbeck in the Figure, the arrangement of coexisting settlement sites allows the identification of their intensive interconnection for defensive purposes (Figure 3). For this, a direct line of sight between the different settlements often existed. Additionally, if the direct line vanished, or was interrupted, or a direct line of sight was not possible due to the natural topography, the gap was closed by the construction of lookouts and communication positions. By acting like this, in case of an attack, the defenders of a settlement could alert their allies and wait until help arrived. As for the place near Fort Kitwanga, it happened that not only was the vegetation cleared, but that places were artificially transformed into suitable positions.¹⁸

In addition to the category of more or less intensive modifications to the natural topography, the ethnographical record shows several other ways of improving the defensibility of a site with little effort, although these will often leave no archaeological traces. This applies especially for defensive structures, such as hedges, fences and bushes, that can appear solely or combined as part of a complex defensive strategy.

Prince 2004: 49f., quoted this way in Angelbeck 2009: 178.
 See Schaepe 2006.

 ¹⁸ See Schaepe 2006.



Figure 3: The defensive network on Northern Gulf Island, Strait of Georgia, British Columbia, Canada (Angelbeck 2009, figure 43, 255).

Good examples are wooden *chevaux-de-frise* commonly used to fortify a settlement in Melanesia, Polynesia, and eastern Toraja.¹⁹ The Toraja accounts mention the combination of sharp bamboo constructions with other structures such as wooden walls and stockades.²⁰ Another example of small modifications, or rather 'light' fortifications, are bushes and thorny hedges; they could and still can be found in many parts of Africa, where they were reported, for example, among the Rwanda at the beginning of the 20th century,²¹ or the Barundi and Urundi.²² Additionally, in other parts of the world settlement defense is realised in that way as well, e.g. thorny hedges among the south American Chiquitos,²³ or a cacteen hedge surrounding villages of the Goajira.²⁴

Although the use of plants may seem an ineffective way of defense, the ethnographic reports show that it is perfectly adjusted to the frequent appearances of raids in those regions where it is used. When combined with other types of fortifications, such as traps, stockades or ditches, then plants can provide a suitable additional line of defense. This slows down enemy approaches and is often more feared by attackers than the 'real' fortification. But of course, from the perspective of archaeological fieldworks, the identification of prehistoric hedges and other easy ways of fortifications is a difficult challenge.

Finally, before looking at more costly forms of defensive structures, a last example leads us to quacking ducks! This may sound strange at first glance, but the Dani of Papua New Guinea are masters of utilising all aspects of their rough terrain for additional fortifications.

 $^{^{\}rm 19}\,$ See Adriani and Krujit 1950 for Toraja; Playfair 1909 for Garo; Low and Roth 1893 for Iban.

²⁰ 'Furthermore, a thick hedge of bamboo was planted around the dwelling place, the stalks of which were connected by cross-laths in times of war. *Chevaux-de-frise* were placed in this bamboo hedge, and sharpened bamboo, which stuck out like spears (VI, 56). Such fortification was called *bente* (from the Boeg,/Buginese/ benteng). Some villages were provided with a double hedge of bamboo, some with three.' (Adriani and Krujit 1950: 247).

²¹ 'I observed such fences among the Baamba on the Ruwenzori. In Ruanda one does not see them. Here the dwelling is, as a rule, situated on the edge of the courtyard and is, together with the courtyard, surrounded by a euphorbia hedge. The hedges of the individual homesteads intertwine and form a labyrinth that is impenetrable even with the aid of a bush knife, for if one cuts the branches an exceedingly caustic juice squirts out which is very dangerous for the eyes. On the inside these hedges are usually supported by a fence made of sticks bound together. At night the outer approaches, usually opposite the huts, are closed with tree trunks, the branches of which are turned toward the outside. This primitive closure cannot be removed from the outside and, along with the euphorbia hedge, makes a very effective though not at all conspicuous fortification.' (Czekanowski 1917: 103).

²² See Meyer 1916.

²³ 'Villages were protected by thorny hedges and by poisoned caltrops. During the Conquest, the Spaniards had to storm villages defended by strong palisades.' (Métraux 1948a: 385).

²⁴ See Armstrong and Métraux 1948.

Although much has been written about the ritualised warfare in this part of the world, non-ritualised fighting often occurs as raids and small-scale attacks. Some tribes of the Dani have therefore resettled in swamps and wetlands, with only scarcely visible paths leading towards their homes. The Dani often provide these paths with traps and holes, in which a species of loud quacking duck can be penned.²⁵ (It may seem to be an isolated case, but this effective way of defending villages finds its counterpart in the famous story of Juno's sacred geese during the invasion of Rome by the Gauls in 390 BCE, and hints at the special role of animals for the protection of human property and life in prehistoric times.²⁶)

Medium-scale artificial modifications

If we move on to the next category of fortifications, we reach those structures usually categorised under the term 'fortification' by modern archaeology. Beginning with the most basic, the palisade or stockade, we find many thousands of examples from all over the world. The boma, for example, is a simple wooden construction consisting only of one line of posts dug into the earth and bound together, supplemented by a gate that could be barricaded if needed.²⁷ Similar structures have been used by the South American Tupinamba²⁸ and the North American Huron and Iroquois,²⁹ although for the latter an evolution from single line palisades to complex multi-line-systems has been researched in detail.³⁰ Moreover, the use of multiple lines of palisades seems to be a common feature in the ethnographical record as well:³¹ always as a reaction to an increased frequency of warfare and the increased danger of being attacked.

²⁹ 'Only in the area occupied by the predecessors of the historicperiod Huron and Iroquois were robust walls common. They consisted of multiple lines of posts or thick bands of posts and appear to have conformed to seventeenth-century descriptions of palisades [...].' (Milner 2007: 189). The question of adequacy can be touched on here. Much has been written about war and warfare in ancient past, more than can be referenced here of course.³² However, the thorny issue of how the effectiveness of fortifications can be measured still raises controversy, and especially in archaeological science. Narrowing the wide topic down only to attempts to calculate the defensiveness of a site,³³ a good example is presented in an article by Keeley, Fontana and Quick.³⁴ Here, beside other topics, the question of the effectiveness of fortifications is discussed by contrasting the defensive layout of gates with their suitability in daily life.³⁵ As the authors show, the concept of a gate itself proposes a problem, as from 'a purely military perspective, a curtain ideally would have no gates. [...] However, main gates at fortified settlements had to allow the regular transit of people, livestock, and carts or loaded pack animals and, if busy, simultaneous passage of streams in and out.'36 Therefore fortifications were not only places of an absolute focus on the aspects of defense, but they were also places governed by considerations of necessity and compromise.

On the other hand, places that perhaps look weak and vulnerable to us nowadays could have been fully fortified sites in the past, bearing in mind the particular manner of warfare. The East African *tempe* for example, described by the German Ethnologist Karl Weule at the beginning of the 20th century, shows this clearly. This type of building, in its simplest form, was a long house with a width of 5 m and a length of 20 m; it was usually constructed as a log house with walls made of poles, sticks and clay, and a roof of similar materials. Although this concept looks relatively flimsy to us nowadays, Weule describes the walls of this house as being immune to attacks by spear and arrow, pistol and rifle fire, and even rounds of light field artillery.³⁷ With a fire-resistant roof and the structures arranged in a circle, as well as being supplemented by towers, ditches and other defensive structures, the African tempe were effective fortifications in the early 20th century. Several were attacked by German forces in their war of conquest, and they were often 'besieged', as if they were modern fortifications of European style - even though they looked like simple huts at first glance.

Large-scale artificial fortifications

This aspect and a look at African *tempe* brings us to the last category of fortification, which has been mentioned previously. As already discussed with reference to the other categories, there is a thin line between

²⁵ See Heider 1979: 100f.

²⁶ Of course, this means of fortification is not the only defensive tactic of the Dani – as has been described in detail in Harrer 1976.

 $^{^{27}}$ See Weule 1916. Although the word is also in use in modern times, it only refers to fences as protection for livestock (see Sutton *et al.* 2017).

 $^{^{28}}$ 'The minimal sociopolitical unit of the Tupinambá was the maloca or longhouse, some 5 to 10 meters wide and perhaps 100 meters long (some accounts say twice that long). Each maloca was occupied by an extended family of at least 40 people, more usually 50 to 200 people, and according to some sources as many as 600 to 850 people. Each local group or aldeia – called a taba in Tupinambá – had a distinctive name and was composed of one to seven or eight malocas, arranged around a central plaza which was the locus of important activities such as ritual sacrifices, feasts, dances, and chiefly council meetings. On the frontiers between traditional enemies the aldeias were fortified with stockades.' (Sturtevant 1998: 141f).

³⁰ Keener 1999.

³¹ Examples for multiple systems can also be found worldwide, e.g. in South America, among the Chiriguano (Métraux 1948b: 472), in Oceania the so-called Pah among the Maori (see Best 1924), the North American Nuu-cha-Nulth (Drucker 1951: 338), and the Maasai of Africa (Thomson 1887: 77).

³² But to nevertheless refer to just some publications on warfare in archaeology, see e.g. Horn and Kristiansen 2018.

³³ See, e.g., Martindale and Supernant 2009; Sakaguchi *et al.* 2010.

³⁴ Keeley, Fontana and Quick 2007.

³⁵ Keeley, Fontana and Quick 2007: 62-67.

³⁶ Keeley, Fontana and Quick 2007, 82.

⁷ Weule 1916: 136.

medium- and large-scale artificial modifications. We will therefore subsume these fortifications into this grouping, for which huge amounts of earth had to be moved to form such structures, which then changed the topography of a wide area. Together with massive stone walls and multilayered complex systems, these structures formed an impressive, highly visible aspect of the landscape.

Naturally, the iconic examples are massive stone fortifications, and the massive medieval castles of Europe always appear in discussions about the visibility of fortifications, as their usual hill top positions normally allow them to dominate all view points of the landscape. They could accommodate large mobile forces – mounted knights – who could be stationed at all critical points. In times of danger, castles were miraculous refuges with large storerooms and formidable walls. It is also well known that castles were a high cost investment, not only if we look at the time and money needed to construct them, but also in terms of the resources needed to maintain them.

archaeology, there are several approaches In calculate the construction costs of ancient to fortifications.³⁸ Although the resulting data differ, all investigations and their underlying ethnographical and experimental-archaeological surveys prove that complex fortifications, and especially stone walls, were connected to an extensive amount of labour.³⁹ Nevertheless, in archaeology, just as in ethnology, there are several examples of fortifications constructed with enormous efforts of labour and resources.⁴⁰ Ethnological examples of stone walls and complex fortifications can be found worldwide.⁴¹ As well as stone walls, other types of massive fortifications, such as multi-layered rampart systems, are found, e.g. the mound building cultures and other early North American cultural complexes.⁴²

Konso stone walls and discussion

The intent of this paper was to demonstrate the problematic link between the archaeological definition of the term 'fortification' and the consequential systems that have been postulated by archaeologists for many decades.

As it has been shown, fortifications – in their easiest form or as complex, multilayered systems – exist in many cultures worldwide. Many of them, although perhaps hardly traceable in the archaeological record, can be defined as defensive when compared to the actual ways of warfare which the corresponding societies were used to seeing. Therefore, a distinction between unfortified and fortified may be problematic, as it creates divergent categories, probably only in a modern Eurocentric way, while effective defensive categories of the past stay invisible to us.

As Arkush expresses, fortifications are 'directly related to the threat that looms'.43 However, this does not mean that the complexity of fortifications is directly derivable from the corresponding system of social organisation, as Jockenhövel mentioned in the quote at the beginning of this contribution. On the contrary, in a short register of fortifications and the correlating social and political organisations, Arkush demonstrates that cultures with different political and social systems can react in a similar way to threats and smoldering conflicts.⁴⁴ Clarifying, not only do fortifications exist in small-scale societies and among hunter and gatherers with low social and political complexity, but also they appear in large-scale and high hierarchical pre-state societies. Moreover, it means that an organising elite is not required to construct a complex fortification system, and that an existing fortification is not necessarily an indication of an elite living and ruling culture there.⁴⁵ A striking example of this can be found among the Ethiopian Konso. In this society, that has been studied since at least the beginning of the 20th century,46 war was common and most of the settlements were surrounded by massive, well-defended stone walls:

'The Konso live in about thirty-five walled towns, with average populations of 1,500 and a maximum of about 3,000, covering from 6 to 14 hectares, often on the summits of hills or at other easily defensible sites. The walls are without mortar, 3.0 to 4.5 meters high; they are intended only to deter a surprise attack, not to resist a siege. They are usually surrounded by a dense belt of vegetation as a further deterrent to attack. Each town is separated into two divisions, and a man who is born in one is forbidden to live in the other. The divisions have no other social function, however'.⁴⁷

³⁸ See, e.g., Müller 2001: 388-395; Cazella and Recchia 2013: 55-57.

³⁹ Here we subsume the direct working costs for the building of a fortification itself and the indirect workings costs, meaning the energy and time needed to gather resources, construct the necessary tools, etc.

⁴⁰ Here one quote of E. Arkush may be particularly apposite: 'Because such defensive efforts are costly, they are directly related to the kind of threat that looms: how severe, of what kind, at what scale.' (Arkush 2011: 60).

⁴¹ To name just some groups and cultural complexes: the Marquesans in Oceania (Handy 1923), the eastern Toraja in South Asia (Nicolaus and Krujiit 1950), the north Asiatic Koryak (Jochelson 1905-1908), the Shona (Bhila 1982) and the Wolof (Poix/ Winchell 1955) in Africa, and of course the complex cultures in Southern and Mesoamerica – Inca, Aztecs, etc. (see, e.g., Arkush 2011).

 $^{^{\}rm 42}$ See for a summary Lambert 2002, or the different articles in Chacon and Mendoza 2007.

⁴³ Arkush 2011: 60.

⁴⁴ Arkush 2011: 61.

⁴⁵ And as has been argued by Feinman, even if a society-leading elite existed, it was not always they who were responsible for the construction of fortifications (see Feinman 2017).

⁴⁶ See, among others Hallpike 1972; Jensen 1936; Poissonnier 2009.

⁴⁷ Hallpike 1995: 169.



Figure 4: Outer wall of the village of Karat Konso, Ethiopia (Dr Angela C.Y. Lee, October 2012).

The Konso-People, who call themselves Konso, meaning 'those who live on mountain tops',48 are socially structured by a complex age-class-system, the so called 'Gada', in which members of different families are integrated. The age-class derives from the father's age-class minus one, and in a specific rhythm that takes between eight to ten years on the occasion of a special feast, where the group of all the living members raises by one. Access to public offices is only available to those with a certain class, so that long-living members with good connections can reach high social positions. Influential persons can be rich members of the settlement, owners of religious offices or 'killers'. This means that those who have killed at least one enemy during their life are considered very important and therefore have won honour for their whole age class. This is a very important matter, as age-classes without killers are marked as useless and mocked by the rest of the group. They are not allowed to enter public offices and hold respectful positions.

Killing, attacking and small-scale warfare between different settlements therefore happens very often, central male houses are used as guard houses and armory, and the regular construction of effective defenses shows the importance of, and need for, organised defensive structures (Figure 4).⁴⁹ The Konso system is not led by authoritarian members or an elite, but rather by a council composing of high-ranking members from different settlement districts. This council rules on a democratic base, but its orders are not compelled commands, since there often follows a time of negotiation and intergroup interaction.⁵⁰

Keeping this example in mind, it should be asked, which possibilities and established modes of operation are still operational in prehistoric archaeology? Because, if a distinction between fortified and unfortified sites seems to be so dependent from our viewpoint of the effectiveness of defensive structures, and derived from our opinion about what a fortification is and what is not – how possible is it, then, to reconstruct ancient modes of warfare, social organisation and territorial connectivity from these estimates?

Moreover, it has been shown that different social systems can construct similar fortifications, so that a fortification itself seems not to reveal what type of social system it was based on – but only as signifier

of the way of warfare, or the intensity of estimated warfare – as a fortification was often constructed in the estimation of an attack or conflict, not during an actual event. The Konso are a good example of the multi-social use of massive stone walls, which can be contrasted with highly hierarchical pre-state societies on the one hand and forager bands on the other.

And, finally, the classical concept in European prehistory that proclaims a model such as 'One castle – many villages', especially for the northern Alpine metal ages, has to be considered with care, because the concept of centralisation and fortification is not as easy as it seems. This is not only shown by Arkush,⁵¹ but also by the settlement organisation of the late Zulu kingdom under the lead of King Shaka. At this time, a system of hierarchical connections between fortified and unfortified settlements, surrounded normally by several unfortified sites, were only inhabited by warriors, who had no economic productive value. The real elite, especially the war chiefs under Shaka's command, lived

⁴⁹ An overview of Konso settlement structures and defenses can be found in Capuro *et al.* 2011.

^o See different examples in Poissionnier 2009.

⁵¹ Arkush 2011: 60-61.

half of the time in these warrior villages and the rest in their fortified kraal.⁵² Classical models, such as the widely known 'centralisation model' of Gringmuth Dalmer,⁵³ would completely fail here, as the typical markers were widespread and a polythetical approach had to be constructed.

It should always be kept in mind that a fortification is much more than just two stones forming a wall – trusting on a fortification in times of danger was always a way of life.

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⁵² See Edgerton 1988.

⁵³ See, e.g., Grungmuth-Dallmer 1999.

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A new overview of the later prehistoric hillforts of Britain and Ireland

Gary Lock and Ian Ralston

Abstract

The Atlas of Hillforts of Britain and Ireland project has compiled data on over 4000 hillforts distributed across Britain, Ireland, and their offshore islands. This exercise has provided the opportunity to update our knowledge *inter alia* of the key architectural characteristics of their enclosing works, including overall site sizes, wall and entrance types, as well as the presence of more unusual traits such as *chevaux-de-frise*. A key aim is to describe and thus enable mapping of many such features of hillforts as consistently as is feasible across five territories (England, Ireland, Northern Ireland, Scotland and Wales) with historically different practices and varying terminologies. This allows new patterns in hillfort distributions to be discerned. Selected examples of the results obtained are presented here.

Keywords: hillforts, mapping, Britain, Ireland

Introduction

Hillforts in Britain and Ireland, as a major and very visible category of monument, bear many similarities to the enclosed sites found widely in temperate Europe. Despite being a well-known insular site type, with a long history of archaeological survey and excavation, there is in fact considerable variation, in some cases long-established, in how they have been assessed by archaeologists in the different countries concerned -England, Ireland, Northern Ireland, Scotland and Wales. The Atlas of Hillforts of Britain and Ireland (hereafter AHFBI) project led by the writers and outlined here was founded on a case for a major re-assessment of these sites. It ran from 2012 to 2016 and was funded by the Arts and Humanities Research Council. The exercise was underpinned by a reconsideration of the primary characteristics of these sites, leading to new perspectives on their numbers and distributions, and of the geography of their key traits, not least the different architectures of their fortifications. Its database is now freely accessible online.1 The writers are still processing the data produced during this exercise; and the paper Atlas is scheduled for delivery to Edinburgh University Press in 2019. Some preliminary results are outlined hereafter.

Essentially working from published sources, including information in local and national Sites and Monuments Records (SMRs; also known as Historic Environment Records: hereafter HERs), a key task for the AHFBI team was to standardize, as far as possible, the range of characteristics essential to monuments of this class. In English Heritage's (now Historic England's) Monument Type Thesaurus, for instance, a hillfort is defined as 'a hilltop enclosure bounded by one or more substantial banks, ramparts and ditches'; and this definition indeed embraces many, but not all, examples considered in the AHFBI study. Historic Environment Scotland's online thesaurus (accessible via its CANMORE system²) takes a mildly different tack; it prefers 'fort', to 'hillfort', and defines this as 'an enclosure, often ... on a hilltop, bounded by one or more banks, ditches, ramparts or walls. Use for prehistoric and early historic sites'. Such variations in descriptive vocabularies can be replicated elsewhere; and there is even more divergence across Britain and Ireland in the descriptions used for smaller, often slighter enclosed sites which complement hillforts. This variability compounds the problem of the definition of these monuments. It is plain that the recording and study of these sites developed from local roots and remains in many aspects profoundly regional. If syntheses of British and Irish prehistory normally include a map or maps of hillforts or of particular hillfort traits, these cover Britain or, less problematically, Ireland, but never the 'British Isles'. Most maps depicting hillforts are, however, regional in scope. Behind this lies at least tacit recognition of the variability (which the AHFBI project team sought to capture) that characterizes these seemingly wellknown sites.

In many areas still displaying physically impressive earthworks, which in some instances enclose tens of hectares, hillforts early attracted the attention of antiquaries; and have continued to do so. Often but not universally placed in upland settings, they

¹ The online *Atlas* (Lock and Ralston 2017) is publicly accessible free of charge under a Creative Commons licence at: https://hillforts.arch.ox.ac.uk/

² https://canmore.org.uk/thesaurus/1/502553/FORT

frequently occur today within fields used for livestock, in rough pasture or indeed on heathland rather than being set in woodland as is more frequently the case in some areas of continental Europe. This contributes to their visibility, making some examples well known, indeed much visited, sites which articulate with their surrounding landscapes.

We have outlined the history of their study, more particularly in the later 19th and first half of the 20th centuries elsewhere (Lock and Ralston, forthcoming 1), including drawing attention to the divergence in the ways the consideration of these monuments evolved between Britain and Ireland. We have thus chosen here not to retrace these earlier developments but to take the most significant previous episode of hillfort cartography in Britain, now nearly three quarters of a century ago, as the baseline for this contribution.

Towards the Atlas

The key map that has underpinned almost all recent considerations of the distribution of hillforts across southern Britain (and has influenced the compilation of maps for other areas) is the Ordnance Survey Map of Southern Britain in the Iron Age, published in 1962. The Southern Britain... map depicted more than just hillforts, although they dominate it numerically. Lake dwellings, a variety of types of unenclosed settlements, selected burial evidence and a range of artefact findspots are also shown. Wales, and most of England, were covered, up to about 54° North, such that the northern limit of the mapping extends from the North Yorkshire Moors to the southern Lake District of Cumbria; the Isle of Man is included, but much of north-east England was not. Its preparation was supervised by the Ordnance Survey's then Assistant Archaeological Officer, A.L.F. Rivet. A rather differently constructed map, just of the settlement evidence, and at a different scale (1:1,000,000 as opposed to 1:625,000) was included in The Iron Age in Northern Britain, a volume of conference papers published in the mid 1960s, again edited by Rivet (1966), who also oversaw the production of this map. Its southern limit, however, was effectively at Hadrian's Wall between the River Tyne valley and the inner Solway Firth. Aside from the different scales and conventions employed, there was thus a band 50 km wide across northern England which does not appear on either map. Within this sector lies the great North Yorkshire oppidum (a cognate class of Late pre-Roman Iron Age enclosed site) of Stanwick (Haselgrove 2016) as well as numerous further enclosed settlements, emphasizing the significance of this exclusion. Irish evidence was not considered in this exercise.

Furthermore, the two 1960s maps organised the data they depicted differently. The North British map only showed settlement sites. All forts, hill- but also coastal and inland promontory-forts, are displayed using the same symbol, the only distinction drawn being if there were any indications that the enclosure had been vitrified, a process considered further below. Overall, however, the main distributional contrast apparent on this map is between regions wholly or dominantly marked by the undifferentiated open blue circles used for hillforts, and others where solid red dots dominate. These latter signal a range of tiny, generally round, heavily walled structures, including 'complex Atlantic roundhouses' (e.g. Romankiewicz 2011), such as broch towers, whose architectural form is entirely restricted to Scotland.

The Southern Britain map aimed higher. It incorporated a chronological/cultural dimension in its depiction of hillforts, for instance, using colour. Black was selected for those attributed to Iron Age 'A' and' B' cultures, as then defined by Christopher Hawkes in a key contribution to Iron Age studies (1959). These earlier Iron Age cultures, broadly seen as contemporary with Hallstatt and earlier La Tène times on the continent, were believed to have been largely responsible for fort construction. At a time when inward migration was envisaged as a principal motor of change, sites attributable to the latest arrivals, the 'C' or Belgic groups – and generally oppida rather than hillforts - were shown in red. Purple was chosen for sites considered to span both the earlier, and C, cultures, but in fact this is rarely used for hillforts. Many examples of hillforts of course lacked any dating evidence; they were simply assimilated to Iron Age A or B, and again mapped in black.

Two further characteristics were signalled by the symbol chosen. A distinction was made between 'univallate' hillforts enclosed by a single bank-andditch or wall system and those considered 'multivallate' - in essence here taken to indicate those with two or more banks or walls surrounding the hillfort interior. This characteristic was linked with contemporary views which related defensive styles to hostile practices with more complex instances of multivallation believed to correlate with the introduction of missile, especially sling, warfare during later prehistory. Also depicted in the choice of symbols was an indication of hillfort size, defined as the area enclosed within the innermost defences. Three size bands, expressed in imperial acres, were chosen: above 15 acres (6.07 ha), below 3 acres (1.21 ha) and the intermediate range of 3-15 acres. No explicit justification was put forward for these selections (Ordnance Survey 1962, 13), but they rapidly became established and have proved enduring, being reproduced in modern distribution maps (e.g. Davies and Lynch 2000, fig. 4.1 for Wales; Payne, fig. 1.2 in Payne et al. 2006 for England). The use of these three size bands has also been extended more recently into northern Britain (Harding 2012, figs 1.1-1.3), while for southern areas still fundamentally being based on the

1960s dataset of these sites, a testament to the academic resilience of this pioneering map.

As well as the appearance of the first two editions of the major textbook (now in its fourth edition: Cunliffe 2005) in which hillforts figure prominently, the 1970s were marked by two individual projects designed to advance hillfort studies at a broad scale within, if not entirely encompassing, Britain. James Forde-Johnston (1976) retained the Ordnance Survey 'Southern Britain' territory as his geographical focus in a study based uniquely on the surface field evidence. This gave rise to a new typological classification of these sites, based on their scale and enclosure forms, but his twin ambitions - also to include excavation evidence and to extend northwards to the Scottish border - were not to be realised (1976). If Forde-Johnston's complex typology of hillfort enclosures and forms was subsequently rarely adopted, his study is important not least in its pioneering quantification (and mapping) of hillfort data. The other publications of that decade which influenced the AHFBI project were by A.H.A. Hogg, who had been the Secretary of the Royal Commission on the Ancient and Historical Monuments in Wales and was the founder in 1966 of the Hill-Fort Study Group. Hogg, notably through his studies of Welsh hillforts, became the doyen of this field. His index to British hillforts provided basic information from published sources and his own researches on the hillforts (and some lesser enclosed sites) of Britain; this was data Hogg (1979, 1) had assembled for 'a map covering the whole of Britain and giving more information on areas than ... [the 1962 OS map].' Sadly this map, which would have been a daunting prospect for an individual to compile, never materialised. Hogg's national cartography - the problems of which he acknowledged (1975, 37) - was limited to the crowded figures (1-3) accompanying the general essay on hillfort distributions and regional types he set out in his 1975 popular Guide to these sites.

The provision of up-to-date distribution maps to reasonably compatible standards and at the scale of Britain and Ireland was a central aim of the AHFBI project. The database assembled to enable this by the judicious use of published sources and HER databases – ground-truthing was necessarily limited – is now publicly available for use online.

The project team evaluated records not only of the surface evidence which was Forde-Johnston's focus, but also took into consideration information derived from excavation, sometimes extensive but more often not, within hillforts; and results from the application of geophysical survey techniques, notably to hillfort interiors (e.g. in Wessex: Payne *et al.* 2006). It had already been plain a generation ago that in some lowland landscapes – such as East Anglia (e.g. Rickett 1991, fig. 52) – sites akin in their configuration or contents to

hillforts occurred in low-relief settings as upstanding features; relatively little had by then been achieved, however, to identify among the cropmark evidence generated from aerial reconnaissance examples of hillforts surviving within the agricultural lowlands elsewhere in Britain. Individual sites in lowland settings have been excavated, usually as a result of catastrophic threats (e.g. Taplow, Buckinghamshire - Allen et al., 2009; Broxmouth, East Lothian - Armit and McKenzie 2013), but the majority of enclosed sites first identified from the air as cropmarks remained largely 'unsorted' in the photographic records. AHFBI researchers set out to identify previously un-noted hillforts in such areas. As a consequence, hillfort distributions have been extended in greater numbers into the arable lowlands of Britain, where sites are rarely upstanding and are generally less well conserved. The impact of this procedure has been much less marked in Ireland.

Capturing the diversity of hillforts in the database

In Britain and Ireland hillforts comprise only a segment - albeit both an extensive and varied one - within a continuum of later prehistoric enclosed settlement. Given the unevenly preserved, sometimes badly eroded, remains present today, it will therefore never be possible to identify a hillfort category, the membership of which does not include (or exclude) some contentious, debatable examples, at the margins of qualification. Hillforts are thus acknowledged to be defined as monuments possessing at least some of a polythetic range of traits, but some fundamental standardisation was essential to underpin the selection of sites within the AHFBI project database. Three criteria (at least two of which have to be satisfied) were used as the basis for any site to qualify for inclusion in the Atlas database. These criteria, all of which can be related to function, and none of which varies in any great degree from previous views of the definition of this type of site, are:

Landscape prominence

Britain and Ireland display considerable topographic diversity and so it proved impossible to devise a satisfactory absolute criterion, for example in terms of a difference in altitude between the site and its environs, to estimate this characteristic. For inclusion, however, sites had to show some prominence within their local landscape, a professional judgement that was entrusted to our experienced researchers.

Scale of enclosing works

Again, allowing for damage and erosion, the calculation of the initial scale of ramparts, ditches or walls is not always straightforward. The fundamental judgement used was that their dimensions had to exceed those delineating lesser enclosures which might, for example, simply have defined the site's boundaries, or served to prevent access by wild animals. They should thus have offered some prospect of enabling resistance to human assault and/or have been impressive enough to suggest that they had a role in displaying the importance of the location and its inhabitants. This general concept can be extended to entrances which are often enhanced in a variety of ways and more grandiose in their scale or ground plans in the case of hillforts than for smaller enclosures. This criterion, founded on a consideration of the appropriateness of scale, is unavoidably especially contentious when unexcavated cropmark sites, normally lacking any surface relief, are assessed. For these, a ditch width of at least 4 m was selected as a proxy for defensive intent or the demonstration of status. In these examples, of course, former ramparts were often entirely ploughed down, but the minimum width of upstanding ramparts or walls accepted for inclusion in our database where these survive was set at 3 m.

Size of enclosed area

The definition of the minimum internal area for inclusion in the AHFBI database was also a matter for considerable debate. We settled on 0.2 ha (2000 square metres) as the minimum threshold, conforming with the precedent set by Hogg (1975). This enabled many small upland sites, for example in parts of west Wales or the Scottish Borders, to be listed, where they also satisfied at least one of the other key criteria. Adherence to this size limit also - and importantly - let us exclude smaller cropmark enclosures, as well as, for example, numbers of small, heavily walled circuits such as those of duns, some of which may have been entirely roofed, of the Atlantic West and North-West of Scotland (Harding 1997) as well as broadly comparable small sites for example in Wales. Ireland, however, had to be treated differently: the numerous ringfort enclosures of that island, attributable largely to the Early Medieval period (Stout 1997), had to be discounted in our survey, given that the Heritage Council (2017) currently estimates that some 60,000 examples are known. Their internal diameters can attain 60 m, and some ringforts (also known as raths) undoubtedly display relatively substantial circuits of banks and ditches. Thus an unknown but probably small proportion of these sites exceed AHFBI thresholds, both on size and scale of enclosure, and would thus qualify as hillforts on our criteria, but practical considerations of timescale and labour meant that the data on them could not be sifted satisfactorily; and this necessitated their exclusion. They thus unavoidably remain - at present, at least - as a wholly separate monument category, which is none the less acknowledged to impinge, potentially significantly but unquantifiably, on our understanding of hillforts, not least as the construction and use of Irish ringforts is broadly contemporary with that of the latest, Early Historic, hillforts elsewhere in Britain.

Were the size of the enclosed area to be operated as the unique selection criterion, even at the 0.2 ha limit, there would be further issues relating to exclusion. These are often legacies from earlier treatments of the evidence. One concerns the set of 'vitrified forts', insular examples of which are dominantly but not exclusively found in Scotland. The focus both of wonder and of scientific analysis since their first description in the 18th century, they have accrued a substantial literature (e.g. Ralston 2013, 143-63). Common in Scotland and present elsewhere in Britain (there is no confirmed example in Ireland), it would be generally anticipated that the Atlas would include these iconic remains. It indeed does so, albeit with the caveat that some examples normally incorporated in previous listings (e.g. MacKie 1976) are too small-scale to meet the minimum size threshold used in the compilation of the Atlas.

The issue of anticipated Atlas contents also affects another established group of forts, which includes examples that fall below our already modest, minimum size threshold. The Early Medieval hillforts of the West and North of Britain (e.g. Alcock 2003, chs 13-14), numbers of which enclose less than our 0.2 ha size threshold, merit inclusion through the deployment of the other two criteria. Their presence in the *Atlas* emphasises the fact that hillforts, far from being uniquely Iron Age constructions, were built *de novo*, their enceintes refurbished, or their interiors reoccupied in a variety of ways over a span of the order of two millennia from the later Bronze Age into post-Roman times.

How many hillforts are there?

The database contains 4147 entries for individual hillforts, including possible, unconfirmed examples. As is obvious from the foregoing discussion there are, as with much archaeological categorisation, not least of unevenly conserved earthworks, a number of marginal cases for which inclusion is debatable. In part, this uncertainty is also determined by the AHFBI team's need to base our decision making on site descriptions often prepared for other purposes. Such 'fuzzy' data are difficult to capture within a database consisting of pre-defined checklist categories designed to underpin searches and thus mapping. The project therefore adopted two reliability factors to identify uncertainties, since available resources permitted neither much field verification nor extensive consultation of colleagues. In the case of a hillfort for which there were issues either with the quality of the accessible information, or with the interpretation of that data, it would be included in the AHFBI database as 'unconfirmed' on the basis of either the data accessible to the AHFBI team or the interpretation of that data. In a small number of cases, available data were contradictory; if future clarification is unlikely (e.g. because the site has now been quarried away), such sites were marked as 'irreconciled' in terms of information and/or its interpretation. Extracting all such unconfirmed and irreconciled examples leaves 3354 confirmed sites (on our 'reliability of interpretation' criterion). It is these that are deployed in the bulk of the hillfort analyses we have performed to date (Figure 1).

Our database captures a more extensive range of key information about individual hillforts than has previously been possible. In total, there are some 120 fields. Site characteristics include the nature and architecture of the enclosures, and associated features such as entrances. Some sites were used over centuries, whether continuously or intermittently, so that we also allow for variation through time in the use of individual sites, including that both their enclosed area and the form of vallation may change, as in celebrated cases such as Maiden Castle, Dorset (e.g. Sharples 1991). Estimates of site chronology incorporated in the database are necessarily broad-brush, since period descriptors such as 'Early' or 'Middle' Iron Age vary in their definitions across Britain and Ireland and the impacts of Rome too were geographically variable; and the quantities, contexts and types of dating evidence available differ markedly from site to site. It was also not possible to evaluate all the evidence for dating in detail, given the limitations of time and resources. We have thus adopted a simplified system of approximately 400 year blocks centred on the spans from 800-400 BCE onwards, to indicate the general timescales of individual sites where these have been examined; and have made due allowance for both earlier and later recourse to particular sites.

Some outcomes

The population of hillforts considered in the AHFBI survey is a product of the criteria deployed in its construction; and varies from previous overviews, most of which are still based substantially on the 1960s mapping already considered. Other differences arise because of the incorporation of new discoveries of hillforts, in some instances through ground survey, but more frequently by remote sensing. Some 314 of the 1481 hill-forts regarded as 'confirmed' within Scotland, for example, were discovered as cropmarks (approximately 21% of the total), whereas the proportional increase in England, where cropmark forts are concentrated in the North-East, is less at about 8%. Discounting coastal promontory forts in Ireland, which in that country have usually been treated as a separate site type (rather than as a subset of hillforts, the practice that has long prevailed in Britain), overall numbers of upstanding Irish forts have continued to increase, more than doubling to approximately 100 examples since Raftery's seminal survey of 1972, as the monument type has attracted increasing archaeological attention (O'Brien and O'Driscoll 2017; and see now Welsh and Welsh 2018 for Northern Ireland). The unresolved issues in relation to ringforts outlined above means however that a considerably larger minimum size threshold of 1 ha has been operated in the AHFBI database for the inland hillforts of that island.

Compared to earlier surveys, the numbers of hillforts have increased for all the constituent countries of the study area, although markedly differently in proportional terms (Figure 1). Considering only sites in the Ordnance Survey medium-size category (of between 1.21 and 6.07 ha) for example, and juxtaposing AHFBI data with the most recent published map (Harding 2012, fig. 1.2) reveals on the one hand a slight increase in hillfort numbers in this size range in Wales (from 125 to 137) whereas on the other the Scottish total has jumped from 28 to 105 examples. This latter change represents an increase of approximately 275%. The overall British total of such medium-sized forts, 463 in the 2012 account, is now 608. For reasons explained above, for small forts (less than 1.21 ha) only British data can be examined meaningfully along with earlier counts in comparative terms. Compared to Harding's map of 2012 (fig. 1.1) overall numbers of these have increased by several hundred examples to 2141. If 'classic' areas for such sites, such as south-west Wales, the Scottish Borders and Northumberland, already prominent in earlier mapping, remain dominant, small forts are now more apparent than on earlier maps for example in the Welsh Marches and along the Atlantic seaboard of Scotland. It is noteworthy however that over 70% of all British confirmed forts are small - in the 'under 3 acres' (i.e. 1.21 ha) category set up by the staff of the Ordnance Survey Archaeology Branch in the 1960s (Figure 2). Highlighting such counts also conceals the fact that increases are not simply straightforward additions of extra sites to an established record; some examples previously accepted as hillforts have been winnowed out on the basis that they did not fully meet the Atlas criteria.

Distribution maps drawing from the AHFBI database emphasise that, if there were regions and periods within later prehistory for which hillforts formed a significant component of the settlement tissue, there are others, notably in parts of eastern Britain, where the opposite prevailed and hillforts were either rare or absent. In terms of chronological variability, this differentiation is particularly marked in Ireland, for which recent work emphasises that most excavated hillfort sites are in fact datable to the later Bronze Age (O'Brien and O'Driscoll 2017). If some Iron Age use is suggested for hillforts in Northern Ireland, the available evidence seems rather muted (Welsh and Welsh 2018).





Mapping vallation can also change perceptions of overall distributions. Sites where the current morphology of the hillfort indicates that they are at least partially multivallate (in the AHFBI sense of possessing at least three lines of walls or ramparts, minimally for a sector of their circuits) are a case in point (Figure 3). Such complex schemes of enclosure have often been considered as a particular feature of major developed hillforts in south-central Britain, and are sometimes associated with a response to sling or other projectile assault, although alternative rationales for the development of such schemes of enclosure are now preferred. In fact, in terms of simple numbers of occurrences, this trait is more common in the north of Britain; some 385 of 661 British examples based on the current morphology of the remains are in Scotland but

many of these northern sites are very much smaller in scale than their southern counterparts. Multivallate forts are also proportionately significant in Wales, where some 107 examples are recorded, about 17% of the total number of confirmed hillforts in that country. Some 41 examples are recorded on the island of Ireland.

Another way of considering hillfort distributions is by mapping their densities with respect to unit areas. This approach was pioneered by Forde-Johnston (1976, fig. 147) where – for numbers of sites by historic counties, again regardless of the areal extent of individual sites – he was able to demonstrate that in Southern Britain the greatest densities are in Cornwall and Pembrokeshire, with the lowest occurring east of a ragged line drawn from Morecambe Bay south to the Hampshire/Sussex




boundary. Mapping the AHFBI confirmed dataset for all of Britain and Ireland by the areas of historic counties and then ranking the counties into quartiles produces some interesting patterns that allow received opinions to be rethought, although again it has to be borne in mind that this is done here simply by numbers of sites and without reference to their individual sizes (Figure 4). That the top quartile includes the counties of the Scottish Borders and Northumberland is unexceptional, but the inclusion within this northern focus of Galloway and Argyll is perhaps more surprising. Confirmed hillfort numbers relative to the areas of the historic counties place most Welsh counties also in this top quartile, but with the exception largely of those in the Marches. It is noteworthy that only two English counties - Cornwall and Gloucestershire - are included

in this top set. Ireland is unrepresented in it, which should occasion no surprise, but four southern coastal counties in the Republic – Dublin, Wicklow, Waterford and Kerry – are included in the second quartile, not least because of the way the AHFBI protocol incorporates coastal promontory sites into the hillfort category. Much of the west of Ireland - including counties without a coastline, and so not impacted by the inclusion of coastal promontories - falls into the third quartile, whereas counties of the east – including much of Northern Ireland - are in the lowest quartile, like much of eastern England from Kent to County Durham and west to Cumberland and Lancashire. Envisaged in this manner, the steepest gradient in terms of quartile rankings (from first to fourth) is across the border between the historic counties of Northumberland,



Figure 3: The distribution of multivallate (including partially multivallate) forts in Britain on current morphology regardless of enclosed area. Contains OS data © Crown copyright and database right (2018).

Roxburgh and Dumfriesshire, all in the first quartile, and their northern English neighbours, where hillforts are much rarer.

Another characteristic that we have challenged elsewhere by revisiting and extending the hillfort dataset (Lock and Ralston, forthcoming 1) is the view that larger, sometimes more complex sites, some of which are termed 'developed hillforts' (a concept elaborated by Cunliffe in Payne *et al.* 2006) are predominantly a feature of a broad zone extending north-west from south-central England to the northern Welsh Marches (e.g. Cunliffe 2005). It is certainly true that this region is prominent when the *Atlas* database is ranked by historic counties for example for hillforts over 1 ha in internal area (Figure 5). Whilst enclosed area is obviously only a partial proxy for complexity, it is noteworthy that, while this zone indeed contains considerable numbers of these sites (Figure 6 maps all 270 sites of 5 ha or over in the database), a simple ranking of the one hundred largest examples in Britain and Ireland (in effect those exceeding 10.1 ha in internal area, allowing for the inclusion of more than one configuration of certain sites: Figure 7) in the AHFBI database demonstrates that the 69 of these sites found within England and Wales are in fact more widely distributed across these countries. While such large sites remain rare in Scotland, no fewer than 26 examples occur in Ireland. Spinans Hill 2 (County Wicklow) at 130 ha encloses the largest area for any confirmed site in the AHFBI database; of the ten biggest sites, four (including two states of Tinoran, also in County Wicklow) are in the Republic of Ireland.





Limited excavation at Tinoran established the Later Bronze Age origins of at least one of its larger enclosure lines (O'Brien and O'Driscoll 2017, 281-99 and fig 6.72), again demonstrating that the relationship between size and complexity cannot be read off straightforwardly in chronological terms. Of hillforts of 5 ha or over, 48 of 270 – 18% – are in the Republic of Ireland.

Promontory forts form another significant constituent of the AHFBI database which we have examined elsewhere (Lock and Ralston, forthcoming 1). Some 963 examples of coastal and inland promontories are included in the Atlas database, representing approximately 29% of all confirmed sites in Britain and Ireland. The prevailing view, in marked contrast to Britain, is that Ireland's coastal promontories, characteristic in particular of its southern and western seaboards, are dominantly a feature of the early-to-high Middle Ages. If some, such as Larrybane in County Antrim (Childe 1936) were indeed occupied or reoccupied then, others provide some evidence for use in the 1st millennium BC, a pattern repeated elsewhere on the margins of the British mainland. Inland examples, as at Knockdhu (County Antrim), may date back to the Middle/Late Bronze Age. As with the largest hillforts considered above, Ireland has disproportionately many of the bigger promontory sites, including 18 examples each enclosing more than 5 ha, 33% of the total above this threshold for Britain and Ireland (Figure 8). These include the large, multivallate Drumanagh, Loughshinny, County Dublin, a likely emporium on the Irish Sea coast with associated Roman artefacts, as well as the early Knockdhu, cited above. In





England, contrastingly, the bigger coastal promontory forts are a feature of the south Channel coast and the South West of the country more generally. Hengistbury Head (Dorset) is perhaps the example par excellence; it served as a port-of-trade in the late pre-Roman Iron Age (Cunliffe 1987). Further illustrating the diversity of this class of sites, the most extensive coastal promontory sites in Scotland are in the Outer Hebrides at Dun Mhiughlaigh (10.4 ha) and Biruaslum (9.8 ha); both are univallate and the former is a long, narrow, highcliffed promontory jutting into the Atlantic. Its exposed location makes it a prime candidate to have held a non-domestic, even non-defensive, function. Even excluding the massive, unconfirmed promontory site occupying the Mull of Galloway in the extreme southwest of Scotland, the sites just listed demonstrate the

variability apparent in this particular group. This is a characteristic which could be subjected to much fuller analysis.

Even a cursory examination of the AHFBI database reveals that some aspects of our information about hillforts have been susceptible to significant change over recent years as field survey and excavation have been taken forward. In the case of their fortifications or enclosures, for instance, the evidence for the presence (or, more often, the former presence) of timber in their construction, whether as a component of timber-framed walls including vertical posts, or timber-lacing consisting solely of transversal and longitudinal beams within their walls (Harding 2012, 58-63), continues to increase relatively rapidly. Such



Figure 6: The Atlas set of the 270 confirmed hillforts in Britain and Ireland which are at least 5 ha in extent in at least one of their configurations. Contains OS data © Crown copyright and database right (2018).

100 Largest Hillforts by Area in Britain and Ireland

works can also be related to free-standing palisades or stockades; in some circumstances, notably where above-ground preservation is poor, it can be difficult for example to distinguish between close-set double palisade lines and narrow walls with timber facings – variants of the 'box rampart' tradition wellestablished particularly in southern Britain (Cunliffe 2005, 349-55).

One trait of hillfort defences, mentioned above, and found to varying degrees across Britain in areas where stones of the requisite geologies are employed, is the vitrification of the enclosures to produce the so-called vitrified forts. These relate directly to timber-framed and/or -laced walls (Figure 9A), in that combustible wood within the make-up of the wall core is considered



Figure 7: Pie-chart of the hundred largest hillforts in Britain and Ireland by country.



Figure 8: The Atlas set of confirmed promontory forts in Britain and Ireland (N=963), highlighting the 55 examples over 5 ha in internal area. Contains OS data © Crown copyright and database right (2018).

essential to the observed outcome of heat-altered stonework which has resolidified after a partial melt. In the most celebrated cases, extensive evidence of vitrification is very apparent on the surface, in the form of massive upstanding solidified lumps of material, on, or close to, the enclosure circuit, as at Carradale Point in Argyll; in other examples the evidence, which can be very localised, is only apparent on excavation of the sites. Vitrified forts are not unique to Britain (there are no confirmed examples in Ireland), still less to Scotland (although most British examples are found here), but are found widely across Europe from Portugal to Scandinavia and east to the Carpathians, with eastern examples of forts, some burnt, some containing vitrified material, dating to the Bronze Age (B. Richter, University of Frankfurt, pers. comm.).

Present-day archaeological opinions dominantly consider the vitrification of forts as the by-product of the destruction of their enclosure walls by fire, occasioned by the burning of their contained timberwork, although the case for vitrification as a deliberate constructional technique continues to be advocated (e.g. Wadsworth, F. et al. 2016), albeit cautiously. It can be argued that timberwork laid horizontally within the wall assists the fire to penetrate into its core. It is thus instructive to compare known distributions of timber-laced and -framed walls, generally only recognisable through excavation, and the former more common in northern Britain, the latter in the south, with that of vitrified forts, again made possible by extracting the relevant data from the Atlas online database (Figures 9A and 9B).





Contrastingly, some other traits have proved to be much more stable in terms of numbers, with new discoveries remarkable for their rarity. British and Irish examples of the emplacement of irregular rows of jagged upright stones, or more rarely timbers, (usually termed chevaux-de-frise) have hardly increased in recent years, perhaps in part because the fragility of the evidence diminishes the opportunity for features of this kind to survive (Figure 10). Murphy (2018) suggests that some such stone arrangements were only set into topsoil in the first instance, indicating that they were perhaps intended to be a temporary expedient. Despite the distinctiveness and potential high visibility of these characteristic features, even if their function remains debated, new examples thus remain rare. Notable

exceptions to this rule are the recovery of an example preserved under a later rampart at Castel Henllys (Pembrokeshire; Mytum 2013, ch. 5) and the detection of a further example at Black Scar coastal promontory fort in the same county. Here, circumstances are again instructive: survival of the vulnerable upright stones was again due to protection under a later rampart, and detection of the *chevaux-de-frise* in this instance was attributable to continuing erosion of the coastal earthworks (Murphy 2018).

Conclusions

It is hoped that the rehearsal here of a small selection of the evidence accumulated in the AHFBI database gives a sense of the new configurations that can be



Figure 9: (B) The Atlas distributions of confirmed forts with evidence of vitrification from either surface or excavated evidence. Contains OS data © Crown copyright and database right (2018).

revealed by manipulating it for mapping and other purposes. In due course, a printed Atlas offering a consideration of Britain's and Ireland's hillforts will become available (Lock and Ralston, forthcoming 2). This will complement the interactive online *Atlas*³ and which will allow the authors more scope to examine the impacts of the new sets of data on wider perceptions of later prehistory.

Although the project is necessarily time-limited, and the team has now stood down, the data itself will continue to be available as CSV exports through the online resource and via the Archaeological Data Service. It will also be forwarded to the various National Monuments It has been acknowledged above that hillforts are in some measure a problematic archaeological site category, overlapping with other categories of site in their scale, in their landscape settings and in the archaeological evidence they contain. These latter are generally, but not universally, smaller and slighter, than hillforts; and of course it has been acknowledged above that setting the thresholds for inclusion differently – for example operating the much higher Irish threshold of 1 ha across Britain too – would produce a very different dataset. One impact of the project has been to show that Cunliffe's assertion in relation to the functions of Wessex hillforts that 'there may be no

Records whose records formed the launch pad for this endeavour.

³ See note 3 above for details.



Figure 10: Chevaux-de-frise associated with confirmed hillforts in Britain and Ireland. Only 19 examples, predominantly along western coasts, are recognised. Contains OS data © Crown copyright and database right (2018).

such thing as a typical hillfort' (in Payne *et al.*, 2006, 154) is incontrovertible in the face of the availability of data on hillforts at the wider insular scale considered in AHFBI.

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The online webmapping database was built by John Pouncett (Oxford).

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The chronology of the defensive systems at Los Millares (Santa Fe de Mondújar, Almería, Spain)

Fernando Molina González, José Andrés Afonso Marrero, Juan Antonio Cámara Serrano, Alberto Dorado Alejos, Rafael María Martínez Sánchez and Liliana Spanedda

Abstract

Los Millares (Santa Fe de Mondújar, Almería, Spain) is probably the most famous fortified Chalcolithic site in western Europe. The four concentric walls that delimit the settlement are only part of a defensive system that also includes a double line of hillforts (up to a total of 13) that guarantee control of the Sierra de Alhama and Sierra de Gádor piedmont resources. An important aspect to highlight is that the radiocarbon dates available for the whole cluster (village, necropolis and hillforts) include the oldest known dates (end of the 4th millennium BC) for the Iberian Peninsula settlements fortified with stone walls. Although Los Millares is one of the Chalcolithic sites with a greater number of published radiocarbon dates (25), these are insufficient to characterise each of the areas in this complex site. In addition, no comprehensive statistical study of the available dataset has been made so far. Further statistical studies (e.g. sum of probabilities and Bayesian analysis) will allow us to discuss, with greater empirical support, the sequence of the site and its defensive systems, and to contextualise it within the radiocarbon framework of the Copper Age in southern Iberia. Results show an occupation range between 3300 and 2200 cal BC, with transitions among the different periods (Early, Middle, Late and Final Copper Age) at 2900, 2650 and 2450 cal BC.

Keywords: Southeastern Iberia, Chalcolithic, enclosure, fortifications, radiocarbon dates, Bayesian analysis

Introduction

Los Millares is situated in southeastern Iberia not very far from the present coastline (Figure 1). The site is placed on a river terrace which has a difficult access from two of its three sides, between the Andarax and Rambla de Huéchar rivers (Figure 2). The site comprises a fortified village, a dense necropolis, with *c*. 100 graves, and a set of hillforts surrounding them (Molina and Cámara 2005) (Figure 3a). Different necropolises and small villages in the Alhama and Gádor mountains can also be considered as important parts of the ancient landscape (Cámara *et al.* 2014) (Figure 3b).

The first researches were carried out by Luis Siret at the end of the 19th century (Siret 1893). Although Siret did not excavate the different defensive wall lines, he was able to define them via the banks created by earth accumulations over them (Figure 4a). He could also document some of the hillforts that surround the settlement from the south and east. The different ditches can also be recognised in the plan he drew (Figure 4b).

In the 1950s, new excavations by Antonio Arribas and Martín Almagro showed the extent of the fortification walls at Los Millares (Almagro and Arribas 1963), but it was only after 1978 that the complex system was exposed by the works of Antonio Arribas and Fernando Molina from the Department of Prehistory and Archaeology of the University of Granada (Arribas *et al.* 1979; 1981; 1987).

Description of the defensive system

Four wall lines were identified at Los Millares (Molina and Cámara 2005) (Figure 5a). The outer line (I) extends to almost 400 m and closes the most external area of the settlement (Zone A). In the northern area, the wall's best preserved side has a stone masonry base almost 2 m high; and according to the collapsed mud sections, the wall could have reached 4 or 4.5 m.

The towers are located at regular distances and in between them were bastions without gates from floor level that were built later (Figure 5b). Several loopholes are found along this outer wall and they are especially well preserved in this northern area. When the bastions were built later on the wall, the loopholes, now obsolete, were closed.

Several round huts have been explored near and inside this wall line. One of the excavated buildings, including attached rooms in a square shape, was involved in metallurgical activities. Although some towers were also used for different activities, as we have said earlier (Cámara and Molina 2013), this does not exclude their primary military function.



Figure 1: Los Millares, southeastern Iberia.



Figure 2: Los Millares – between the Rambla de Huéchar and Río Andarax (photo: Paisajes españoles).

An aqueduct entrance and two gates have been documented in the central and southern areas of this outer line (Figure 5c). Architectonical systems were built at both gates to hinder unwelcome access (lateral passages, wall reinforcements, etc.). In addition, a wide ditch can be still seen all along the wall (Figure 5d).

The outer wall was built at an advanced stage of the settlement's occupation, as proved by the indoor situation of several megalithic graves belonging to the attached necropolis. However, different phases can be defined in its use and also in its structural transformations devoted to improving defensive effectiveness, i.e. additional bastions and gate reinforcements, as we have already referred (Cámara and Molina 2013; Cámara *et al.* 2016).

Wall lines II and III enclose an elevated, plain plateau. The area between lines II and III is referred to as Zone B and is separated from Zone A by the above-mentioned second fortification wall (II). This line is the most complex one, in part due to the long period of time it was in use. At least one



Figure 3: a) Map of the Los Millares settlement, necropolis and hillforts; b) Los Millares and surrounding sites and necropolises.



Figure 4: a) Los Millares necropolis and settlement (including banks/walls), according to the drawings of L. Siret (1893); b) Hillfort 1 with ditches, according to the drawings of L. Siret (1893).



Figure 5: a) General aerial view of the four defensive lines of Los Millares (photo: Paisajes españoles);
b) The northern area of the outer wall (I) with towers and successive bastions (photo: Research Group HUM274);
c) Main gate in outer wall (I) (photo: Research Group HUM274);
d) The central area of the outer wall (I), with the main gate and a view of the outer ditch (photo: Research Group HUM274).

ditch (or perhaps two) was excavated in front of and along the stone wall (Figure 6a). The gate was specially

protected by two flanking towers and reinforced with several successive walls.

The third and fourth wall lines have been dug in a lesser extension than the others and the eastern part of the first one (III) was used for only some centuries (Figure 6b). After its abandonment, supposedly due to the existence of the other outer walls (II and I) eastward, several great huts were built over its collapsed walls. The area behind this ancient wall line III (Zone C) includes the most outstanding buildings at Los Millares: a metallurgical workshop and a monumental building. The latter has a central court placed between two rows of rooms. Both buildings are rectangular in plan but, unfortunately, the second has few stratigraphic units preserved and has not yet been excavated (Molina and Cámara 2005).

The inner wall (IV) defends a citadel (Zone D) with its reservoir (Figure 6c). In the few metres explored so far, the line features several towers and the wall has inner corridors. The corridors facilitated circulation among different parts of the perimeter defended by this inner wall, protecting people moving along it during possible assaults. This defensive system is even more impressive if we take into account that this citadel is situated in the inner part of the settlement, bounded by cliffs over two rivers (the Andarax and Rambla de Huéchar) and by the other two (and even three for a short period) walls on the east side. In any event, especially in the first phases of settlement occupation, when the citadel area was not yet a high artificial tell, and less high above the Andarax, this lower area had a complex defensive system. The other parts of the settlement, defended by the outer walls (I, II and III), are higher and are located over natural plateaus.

We propose that the three inner walls (II, III and IV) were built around the same period, and the lines I, II and IV were in use until the last quarter of the 3rd millennium cal BC, when the site's occupation ended (Arribas *et al.* 1987; Molina *et al.* 2004). These proposals will be explored in this contribution using statistical analysis of the available radiocarbon dates.



Figure 6: a) View of defensive wall II (photo: Research Group HUM274); b) View of defensive wall III (photo: Research Group HUM274); c) View of the citadel (IV) (photo: Research Group HUM274); d) View of hillfort 1 (photo: Paisajes españoles).

In relation to the different areas near each wall, there are chronological as well as social differences, as expressed in terms of meat consumption, hut size, and buildings for specialised tasks (Molina and Cámara 2005; Navas *et al.* 2008; Castro *et al.* 2010).

As we have previously said, at least 13 hillforts defend the village from the south and the east. Hillfort 1 has been extensively excavated (Molina and Cámara 2005) (Figure 6d). It has two main defensive lines built in two different phases, and an inner building erected after a fire destroyed all the previous structures. Unfortunately, this building is badly preserved and only its foundations have been studied. Regarding the two previous phases, the most important aspect to refer to is that the protection of the gates was also a priority (Cámara and Molina 2013). In the second phase, the gates of the new outer wall have lateral passages placed over the inner ditch; making it easier to lift wooden planks possibly used as bridges. There is a second, and outer, excavated ditch and, in addition, walking across the hill was restricted by cutting its slopes. The defenses were completed with a small tower at a point without a view from the fort. When the outer line was built, the loopholes of the inner wall were closed (Cámara and Molina 2013), as we already mentioned when discussing the northern area of wall I at the village.

The open areas between the two walls were used for different activities. Hearths and grinding structures are located in open areas and in some of them changing uses can be seen. Hearths were built in the area during the first phase and later they were substituted with grinding structures. Different activities, i.e. limited metallurgy and arrowhead manufacture, have been traced in the bastions and huts (Molina and Cámara 2005).

Other hillforts are smaller – some with only a wall with towers (e.g. forts 4 and 5), or simple towers – but preoccupation with gate protection is very often found, even in isolated towers (i.e. forts 3 and 7).

The proliferation of arrowheads can be a clue to conflict; the raw material for some of them coming from abroad (Afonso *et al.* 2011). Flint daggers are scarce objects and were worked as prestige items. Some metallic weapons, belonging to the final phases, have been also found.

Objectives, hypotheses and methodology

The main objective of this contribution is to evaluate the chronology of the different elements of the defensive systems (walls and hillforts) at Los Millares.

To get a better view of this issue, starting from the available radiocarbon dates, a coherent analysis of their stratigraphic situation is required. The dates will be clustered in wide cultural periods (Early, Middle, Late, and Final Copper Age) according to their stratigraphic situation and material association. The 'sum of probabilities' and Bayesian analyses will be used to contrast these clusters and provide an absolute chronology for these periods. In addition, samples will be also clustered in relation to site areas (wall lines I, III, III and IV, hillforts and necropolis) to place them all within a chronological framework in an attempt to get a better sequence.

Different hypothesis deriving from previous works (Molina *et al.* 2004) will be tested:

- 1. The existence of three wall lines from the beginning of the site's occupation.
- 2. The construction of the outer line at a later phase.
- 3. The existence of a temporal lapse when hillforts and village were all in use.
- 4. The synchronic end of the entire system.

Los Millares radiocarbon dates and analyses of southeastern Iberian Copper Age chronology

The first Los Millares radiocarbon date was obtained for a grave in the 1950s (Almagro 1959). Between the end of the 20th and beginning of the 21st century, several samples from the village and hillforts were dated, some of them by AMS. They were published with a brief description and an analysis of their problems and provenance contexts (Molina *et al.* 2004). New radiocarbon dates from human bones have been recently sent to the Seville laboratory and other faunal samples from the village are being prepared to send.

Although the available dates were studied according to their stratigraphic position in every area, and a discussion on previous proposals about the chronology of the different wall lines, was carried out (Molina *et al.* 2004), no systematic effort was made to better correlate the chronology of the different areas.

In any event these dates were the base for establishing a chronological framework for the southeastern Iberian Copper Age (Molina *et al.* 2004; Molina and Cámara, 2005; Lull *et al.* 2010). The results suggested a beginning before 3200 cal BC and an end shortly after 2150 cal BC.

From then, statistical analyses of radiocarbon dates, and especially Bayesian approaches, have become frequent regarding the study of the southeastern Iberian Copper Age. Most of the work refers to burials (Aranda and Lozano 2014; Lozano and Aranda 2017; Aranda *et al.* 2017a; 2017b; 2017c), and only some papers discuss of samples coming from settlements (Lull *et al.* 2010; Soler 2016; Molina *et al.* 2017). Unfortunately, Bayesian analysis has so far only been carried out on

samples from Argaric periods (Lull *et al.* 2013; Jover *et al.* 2014; Molina *et al.* 2014), or on Chalcolithic samples from neighboring areas (Afonso *et al.* 2014; Aranda *et al.* 2016), if we exclude the above-mentioned burial studies.

Although statistical analyses on samples from graves can be useful to establish different patterns of ritual change, as proved even in generic studies on southern Iberia (Balsera *et al.* 2015a; 2015b), proper seriation of a period only can be achieved from samples coming from a multilayer site, such as Los Millares, or Cerro de la Virgen (Orce, Granada).

Contexts of available radiocarbon dates from Los Millares

As mentioned above, the available radiocarbon dates from the Los Millares archaeological sites were previously studied according to their stratigraphic position, and discussed in relation to southeastern Iberian Copper Age chronology (Molina *et al.* 2004): detailed correlation by area was not presented. A more detailed study aimed at taking new faunal samples for dating, and focusing on stable isotope analysis, has led to the placing of the previously dated samples within a more accurate contextualisation (Table 1).

Four samples (Beta124529, Beta124530, Beta124531 and Beta124532) come from the inner citadel (Zone D), and, consequently, are associated with wall line IV. letting us date its construction and timeline. These four dates have received more accurate analysis of their position in the literature, due to the characteristics of the stratigraphic sequence in the area (a genuine tell, as referred to above), and the need to analyse Bell-Beaker evolution. Sample Beta124532 comes from the deepest deposits in the area and allowed us to date the beginning of the site and also wall IV. Although the most superficial stratigraphic levels have not yet been dated, sample Beta124530 offers an adequate *terminus* post quem for the end of the site. In any event, we must take into account that this last date is a standard radiometric one (i.e. not AMS).

Only two samples (Beta124527 and Beta124528) from the levels attached to wall III have been dated, both of them coming from the metallurgical workshop area. These samples were analysed using standard procedures (not AMS). The dates obtained after the analysis have a large standard deviation, especially the second one. In addition, although both of the dates come from the more ancient deposits excavated, we cannot be sure that excavations in the area had reached the bottom of

Lab identification	Date Bp	Zone	Phase	Period	Analysis	Sample
Beta124532	4410±60	D	D1	ECA	AMS	Charcoal
Beta124531	4200±60	D	D6	MCA	AMS	Charcoal
Beta124529	4020±60	D	D7	LCA	AMS	Charcoal
Beta124530	3900±60	D	D9	FCA	Standard	Charcoal (Populus)
Beta124527	4220±70	С	C2	MCA	Standard	Charcoal (Olea europea, P. halepensis, Q. ilex-coccifera and others)
Beta124528	4030±130	С	C1	MCA	Standard	Charcoal (Olea europea and others)
Beta124523	4460±70	В	B2	ECA	Standard	Charcoal (Q. ilex-coccifera, Olea europea and others)
Beta124524	4420±70	В	B2	ECA	Standard	Charcoal (Olea europea and others)
BM2343	4150±40	В	B4	MCA	Standard	Charcoal
Beta124522	3990±60	В	B5	LCA	Standard	Charcoal
H204-247	4295±85	А	A1	MCA	Standard	Charcoal
Beta124526	4220±70	А	A1	MCA	Standard	Charcoal (Olea europea and others)
BM2344	4110±110	А	A2	MCA	Standard	Charcoal
Beta124525	4040±70	А	A3	LCA	Standard	Charcoal (Olea europea and others)
Beta125862	4000±70	F1	F2	FCA	Standard	Charcoal (P. halapensis)
Beta125861	3980±40	F1	F2	FCA	Standard	Charcoal (Tarae and others)
Beta125860	3950±40	F1	F2	FCA	AMS	Charcoal (Olea europea)
BM2536	3920±50	F1	F2	FCA	Standard	Charcoal
BM2537	3880±50	F1	F2	FCA	Standard	Charcoal
Beta125859	3880±60	F1	F2	FCA	Standard	Charcoal (P. halapensis)
BM2345	3820±40	F1	F2	FCA	Standard	Charcoal
Beta135669	3830±70	F4	F2	FCA	Standard	Charcoal (P. halapensis)
Beta135670	3840±50	F5	F2	FCA	Standard	Charcoal (Populus)
Beta135671	3840±70	F5	F2	FCA	Standard	Charcoal(Populus and Olea europea)
KN72	4380±120	Ν	N1	ECA	Standard	Charcoal

Table 1: Available radiocarbon dates for Los Millares.

the sequence. On the other hand, none of the available samples are from the time wall III terminates.

Better results can be expected from the four samples from wall II (Beta124522, Beta124523, Beta124524 and BM2343), although they are standard radiometric dates. The second and third dates come from initial deposits, and the others from deposits near the top of the sequence: these being useful for an idea of the end of occupation in the area.

Another four samples have been dated in relation to wall I (Beta124525, Beta124526, BM2344 and H204-207). In spite of their scarcity, these samples represent all the preserved sequence from Zone A, where the most superficial deposits have disappeared due to erosion and recent alterations.

There are seven radiocarbon dates available for hillfort 1 (Beta125859, Beta125860, Beta125861, Beta125862, BM2536, BM2537 and BM2345), all belonging to the second phase of the fort, when it consisted of two concentric walled enclosures. We must also take into account that these dates are from the final stage of this phase, when an extended fire destroyed the fort. Nevertheless, these dates provide an accurate chronology for this event, which is considered as marking the end of the site's effective occupation. We must remember, however, that the central structure was built over the deposits generated by this fire, and only its foundations have been explored and no associated item has been recovered.

There is one date for hillfort 4 and two from fort 5 (Beta135669, Beta135670, Beta135671). All come from the last occupation phase, when the forts were destroyed by fire. In the case of fort 5, this fire followed different modifications in the design of the wall to better gate protection – as happened at other areas of the site.

One further date was obtained from a grave (KN72). This date may be considered as one of the earliest from the entire site. Only in the recent years have been older dates come from southeastern Iberian megaliths. Some are TL dates (Román *et al.* 2005), but others are radiocarbon dates (Aranda *et al.* 2017a), yet only a few of the passage graves are dated as old as the Los Millares sample (Aranda *et al.* 2017a; Lozano and Aranda 2017).

Statistical analysis of Los Millares radiocarbon dates and discussion

As mentioned above, the set of determinants from the archaeological complex of Los Millares is enough to allow an exploration of the chronological development of the occupation of the settlement and its structural evolution, even though most of the dates have been obtained using standard radiometric techniques. Although all the occupation phases identified at the settlement are dated, the number of determinations of each of them is not similar, nor are the dates obtained in the different site zones comparable.

For our research, a Bayesian analysis was performed using OxCal (Bronk Ramsey 2017) to see whether, after the samples were calibrated, the set of determinants was suitable to address the chronological issues raised here. Given the characteristics of the stratigraphy of Los Millares, the sequence model to be explored hypotises contiguous phases.

The proposed model consists of four phases: Early, Middle, Late, and Final Chalcolithic. The model was calibrated according to Bayesian statistics using the OxCal application (Bronk Ramsey 2017). The Amodell index obtained a value of 109.4, well above the 60 required to understand whether the model was significant. However, the determinants Beta125861 and BM2345, belonging to phase IV, did not fit the model well, and none had an A index equal or higher than 60.

To adjust the model better, Outlier Model General (Bronk Ramsey 2009) was applied. Both atypical determinations were marked and each one assigned a 25% probability of being atypical. Once the program was run, the Amodell agreement index improved and it reached a value of 112.7 (Figure 7; Table 2). However, only the Beta125861 dating improved its adjustment index A, reaching 60.5. Yet the probability (P) that both determinants come from phase IV of the model is higher than 81% (Table 2).

Finally, and to check the chronology of the phases generated by the program, 'sum of probabilities' analyses of the grouped dates were made – first by phases, and then by each of the defined areas from Los Millares. The obtained results were consistent with those of the Bayesian model for each of the phases (Figure 8a). The second set of analyzes, those referring to site area chronology, has enabled proposals for start and end date of occupation of each space (Figure 8b).

Final remarks

The available Los Millares radiocarbon dates do not show differences from the few dates known from southeastern Iberian Chalcolithic stone fortifications.

In spite of their scarcity, the quality of the available Los Millares dates can be assumed from the slight chronological differences found for every phase, no matter if the 'sum of probabilities' or Bayesian approach is used (Figures 7 and 8a). OxCal v4.3.2 Bronk Ramsey (2017); r:5 IntCal13 atmospheric curve (Reimer et al 2013)



Figure 7: A contiguous phases bayesian model from Los Millares radiocarbon dates according to their stratigraphic phases.

The chronology of every phase can be summarised as follows:

Early Copper Age (from 3300 to 2900 cal BC). The statistical analysis lets us keep an old date for the first establishment at Los Millares site, while the end of the period does not change regarding the previous proposals (Molina *et al.* 2004; Molina and Cámara 2005). Although the dates belonging to this period have only been obtained from zones B and D, we can maintain the

hypothesis that, from its beginning, Los Millares had three wall enclosures and round huts. The necropolis existed from this early period – as suggested by the only published date. The pottery shapes are open. These vessels were used for cooking food. Metallurgical activities are also recorded from this phase.

Middle Copper Age (2900 to 2650 cal BC). Few differences can be found between the results of statistical analysis and previous proposals (Molina *et al.* 2004; Molina and

								Índices						
	Uı	ımod	elled	(BC/AD)			Amodel=112.7							
					ì			Aoverall=107.7						
	from	to	%	μ	σ	from	to	%	μ	σ	А	L	Р	С
Outlier Model General						-183	223	95.4	0	83				99.7
T(5)	-2.65	2.65	95.4	2.26696e-8	1.29081				-0.0662446	1.14303				95.6
U(0,4)	3.98986e-17	4	95.4	2	1.1431	5.37764e-17	3.908	95.4	1.82154	1.08799	100			99.6

							Índices							
		Unmode	elled (I	BC/AD)			Model	Amodel=112.7						
		1							Aoverall=107.7					
Sequence	from	to	%	μ	σ	from	to	%	μ	σ	A	L	Р	C
Boundary Star Phase 1							-2921	95.4	-3119	149				97 . 5
Phase 1														
R_Date Beta124532	-3335	-2906	95.4	-3088	123	-3264	-2900	95.4	-3013	79	115.2			99.6
R_Date Beta124523	-3351	-2928	95.4	-3156	123	-3259	-2906	95.4	-3032	91	84.6			99.6
R_Date Beta124524	-3339	-2909	95.4	-3109	128	-3262	-2900	95.4	-3018	84	110.7			99.6
R_Date KN72	-3485	-2678	95.3	-3073	177	-3261	-2878	95.5	-3011	88	126.7			99.7
Boundary transition Phas	-3050	-2766	95.4	-2911	67				99.7					
Phase 2														
R_Date Beta124531	-2910	-2601	95.4	-2770	85	-2904	-2639	95.4	-2779	72	106.7			99.8
R_Date Beta124527	-3009	-2579	95.4	-2787	99	-2913	-2639	95.4	-2785	76	110.1			99.9
R_Date Beta124528	-2895	-2206	95.4	-2575	189	-2896	-2582	95.4	-2754	87	97.4			99.9
R_Date BM2343	-2880	-2620	95.4	-2744	78	-2880	-2637	95.4	-2764	69	103.6			99.9
R_Date H204-247	-3323	-2629	95.4	-2930	147	-2966	-2639	95.4	-2817	87	94.6			99.7
R_Date Beta124526	-3009	-2579	95.4	-2787	99	-2914	-2638	95.4	-2785	76	110.1			99.8
R_Date BM2344	-2918	-2348	95.4	-2680	146	-2900	-2595	95.4	-2761	83	111			99.9
Boundary transition Phases 2/3							-2495	95.4	-2645	78				99.7
Phase 3														
R_Date Beta124529	-2860	-2348	95.4	-2570	108	-2660	-2463	95.4	-2546	52	125			99.9
R_Date Beta124522	-2837	-2299	95.4	-2517	103	-2636	-2451	95.4	-2535	48	126.5			99.9
R_Date Beta124525	-2873	-2351	95.4	-2608	123	-2677	-2463	95.4	-2555	59	125.8			99.9
Boundary transition Phas	-2549	-2373	95.4	-2467	40				99.8					
Phase 4														
R_Date Beta124530	-2566	-2203	95.4	-2375	88	-2481	-2304	95.4	-2408	48	121.4			99.7
R_Date Beta125862	-2858	-2297	95.4	-2538	123	-2511	-2314	95.4	-2424	49	70.8			99.7
R_Date Beta125861	-2618	-2347	95.4	-2505	59	-2508	-2338	95.4	-2433	47	60.5		81.8	99.7
R_Date Beta125860	-2572	-2307	95.4	-2451	71	-2495	-2338	95.4	-2422	44	99.3			99.8
R_Date BM2536	-2568	-2214	95.4	-2401	77	-2484	-2316	95.4	-2411	45	119.7			99.7
R_Date BM2537	-2474	-2204	95.4	-2357	77	-2474	-2307	95.4	-2404	47	113.3			99.8
R_Date Beta125859	-2559	-2149	95.4	-2353	89	-2476	-2301	95.4	-2405	48	116.6			99.7
R_Date BM2345	-2457	-2142	95.5	-2276	77	-2469	-2274	95.4	-2392	56	55.9		84	99.6
R_Date Beta135669	-2474	-2045	95.4	-2289	108	-2475	-2285	95.4	-2400	52	95			99.7
R_Date Beta135670	-2465	-2146	95.4	-2309	86	-2470	-2290	95.4	-2398	52	88.7			99.6
R_Date Beta135671	-2477	-2049	95.4	-2302	106	-2476	-2287	95.4	-2401	52	101.6			99.7
Boundary end Phase 4	-2460	-2218	95.4	-2350	67				98.1					

Table 2: Bayesian calibration results following a model of contiguous phases (without overlapping or hiatus) of the set of dates from the Los Millares archaeological complex.

Cámara 2005), but the analysis performed here let us fill in the gaps between the different periods. Wall I was built in this second period. Several special buildings, some of them true metallurgical workshops, were identified from this phase. Perhaps some of the hillforts were erected at this time, but no dates are available. Late Copper Age (from 2650 to 2450 cal BC). As referred to for the previous period, the concordance with earlier proposals is almost total (Molina *et al.* 2004; Molina and Cámara 2005). Hillforts are present, although available dates are only related to their destruction levels (the end of the successive period). Important modifications



Figure 8: a) 'Sum of probabilities' curves of Los Millares radiocarbon dates according to their stratigraphic phases; b) 'Sum of probabilities' curves of Los Millares radiocarbon dates according to their provenance areas.

are documented in the defensive walls, for example, the addition of intermediate bastions to wall I. Many Beaker-pottery sherds are found, especially in zone D, and there are also many very large pottery shapes used for food storage. Among the metallurgical items, axes, saws and arrowheads, together with awls and needles, are recorded.

Final Copper Age (from 2450 to 2200 cal BC). Wall III was abandoned. The hillforts return evidence for important storage and grinding facilities. A great fire destroyed these forts at the end of this phase. A local Bell-Beaker style can be defined and recognised, even for cooking and storage pots.

The statistical analysis results suggest that the end of the site was around 2200 cal BC, and final occupation levels could well reach a later date, taking into account the superficial strata (without radiocarbon dates) from zone D, and, perhaps, the central building erected in hillfort 1 over the deposits generated by the fire. Radiocarbon dates are available for sediments associated with the foundations of most of the defensive walls (I, II and IV), allowing us to propose the initial synchronic construction of walls II and IV (and probably III), and the erection of line I *c.* 200-300 years after. The hillforts could have been erected around the same time, but the available dates for their destruction at the end of their second phase place them in the Late/Final Chalcolithic.

A last remark must be made on the chronology of each area to attempt an assessment of their relationship (Figure 8b). As mentioned above, the dates for the hillforts come from the destruction deposits caused by fire. In any event, there are contemporary dates available for all the village areas, especially from the citadel (Zone D) and Zone B. Although the number of available dates is very low.

Finally, it is possible to suggest that around 2200 cal BC a great transformation took place in Chalcolithic social formations, because to that time not only can we place the great fires that destroyed the Los Millares hillforts

(Molina and Cámara 2005), but also changes at other southeastern Iberian sites as well (Lull *et al.* 2010). For instance, at Cerro de la Virgen (Molina *et al.* 2014; 2018) a local Bronze Age culture can be identified before the Argaric influences. The Los Millares chronology is also important in terms of different cultural traits, and, for example, the Bell-Beaker introduction in the Southeast can be placed to *c.* 2650/2600 cal BC.

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Fortified and Monumentalised Landscapes of the Beira-Douro region between the 3rd and 1st millennia BC: Architecture, Scenarios and Symbology

Alexandre Canha

Abstract

A project designed to analyse the evolution of fortified structures and other pre-Roman defensive systems in the Beira-Douro region (Portugal) is introduced. This takes a long-term diachronic perspective across the Metal Ages, from the genesis of such sites in the 3rd millennium BC to their apogee in the 1st millennium BC. The end of the Late Iron Age marks the temporal limit of this study. The project is focused on two main themes, related respectively to fortifications and their use and to landscape settings. The defensive systems of fortified settlements are to be analysed with regard to their architectural, constructional, functional and symbolic aspects. The second theme will see the subject approached from the perspective of Landscape Archaeology, within which fortified structures will be analysed in relation to the processes of territorial construction and spatial appropriation.

Keywords: Project, defensive systems, landscape, Beira-Douro

Introduction

This contribution introduces the project Fortified and Monumentalised Landscapes of the 'Beira-Douro' (3rd to 1st millennium BC) – Architectures, Scenarios and Symbologies. The project is founded on a PhD dissertation, to be carried out between 2017 and 2021 at the University of Coimbra and is supported by the Foundation for Science and Technology (FCT) through a PhD Scholarship.

The project aims to analyse, the evolution of fortified structures and – in a comprehensive way – the pre-Roman defensive systems of the northern Beira Alta and Alto Douro Wine Region (Portugal), taking a long-term perspective across the Metal Ages from the genesis of fortified sites (3rd millennium BC) to their apogee (1st millennium BC); the end of the Late Iron Age provides the terminus of this study. Throughout this contribution the region under consideration will be labelled simply as the *Beira-Douro* for convenience (Figure 1).

This study area covers approximately 4250 km^2 (Figure 2). The archaeological literature for this region identifies about 100 settlements with some form of defensive structure present, although these survive in differing states of preservation.

These defensive systems, throughout their use – sometimes extending through different chronological periods – have a common feature; this is their imposing nature in the landscape, including the display of monumentalising elements, whilst simultaneously they shaped and monumentalised the surrounding landscape, into what we may hypothesise as a landscape of communication and also an affirmation of power,

which can be encapsulated in the project subtitle: Architecture, Scenarios and Symbology.

The project itself is divided into two main themes, here termed defensive systems and landscape. The first will analyse the defensive systems of the fortified settlements, with regard to their architectural, constructional, functional and symbolic aspects. The second theme approaches the subject from the perspective of Landscape Archaeology, analysing the role of fortified structures in the process of territorial and spatial appropriation in which the configuration of the landscape is a determining factor. Among other elements, the determining factors considered when selecting a location for settlement, as well as the relations between settlement and pathways (movement), will be studied. This will result, hopefully, in the definition of settlement patterns, or at least tendencies within the occupation of this territory.

State of the art

The study of prehistoric fortifications has been a subject of interest to scholars for a long time. From the earliest visions contained in 17th- and 18th-century illustrated historiography, to the 20th-century scientific approach, attention – particularly for the 1st millennium BC – has generally been centred on architectural and urban studies, often following, too literally, Classical sources. In this context, the defensive systems of the Iberian Peninsula have been understood only as another component in the study of proto-urbanism, and generally favouring consideration of their appearance over their function. It was mainly at the transition from the 20th to the 21st century that the study of defensive systems emerged as an independent field, especially



Figure 2: Administrative areas (city councils).

under the influence of Luis Berrocal-Rangel and Pierre Moret, with particular attention given to the existence of different types of defensive systems (Berrocal-Rangel 2004; 2005; Berrocal-Rangel and Moret 2007; 2010). With regard to research on the Iron Age fortifications of the Iberian Peninsula, special mention must be made of the project *Study of the Protohistoric defences at the* Spanish Plateau and the Atlantic Iberian Basin (8th-1st B.C.), directed by L. Berrocal-Rangel.

In the specific case of the *Beira-Douro* project area, there has been a scarcity of studies of fortification processes and defensive systems, regarding not only the fortified structures of the 1st millennium BC, but also those falling within the chronological range of the 3rd and 2nd millennia BC; this lack could in itself justify the existence of this project. In regions surrounding the project area, and in neighbouring Spain, there are works, which approach these themes, even though sometimes with less of a focus on the defensive systems, and generally restricted to the 1st millennium BC. This approach can be justified by the monumental character that defensive structures acquired in the landscape in this period, in contrast to the generally slighter traces belonging to the previous millennia. Some examples are the studies carried out in the western Meseta (Esparza Arroyo 2011), Extremadura (Almagro-Gorbea and Martín 1994), northern Meseta (Álvarez-Sanchís et al. 2011; Ruiz Zapatero and Álvarez-Sanchís 2015), as well as others with a broader territorial range (Almagro Gorbea 1995). On the other hand, some works are focused on specific defensive systems, not only in the surroundings of the study area, but also in different parts of the Iberian Peninsula (Berrocal-Rangel 2005; 2017; Camino Mayor 2000; Fonte 2008; Sastre Blanco et al. 2012; Torres Martinez et al. 2015; Redentor 2003; Romero Carnicero 2003).

A regional analysis of fortified sites in north-western Portugal, has been carried out, by Armando Coelho Ferreira da Silva. This researcher tackled the evolution of defensive systems in the '*Castro Culture*' (Silva 2007a), in an analysis which has been revised and extended to the northwest Iberian Peninsula (Silva 2007b). In fact, despite its focus on walls, this work gives important indications of the complexity of defensive systems throughout the 1st millennium BC.

In addition to traditional considerations of defensive systems, recent works have introduced new terminology regarding defensive architecture, such as hybrid walls (Osório *et al.* 2015), which consists in the use of natural reliefs in the defensive system. In other cases, research has demonstrated the existence of other structural features, such as vitrified walls, although at present, the inventory of these is limited to zones outside the project area, although in some cases, in its immediate surroundings, as at Alto-Côa (Osório and Pernadas 2011).

Concerning sites attributable to the earlier periods (3rd and 2nd millennia BC) it is important to highlight the significant research carried out in the 1990s by Susana Lopes (Jorge 1994). She presented architectural types and a contextualised approach to fortified settlements, and also broke away from the then current paradigm, by emphasising the role of monumentalisation as a visible element of possession and territorialisation, in what can be called *landscapes of power*.

In a preliminary approach to the project area, based on the available literature, about 100 fortified settlements

have been identified (Figure 3). However, in many cases (about one-third) the nature of their defensive systems is not defined. Amongst them, only some 50 examples are described as having defensive systems and yet, in many cases, the structural types and their numbers are not clear. Within the project area there are only very local and incomplete studies of defensive systems, and there is no systematisation and integration of data on a regional scale that could allow its broader understanding. Something as simple as inventorying, accurately locating and systematically describing the fortified settlements has not been accomplished. These gaps in currently held information are due to the lack of systematic recording and not because of the absence of data. The project can contribute to reduce the inconsistencies in the currently accessible information.

The lack of information on fortified sites in the project area also results in the absence of related landscape studies. For other regions there are numerous landscape studies using GIS (Geographic Information Systems) analysis. The development of GIS tools has revolutionised landscape archaeology by opening a wide range of new scientific approaches, particularly regarding relationships between settlement and space (territory), and how it is appropriated by the communities. In neighbouring regions, this approach has been taken to individual sites (e.g. Fonte et al. 2011) but has also been applied to territories (e.g. Sande Lemos et al. 2012), although in this instance without specific attention being given to fortified landscapes. An exception is the work done at the south-eastern border of the project area (Osório et al. 2015). If there are no studies related to the 1st millennia BC, for the 3rd and 2nd millennia BC it is possible to find landscape studies that cover part of the project area (Lacerda 2017), although again these lack a specific focus on fortified landscapes.

There is now a wide range of useful GIS tools that can be used in the study of fortified landscapes. These include those which enable the analysis of the control of territory and investigate determinant factors for the selection of settlement sites, such as strategic ones (landscape domain, accessibility, visual envelopes, horizon landscapes) or economic factors, especially those such as Site Catchment Analysis related to the exploitation of resources.

One of the ways in which GIS currently presents great analytical potential is the study of the relationships between the occupation of space and forms of mobility over time (Parcero-Oubiña *et al.* 2013). In fact, the study of mobility (pathways, routes, tracks) is a field which furnishes good results in GIS (Fairén-Jiménez 2004). In this case, there are two important concepts: LCP (*Least Cost Paths*) and MADO (*Modelo de Acumulación de Desplazamiento Óptimo* = optimal accumulation model



Figure 3: Settlements with at least one defensive system.

of movement) methodology (Fábrega-Álvarez 2006; Llobera *et al.* 2011). These consist of the application of a computational model to a territory, based on the assumption that certain physical factors condition displacement in space (friction, cost) in a Distance-Cost relationship (Howey 2007; Osório and Salgado 2012; Parcero-Oubiña *et al.* 2013).

Project area

The essential underlying criterion used to define the Project Area is landscape, while a territory constructed and modelled by the communities which inhabited it through out time. This territory is an economic, symbolic, social and mental construction that provides a cultural identity built up over time, underpinned by the interactions between man and his environment. Therefore, we opted to deploy the concept of Landscape Units as developed in *Contributions for the Identification and Characterization of the Landscape in Continental Portugal* (Abreu *et al.* 2004).

These Landscape Units give rise to distinct cultural identities and are the result of diverse solutions to issues of appropriation, corresponding to the construction and reconstruction of space and territory by the human community.

Developing this perspective, a core area was defined within the study region, based on its geomorphological and orographic homogeneity. This corresponds to three Landscape Units: respectively the Montemuro Mountains; the Leomil and Lapa Mountains; and the Penedono Plateau. This core area consists essentially of mountainous-plateau landscapes, with reliefs generally between 600 m-1000 m in altitude. In addition to this core area, it was considered fundamentally important to include other morphologically distinct areas, which were designated as control zones. The intention underlying the inclusion of these control zones was to expand the range of fortified settlements in order to include different types of defensive and/ or monumental structures, in order to make available





Figure 4: Landscape Units defining the project area.

contrasting results more effectively. Thus, Landscape Units adjacent to the core area were included, namely: the Riba-Douro; the Douro wine-growing area; the Moimenta and Lamego orchard areas; and the Upper Paiva and Vouga rivers (Figure 4). These Landscape Units represent distinct cultural identities, which are a result of diverse solutions to matters of the appropriation and construction of space and territory by man. Generally speaking the Landscape Units in the project area comprise two large groups. The first corresponds to the northern Beira Alta: it encompasses the Montemuro Mountains, the Leomil and Lapa Mountains, the Penedono Plateau, the Moimenta and Lamego Orchards and the Upper Paiva and Vouga rivers. The second series of Landscape Units corresponds to the Douro valley and is represented by the Riba-Douro and Douro wine-growing sector. It was decided to designate the entire Project Area as the Beira-Douro region, even though this does not exist coherently as a single uniform group of Landscape Units.

Objectives

In order to study the defensive systems of the fortified sites as functional elements and territorial markers, two distinct objectives were defined. One was focused on

military characteristics, here termed poliorcetics, with emphasis on architectural-constructional, functional and symbolic aspects of the defensive structures. To fulfil these objectives, the primary aim was to inventory and register all settlements with defensive systems attributable to the 3rd to 1st millennia BC. A related objective is the formal and functional characterisation of the defensive elements in the settlements, which can be directly related to the study, systematisation and interpretation of these defensive systems. In turn, this necessitates an emphasis on the analysis of traditional system features (such as walls, ditches and chevaux-de*frise*). Also, of importance to this exercise is the analysis of architectural-constructional variability within defensive systems among fortified settlements to define possible relationships between different communities. Another fundamental objective of the project is the attempt to understand the processes of fortification and, by extension, the evolution of defensive strategies, ranging from simple and discrete structures erected in an orthostatic tradition, essentially passive in concept, to imposing complex systems and structures which apparently display a markedly active and territorial concern. As a final aim, we will consider, as a significant objective, the comparative study of these fortification systems with those of neighbouring regions (including the Western Plateau and the northwestern Iberian Peninsula), with special emphasis on the 1st millennium BC.

The second group of objectives will focus on the interpretation and understanding of the processes underpinning the creation of fortifications between the 3rd and 1st millennia BC, extending to the use of defensive structures as landscape and territorial markers, as well as the wider roles played by the landscape in this process. A primary goal is the study of the territory, starting from the analysis of determining factors lying behind the choice of a location for settlement. For this the following factors will be emphasised: strategic considerations (including accessibility, command zones, the visual domain of the territory, and the nature of communication routes); economic factors (including the availability of basic and marketable resources) and symbolic factors (including territorial markers/loci, frontiers and borders). Another important objective will be to understand the relationships between settlement and movement and how the network of routes through the landscape can influence the strategies lying behind the use and abandonment of particular spaces. The project will also analyse the role of fortified structures in the process of territorialisation, on the one hand as functional constructional elements (by the assessment of their defensive effectiveness when faced by a danger) and on the other as landscape markers (as visible elements of the affirmation of power by a community). The final objective will be the attempt to define patterns of settlement and to infer the factors that gave rise to them. If this is unachievable, at least an attempt will be made to understand the tendencies underlying the nature of the occupation of the region.

Methodology

Given the distinction between the two sets of objectives, the methodology to be used in this study also reflects this duality. Despite their distinction between the two sets of aims, these methodologies complement one another.

Defensive systems

Data on the nature of 3rd to 1st millennia BC defensive systems will be collected from online databases such as *Endovelico* and *Ulysses* available from General Directorate for Cultural Heritage (DGPC), supplemented by the extraction of information from the specialised bibliography.

A second phase, of fieldwork, will be carried out. This will consist of archaeological survey directed specifically at the identification of further fortified settlements within the project area. One of the main problems to be addressed is the difficulty of identifying defensive systems satisfactorily in field survey, because in many cases the defensive structures that characterise them have been substantially destroyed or are hidden by vegetation. A range of Remote Sensing techniques will be used, as non-invasive methodologies, to assist with the identification of defensive systems.

To achieve this goal, different mappable elements, such as digital elevation models, satellite imagery and historical photography will be used. These will enable the generation of photogrammetric reconstructions of key settlements, on which photointerpretation will be carried out. For this, low cost remote sensing techniques will be tested in some *castros*. This will be conducted essentially by the use of freeware tools, such as satellite imagery and other free data, i.e. the products of the Shuttle Radar Topography Mission (STRM), provided by NASA, which allow the creation of Digital Elevation Models (DEM). These techniques are only recently available and still little explored, although having prodigious potential.

Portugal has great limitations regarding the availability of remote sensing data when compared to neighbouring Spain, which has almost complete coverage of its territory with LiDAR (Light Detection and Ranging), with astonishing results (e.g. Berrocal Rangel et al. 2017). This constraint forces us to make use of other available tools, such as old aerial surveys that have provided very interesting results (e.g. Fonte 2015; Fonte and Costa-García 2016). In fact, early aerial photographs and related historical images will be important as they were taken between the 1940s and 1960s, when almost all of the territory of Portugal was pasture (afforestation campaigns occurred later). For this reason many walled structures were more readily visible from the air at that time. The intention is that these photographs will be processed using a photogrammetry program, which will thereafter be digitally manipulated, using different colour filters. This process will enhance image contrast and improve the visual quality of the images by showing different palettes of colour from those captured by the human eye, thus allowing the observation of previously unnoticed details.

We believe that the results which can be obtained through photointerpretation based on early aerial surveys, will demonstrate that this relative low-cost tool may have a very interesting potential as a way of detecting defensive structures.

Further fieldwork will be undertaken based on the results of the steps outlined above. The nature of this intervention will be conditioned by the support that is made available. The results obtained will allow the definition of key sites where further specific surveys



will be carried out. The purpose of these will be to define typological, technical and chronological aspects of particular enclosures.

The last phase of the project will be desk-based and will consist of the compilation of information collected during the field surveys, using a database, and the interpretation of field data using GIS.



Landscape and Territory

The methodology for the implementation of the territorial and landscape aspects of this study is largely based on the application of GIS tools. A range of resources

will be deployed to establish the variable relationships between time, space and territory over the study area. For this purpose, different techniques, appropriate to the objectives as defined, will be used. The fundamental criteria (natural, strategic and economic) that defined the selection of specific locations for fortified settlements will be explored. Among other significant factors, slopes, solar incidence, dominant landscape setting, accessibility, viewsheds, horizon landscapes, domain landscapes, and Site Catchment Analysis for land use will be considered. Agricultural potential will be assessed based on slopes in relation to Corine Land Cover cartography. Density maps and buffers will be produced.

Concerning the study of networks in relation to settlements, it is assumed that the relationship of settlements to movement and the definition of communication routes are of particular interest; and they played a significant role in the choice of settlement locations. MADO (the Spanish acronym for 'Optimal accumulation model of movement from a given origin' (Fábrega Álvarez and Parcero Oubiña 2007: 125) will be used to study pathways. This is a methodology already well tested in recent years, and which has produced interesting results. It corresponds to the use of computational models based on the assumption that certain physical factors condition the displacement in space (friction/cost) in a Distance-Cost relationship that results in the optimisation of pathways and in the definition of critical factors which affect movement through space.

Description

The diversity of defensive systems within the project area justifies an in-depth approach to compiling dispersed, diffuse and often confusing, information, as well as properly to register existing structures. Although the defensive structures in the study area are some of the few upstanding archaeological remains known here, knowledge of them is largely insufficient because of the absence of systematic work on them. This however needs to be done, given the speed with which many of these archaeological structures are being destroyed or seriously degraded. Many of



these structures, on account of their monumentality and physical impressiveness, were and are identity references and story makers, characteristic aspects that this project will take into consideration.

The project Fortified and Monumentalised Landscapes of the 'Beira-Douro' – Architectures, Scenarios and Symbologies aspires to characterise all the defensive systems within the project area, whether they are external elements complementary with lines of fortification (such as ditches, ramparts, or chevaux-de-frise) or masonry structures (including walls, bastions, towers, and entrance-works).

The project will be especially focused on two types of defensive structures which are not well recorded in the study area. Entrances as a primary defensive element will be accorded special attention, as will upright stone rows as a complementary element. There is few literature available regarding entrances passages, and what exists is just for neighbouring areas, which is an additional restraint. In the case of passages, the focus will be on the act of passage through a wall in functional and symbolic terms, which links the external world to the interior of the site, in a mental dichotomy – danger/ safety.

Chevaux-de-frise have been the subject of study in several nearby regions (Esparza Arroyo 2003; Redentor 2003; Romero Carnicero 2003). A recent study (Berrocal 2017), besides taking a chronological approach to these features, also defines different types of upright stone fields.

In the case of the deployment of upright stones, research in the project area needs to address two main questions. The first is chronological. Within the Iberian Peninsula, this type of defensive structure has been ascribed a wide chronological range, extending from the Bronze Age to the Roman period. No radiocarbon dates are available in the project area for these features: consequently, an absolute chronology for this type of structure is presently lacking. The second question addresses the diffusion of this type of structure, since it is unclear why such features within the project area are restricted to the northern Douro river basin, whereas in other areas, such as the Spanish northern Meseta, similar features are known south of the Douro and in the upper Tagus basin (Barco Belmonte 2013), and even occur in southern Portugal (Soares 2007).

The project will primarily assess the functionality and effectiveness of the defensive structures in the face of a perceived threat (Quesada Sanz 2007), but will also consider the symbolism of these structures, which are taken to be the fundamental elements of a landscape of power in which there is the need to see and be seen.

One of the main constraints within the project area is the rarity of scientifically conducted archaeological surveys. Even when these are available, they are accompanied by excavation only on a small scale. Such interventions are almost devoid of absolute chronology, which is essential to establish time relationships between different fortified settlements, or even between the different defensive systems around a settlement. Sometimes the reorganisation of sectors within a settlement corresponds to architectural changes in defence systems which are difficult to date without radiocarbon dates. These gaps in the evidence base can, eventually, be solved by detailed archaeological excavations in precise areas at some key sites, undertaken to characterise the structural record and obtaining, if possible, absolute chronologies for the defensive systems.

In the absence of significant information on the defensive arrangements of a great proportion of the enclosed settlements in the study region, a further approach will be developed. Thus, the project will also focus on landscape as another fundamental objective.

The project will also examine the processes of fortification and the monumentalisation of fortified landscapes over the long term in the study area. A key concern will be to discern whether the tendencies



apparent derive from indigenous evolution within the region or whether they are derived from nearby regions through a process of imitation. In this assessment, various factors ranging from natural ones (e.g. altitude over the surrounding landscape), strategic/defensive issues (e.g. accessibility and communication routes), economic concerns (e.g. resources available in a territory) and others, such as social/symbolic factors (those related to ostentation and the exercise of power, including the requirement to see and be seen).

If possible, the settlement networks which permitted territorial control to be articulated will be characterised. Special attention will be paid to the relationship between fixed settlements and movement, to understand how communication pathways, namely roads and routes, have been an important factor in the choice of settlement location (either through its inclusion in a network, or by a quest for isolation). In this context, GIS tools will be employed to establish relationships between geographic space (territory), settlement forms (fortified settlements and their defensive systems) and their joint manifestation (fortified landscapes).

Based on the assumption that the creation of routes and pathways results from a cumulative historical process (Parcero-Oubiña et al. 2013), which can be seen in particular itineraries (e.g. for transhumance) or routes (e.g. as used by tradesman), another approach can be made using GIS tools to determine moments and critical places of movement. This is founded on the MADO methodology, which is based on Distance-Cost relationships and which translates into the optimisation of pathways. By applying this model, it will be possible to establish the relations (and their articulation) between critical zones of movement, and the fortified settlements and the visual domains within the study area, as well as to understand the processes of territorialisation, abandonment and reterritorialisation that occurred in the project area through time.

As well as functional purposes, the project will also consider symbolic motivations associated with the choice of certain exceptional geomorphological places (natural *loci*), where large investments have been made in construction resulting in monumental sites, which can also be places at which populations converged (Bettencourt 2013). To achieve this, other GIS tools will be employed to highlight proximity buffers which will be identified by noteworthy topographic, water, or comparable features that might contribute to the definition of territories.

Intended project outcomes include efforts to characterise defensive systems and to define settlement patterns, or at least locational tendencies in the settlement pattern of the study area, across the wide chronological span between the 3rd and 1st millennia BC.

As a final remark, it is important to mention that although this is an ambitious project (currently in its initial phase), it is expected that significant data can be collected which will lead to an understanding of the fortification process of this region, which is as beautiful as its defensive systems are archaeologically unknown.

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Terraced-walled settlements in Bronze Age Liguria (north-western Italy): can we speak of Iron Age 'castellari'?

Davide Delfino and Angiolo Del Lucchese

Abstract

In Liguria, from Middle Bronze Age II-III (15th-14th centuries BC) until the Roman conquest, settlements studied since the 1970s show a general habit of building hilltop settlements that feature walls that terrace and surround them. A study of the evolution of the building techniques of dry-stone walls shows some traces that reflect the Late Bronze Age. The increase in the numbers of *castellari* of Late Bronze Age date, and also Roman historical sources from the 4th and 3rd centuries BC, lay the foundations for an hypothesis that these had a defensive use, in addition to being simple adaptations to the mountain slopes, that may have started in the Late Bronze Age.

Keywords: Liguria, Bronze Age, Iron Age, terraced hilltop settlement, landscape

Latin historical sources and origins of castellari

'In the land of Ligurians there was plenty to keep an army on its mettle: mountainous and harsh places that were difficult both for the men themselves to occupy and to dislodge the enemy who had already occupied it... [T]he besieging of fortified points was necessary and at the same time toilsome and dangerous.' (Liv., XXXIX, 1, 2-6).

The siting of castellari in such mountainous and difficult places to access was one of the major obstacles encountered by the Romans in the submission of the Ligurian tribes between the 3rd and 2nd centuries BC. According to the Latin sources, the settlements of the Ligurians were enclosed in wild scrubland (Flor., I, 19, 4-5) in their settlements they call oppida (Liv. XXVIII, 46, 7-11; Plin. n.h. III, 5, 47-49) or castella (Liv., XXXIX, 1, 2-6). The meaning of oppidum is fortress, fortified place or stronghold, all intended as places surrounded by fortified walls. *Castellum* has the meaning of shelter, a settlement located in an elevated position (or an ancorage). In terms of lifestyle the Ligurians are associated with the Celts, although of different lineage (Strab. II, 5, 28), and they are said to live clinging to the mountains, where it is harder to find them than defeat them (Flor., I, 19, 4-5). Based on these historical testimonies (Maras 2007: 21-23, 25), one can clearly think of the use of *castellari* as fortified hilltop settlements where the Ligurians faced Roman attack. However, since evidence of walled hilltop settlements exists from the Bronze Age (Odetti 2003; Del Lucchese 2004a, 2004b; Delfino 2014), can they always have had a purely military function since their inception? Additionally, when is it legitimate to claim that castellari turned from being simple hilltop and terraced settlements into fortified villages, as the classical sources indicate?

An overview of Liguria and castellari

Positioned where the Alps and the Apennines meet, between the northern Tyrrhenian Sea and the Po Valley, Liguria was predominantly mountainous (65%) and hilly (35%), influenced by the last stretch of the mountain chain of the Apennines, which in Liguria join the first section of the Alpine chain (Alpes Maritime) at the Colle di Cadibona (460 m.a.s.l.). The maximum altitude in the Alpes Maritime is Mt Saccarello (2200 m.a.s.l.), while the Apennine section culminates in Mt Maggiorasca (1803 m.a.s.l.). The mountain arc that separates the Ligurian coast from the Po Valley, with its watershed, is crossed by numerous passes that connect the maritime side with that of the Piedmontese and Emilian Po Valley: from west to east the Col di Nava (934 m.a.s.l.); Cadibona (459 m.a.s.l.), del Giovo (516 m.a.s.l.), Turchino (532 m.a.s.l.), Giovi (472 m.a.s.l.); Scoffera (678 m.a.s.l.); Cento Croci (1055 m.a.s.l.); and Cisa (1041 m.a.s.l.). The mountain slopes are mainly harsh, especially those that from the Apennine watershed descend towards the coast. The watershed ridge between the Tyrrhenian coast and the Po Valley, both from west to east and towards the coast, allows easy ridge paths (Figure 1).

The only plains, small in extent, are along the coast – at the mouth of the major torrents. The coast abounds with places to come ashore, in conjunction with rocky and deep ancorages.

Our first surveys and studies into *castellari* go back to Luigi Bernabò Brea (1941, 1942, 1946) and Oscar Giuggiola (1959). After a fundamental study on depositional dynamics and hilltop contexts (Mannoni 1971), the most substantial later research by Tiziano Mannoni and collaborators (Mannoni, Tizzoni 1980, Fossati, Milanese



Figure 1: Map of Liguria showing positions of the settlements referenced: 1) Genova-Brignole; 2) Camogli; 3) Zignago; 4) Bric Reseghe; 5) Sant'Antonino di Perti; 6) Uscio.

1982; Fossati, Messina, Milanese 1985). Thanks to these studies of the 1970 and 1980s, the presence of some Bronze Age castellari was ascertained, not only Iron Age examples, and refined techniques of data collection at hilltop sites were developed. Some castellari were recognised and scientifically investigated between the 1980s and 1990s, thus expanding the framework of knowledge: not only with regard to distribution, dating and the number of *castellari*, but also as to the activities carried out at them. In western Liguria, the castellaro of Bric Reseghe revealed not only slight traces of metallurgical activity, but also a massive wall that was probably something more than simple terracing (Del Lucchese 1997). The castellaro of Sant'Antonino di Perti featured a reuse in the Byzantine era of a massive Bronze Age wall and some light weapons in bronze (Falcetti et al. 1994; Del Lucchese 2004): both these monuments date from the beginning of the Late Bronze Age (etá del Bronzo Recente). Investigations at the castellaro of Uscio (Maggi 1990) highlighted details of the construction technique of the terracing walls and showed the repetitiveness of occupation from the Neolithic to the end of the Iron Age. A summary of Ligurian settlements of pre- and protohistorical date was proposed by Giuliva Odetti (2003), who emphasised that the formation of *castellari* proper took place only in the Iron Age, not considering the settlement walls of the Bronze Age as defensive works, and seeing an internal organisational simplicity with respect to the castellari of the Iron Age.

In the early 2000s, some preliminary works caried out in the 1980s and 1990s were revisited and elsewhere new and striking discoveries were made: subterranean works in Genova revealed an impressive dry stone wall dating to the Early Bronze Age (Del Lucchese 2014); and the *castellaro* of Bergeggi, dating from Iron Age II (Del Lucchese *et al.* 1992) was the subject of extensive excavations (Gianattasio, Odetti 2009). Additionally, the areas of the province of Imperia have witnessed several surveys, with the identification of numerous walled Iron Age II sites (Gambaro, Del Lucchese 2005; Gambaro, Del Lucchese, Rendeli 2005). Synthesis shows that in the eastern part of the region, some *castellari* have a contunity in occupation from the Bronze Age until Iron Age II, while in the western part *castellari ex novo* were founded in the Iron Age, perhaps connected to the Roman wars (Delfino *et al.* 2014).

Based on the data so far known, one of the problems to be addressed is whether

the type of walled settlement we call *castellaro*, or those with massive walls intended for defensive purposes, are peculiar only to the Iron Age (according to the 'classical' interpretation), or were they perhaps inventions of the Bronze Age.

Major Bronze Age hilltop settlements in Liguria

The first evidence of walls linked to settlements in the urban area of Genova were encountered, as mentioned above, during works in 2009, with the remains of a drystone wall (Figures 2, 3). The wall was identified during the digging of a ventilation unit, 5 below the road level, and developed parallel to the bed of a seasonal stream, slightly inclined in a north-south direction. The structure, in general NE/SW, is composed of blocks of local limestone, sometimes intentionally split and roughly hewn; it is characterised by the arrangement of its larger stone elements to form the exposed face, in some places very well preserved. The inner part of the masonry features smaller stones mixed with flakes and clay to make the structure cohesive and resistant. The visible part of the structure, which continued beyond the limits of the excavation, had a length of 12.5 m, a maximum width of 1.2 m, and a maximum height of 1.8 m. On the opposite side of the watercourse there was also an arrangement of a dry-stone slope, unfortunately almost completely collapsed, of which the base of a curvilinear structure remains, with the possible double function of embankment and terracing support. The function of the structures seems therefore to have been, as well as the probable enclosure of an inhabited area, also to channel water during periods of heavy rainfall and to keep the village itself sheltered (of which the investigated area was to constitute the western extremity). Ceramic material (with affinities to the Polada Culture) found on the surfaces of use outside the wall, and the C¹⁴ charcoal dates found in association, are linked to the Bronze Age (3710 ± 40 BP and 3660 ± 40 BP; 2200-1900 cal BC) (Del Lucchese 2014).


Figure 2: Dry-stone wall, settlement of Genova-Brignole (Soprintendenza Archeologia, Belle Arti e Paesaggio della Liguria).



Figure 3: Map of Genova showing the Early Bronze Age wall (elaboration from Barbieri 1938).

Position of the wall, and of the settlement, is in a low hill along the valley of the Bisagno creek.

Castellaro di Camogli

Related to the Middle Bronze Age, the first phase of the Castellaro di Camogli (Figure 4) already shows a doublewall structure: a wall parallel to the level curves, almost certainly worked, and at least another wall perpendicular to this; at least two other lines of wall, parallel to the level curves, are identified downstream (Delfino 2014: 45-46). This evidence make us think not only of a terraced settlement on several levels, but, especially, with the walls being perpendicular to each other, of a structure already evolved, perhaps coffered, to make terracing more robust. The second phase of Castellaro di Camogli, related to the start of the Late Bronze Age, is set on a landslip that covered the previous phase (Delfino, Faccini, Firpo 2008), and it is associated with a wall that has been slightly better





preserved than the walls of the previous phase. Made of worked stones, this feature does not, apparently, seem to be much more robust than a wall built to support terracing.

Looking at the natural context of the *castellaro*, half of its perimeter is on the top of a cliff overlooking the sea, revealing a position surely not chosen by chance: for even if the walls of the two phases were not built with the main purpose of defense, but of terracing, the fact of having half of the perimeter defended naturally makes us think of the need for defense, not so much in terms of its structures but in the choice of the location of the site. Of course, it cannot be excluded that the walls originally had a wooden parapet that has not survived, perhaps making the name *castellaro* appropriate for this settlement. Ceramic material is our only chronological indicator here (as it is indeed for almost all open-air sites in the region), and it also reveals occupation in the Late Bronze and Iron Ages.

Unfortunately works to install an anti-aircraft battery during the Second World War erased the structures on the top of the hill.

The *castellaro* of Zignago is another hilltop settlement that has different phases, from Middle Bronze to Iron Age (Figure 5). Sited inland, in a mountainous area, the settlement lies at 960 m.a.s.l. on a low hilltop just behind

Mt Dragnone (1010 m.a.s.l.). The first occupation level is dated to the late Middle Bronze Age. No terracing walls have been found, indicating perhaps seasonal occupation (summertime during pastoralism?), based on the absence of permanent structures and the quality and forms of the ceramics (Delfino 2014: 155). A second occupation, dating to the start of the Late Bronze Age, shows a more complex structure, with some massive walls, in dry-stone, delineating in some areas a coffered structure with walls perpendicular to each other. In terms of the present structures, both for their quality and the types of ceramic finds, it seems that now it has become a permanent settlement of medium size (Delfino 2014: 155).

A range of Late Bronze and Iron Age ceramics have been found here, but it is not possible to associate these to structures. Some damage was caused to the site in the early Middle Ages on the top of the *castellaro* when a Byzantine watchtower was erected (Mannoni, Tizzoni 1980: 250).

The site is extensive and has not been excavated sufficiently to allow us to understand its structures. Its scale, however, seems to ensure that it was a hilltop settlement aimed at controlling the passageways along the Apennine ridges, and the strong doubt remains whether the walls dated to the start of Late Bronze Age are purely for defense purposes, even if we do not



Figure 5: Left: Castellaro di Zignago. A) Mt Dragnone; B) Settlement area. Right: Plan and stratigraphy of southern area (from Delfino 2014: 65, 66, 69).

have to discard the hypothesis, as with Camogli, of the existence originally of wooden parapets on the stone bases of the walls.

Looking to the western sea coast of Liguria, the *castellaro* of Bric Reseghe is located at a height of 317 m.a.s.l., about 2 km inland of the coast, positioned at a control point of the small valleys that allow passage from west to east, the coastal landscape itself presenting a genuine barrier. The settlement is located on very inaccessible slopes and can be seen from afar; it has all the attributes of a site chosen for its defensive characteristics. The

area of the settlement is located slightly lower than the summit's maximum height (Figure 6), and is delineated lower down by a collapsed dry-stone wall, at least 45 m long. It was 3 m wide and at least 2 m high, often 8 m, and 3 m wide (Figure 7).

There are no traces of occupation dating back before Middle Bronze Age III/Late Bronze Age (Del Lucchese 1997: 72-74), but more probably was limited to Late Bronze Age only – to judge from the pottery and its decoration, and the small bronze finds (Delfino 2014: 128). The wall, dry-stone, was reassessed in the 1980s, and seems to reflect the clear intention by the inhabitants to fortify their settlement. It is characterised by its great width and a height that goes beyond any need to contain terracing, and, above all, by the fact that the wall closes only the most accessible part of the hilltop, where the inhabited area was. At least half of the perimeter of the settlement does not need walling as it on a sheer drop.

Also on the western coast of Liguria, not far from the Bric Reseghe, the Sant' Antonino di Perti settlement reflects the characteristics of a fortified hilltop site. Located at 297 m.a.s.l., near the bifurcation of two valleys (the Aquila and Perti) that lead from the Tyrrhenian coast to the interior, the site preserves the remains of a Byzantine fortification (*Castrum Perticae*). In 1991-1992,



Figure 6: Plan of the settlement of Bric Reseghe (elaboration from Del Lucchese 1998: 103).



Figure 7: Wall of the settlement of Bric Reseghe (from Del Lucchese 1998: 104).

during the last excavation campaigns of the Byzantine fortification, protohistoric levels emerged immediately underneath the Byzantine structures (Murialdo 2001; Del Lucchese 2004c: 165). The protohistoric levels contained no actual wall structure, but finds have been made in the area of ceramic material and bronze, which, for some reason, were not washed away. The

reason for this presents something of a problem: what could have been prevented the material from sliding away? The Byzantine walling was not built until some 1800 years after the life of protohistoric settlement, so it is more probable that the answer is a protohistoric wall, above which, several centuries later, the Byzantine fortifications were erected.

The Final Bronze Age in the eastern part of Liguria is represented by the interesting site of the *castellaro* di Uscio (Figure 8).

Located on Mt Borgo (721 m.a.s.l.), at the crossing point between two ridges, 5 km from the coast (and from the Portofino promontory), it witnessed four chronological phases: Early/Middle Neolithic, Calcolithic/Early Bronze Age, Final Bronze Age, and Iron Age II. The Calcolithic/Early Bronze Age phase is characterised by an ancient association with the transhumance routes, which came to an end between the 19th and 18th centuries BC following excessive erosion of the slopes (Maggi 1990). The Final Bronze Age phase is represented by a stable settlement complex featuring terracing and walls, which are low and located along the slope occupied by the settlement and restored in Iron Age II (Maggi 1998: 127). The area affected by the settlement is about 2000 m², and for one half of its perimeter it is on high rocky slopes.

Castellari or terraced settlements in the Bronze Age?

Tacking into account several factors it is possible to reach a series of observations.

There can be phases when real protection for settlements is required, due to greater instability: the period through which everyone agrees that the Ligurian *castellari* sprang up for defensive reasons, and for which there are historical sources, our classical ones, that testify the use of such fortifications, i.e. Iron Age II, and lasting for a few centuries (4th-2nd centuries BC). But why, even though there are no historical testimonies to confirm it, should they not have existed before this: the period of a few centuries when it was equally necessary for settlements to be fortified?

Evidence from some walled settlements of the Ligurian Bronze Age shows that in some chronological phases of the Bronze Age there were walls more than 1 m thick that surrounded some settlements, i.e. the Early Bronze settlement of Genova-Brignole and the Late Bronze Age settlement of Bric Reseghe (and probably Sant' Antonino di Perti). As for the other walled settlements



Figure 8: Plan of the Castellaro di Uscio (elaboration from Bietti Sestieri 2010: fig. 15).

presented in this contribution, the *castellari* of Zignago and Uscio, they do not have sufficiently thick walls to allow us technically to consider them as fortification walls. The *castellaro* of Camogli has not been excavated enough for us to understand the true widths of the terracing walls, but it presents the same morphological site characteristic of having thick walls, and having at least half of its perimeter above an inaccessible position (in this case a cliff overlooking the sea).

A recent application of the psychology of warfare in Neolithic and Bronze Age periods (Delfino 2016) shows the possibility that the psychological impact of a settlement surrounded by walls, even if not particularly thick, but placed on a mountain side, can be a sufficient deterrent. This is especially so when taking into account that there were human groups involved who lacked the ability to mobilise sufficient means, could not afford long sieges, and probably had to rely on capturing a settlement by surprise or direct attack.

It can be proposed, therefore, that in the Early Bronze Age (i.e. the settlement of Genoa-Brignole) and, more especially, in the Late Bronze Age (i.e. the settlement of Bric Reseghe and probably Sant 'Antonino di Perti and Camogli) there was a coalescence of dynamics that led to the need to strengthen the settlements analysed here.

We are no longer obliged to consider the beginning of the use of fortified settlements, based on the *castellaro* model, only from when classical historians record their existence. Rather, we need to be thinking that, over time, there may have been some circumstances that resulted in a need to build *castellari* in Liguria earlier: i.e. the Early Bronze Age, the Late Bronze Age, and Iron Age II.

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From earth to wood: the ramparts of Ratinhos (Moura, Portugal) as an example in the transition between the Late Bronze Age to the Early Iron Age

Luis Berrocal-Rangel, António Carlos S. Silva, Rosario García Giménez and Lucía Ruano

Abstract

The thorough archaeological excavations carried out between 2004 and 2007 at Castro dos Ratinhos allowed us to identify and interpret for the first time the constructive system of ramparts of the Late Bronze Age in the southwest of the Iberian Peninsula. We were also able to identify a more modern type of defensive construction, dated at the end of the 9th century BC. Built with a framework of wood beams, it was affected by a fire that vitrified or calcined the building materials. This paper explores the differences between both defensive models and discloses the results of the geo-chemical analysis carried out on the affected materials.

Keywords: vitrified walls, Iron Age ramparts, Ratinhos, castros

Vitrified Walls in Iberia: an approach as an Introduction

The existence of vitrified ramparts in the Iberian Peninsula was proved by a British-Portuguese team, under the Projeto Évora in the mid-1980s (Monte Novo: Burgess et al. 1999) (Figure 1.1, nº 1). Many years later, Antonio Monge Soares identified vitrified stones in the hill-fort of Passo Alto, near the Spanish-Portuguese border (Figure 1.1, n° 2). This was a singular site because, in this location, Soares had found years before the first up-right stone bands in southwestern Iberia (Soares 1988; Soares et al. 2012). Then, several places with similar testimonies came out of central Spain and Portugal, such as the Castro de Ratinhos (Figure 1.1, nº 3), under our excavation (Silva et al. 2013), or the so-called Volcán del Gasco (Figure 1.1, nº 4) (Díaz-Martínez et al. 2005). In addition, in Portuguese territory some new cases were found, such as Sabugal Velho (Figure 1.1, nº 5) (Osório and Pernadas 2011) or Cerro das Alminhas (Figure 1.1, nº 6) (Vilhena and Golçalves 2012). Although they do not make up a very large group of sites, they are spread along a great area of the western side of the Iberian Peninsula and they show very different contexts and probably different causes. This picture became more and more complex as the research progressed.

In recent years we have studied several cases of vitrified walls in the Iberian Peninsula, whose partial results were presented at the 23rd Annual Meeting of the European Association of Archaeologists, held in Maastricht in September 2017. Although we could see that the largest proportion of vitrified stones came from extensive surveys, the archaeological remains allowed us to propose dates from the Late Bronze Age (e.g. at Passo Alto) to the first Roman presence in western Iberia at the end of the 2nd century BC (e.g. at Monte Novo).

None of the known cases are clearly related to an armed conflict, according to their remains. Instead, we have proven that many cases fit into two main trends: while Early Iron Age sites, i.e. Ratinhos and Passo Alto or Azenha (Figure 1.1, nº 7), show vitrified walls at a specific point, usually the only access, the sites of the Late Iron Age, related to the Roman Conquest, show vitrified ramparts over a long stretch of the wall, if not the whole rampart, e.g. Monte Novo (nº 1) or Sabugal Velho (n° 5) (Osorio and Pernadas 2011). In both cases an incidental or deliberate fire relating to armed conflicts could be the easiest explanation. But there are other answers, as was proposed years ago (and recently brought to attention again) for Cerro das Alminhas and Nossa Senhora da Cola (nº 6), or even Garvão (nº 8) (Vilhena and Gonçalves 2012; Wadsworth et al. 2017: 5; Youngblood et al. 1978).

In this situation, researches have proven the vitrification, calcination or reddening of masonry and mud bricks from walls, or that supposedly come from walls, in a dozen Late Bronze to Late Iron Age settlements. But only one or two of them have been excavated and they are the only ones that can offer archaeological contexts for accurate explanations.

Ratinhos, a singular site at the beginning of the Iron Age in Southern Portugal

This is the case of Castro dos Ratinhos, in southern Portugal, where we were able to excavate a singular





burning process that we have explained as a consequence of a social dispute or war event (Silva *et al.* 2013).

Between 2004 and 2007, we made open-area excavations at this site, near the town of Moura (Baixo Alentejo). These archaeological works were carried out by the Instituto Português do Patrimonio Cultural and the Universidad Autónoma de Madrid, as a result of the building of the Alqueva reservoir (Berrocal-Rangel and Silva 2010).

The site is located on a hill, with three terraces and at a height of about 150 m above the right bank of the Guadiana River, at a central area between the mouths of two tributaries, the Degebe to the north and the Ardila to the south. The hill is in the horst between the Sierra de Portel and the Falha da Vidigueira, a crossing point in the most important geo-morphologic unevenness that crosses the wide Alentejo region (Figure 1.2 n $^{\circ}$ 1).

Around this hill-fort, many important metal ores have been identified with clear workings in Prehistoric times, such as the mines of Rui Gomes, 14 km away, or Monte dos Judeus, 20 km away. In relation to these, the excavations at Ratinhos have provided archaeological remains that prove metallurgical activities and a main control of a raw materials and manufactured artefacts trade, both from local workshops and from longdistance production centres.



Figure 2: 1. Plan of Ratinhos after the 2004-2007 excavations, with the location of the excavated transepts over the ramparts: D1-D4, at the outer line, and Q1-T1, at the inner line. 2. View of Ratinhos hill and the northern wall from the North (photo: J.M.B.).

Almost inaccessible, this place was defended with an inner wall and provides visual control over the entire surrounding area, as far as 25 km away. In the line of sight, we can see other main hill-forts of the region, such as Safara, Serra Alta, Casa Branca and Laço (Parreira and Soares 1980; Soares 2005: 125-126) (Figure 1.2 n $^{\circ}$ 2-5).

The hill slopes steeply over the river, with sides of more than 100 m, but, to the east, a softer incline justifies larger defensive devices and works that we could easily define as ramparts. These lines are aligned with the three terraces that configure the hill. The highest platform is located at the eastern end, and encloses an area of nearly 700 m^2 , which we can safely call the acropolis (Figure 2).

Excavations at Ratinhos have proved a long chronological sequence, from the Late Bronze Age (13th century BC) to the beginning of the Early Iron Age (8th century BC) (Berrocal-Rangel and Silva 2010: 420).

Digging began in 2004 with the opening of several transects over an outer wall, which runs along the northern slope of the hill. The excavations confirmed an interesting rampart, very well dated by stratigraphy and radiocarbon samples in the Late Bronze Age, while it was amortised at the beginning of the Early Iron Age. In 2006, we dug several transects into the acropolis. One of them, Q1-T1, was opened over the inner line of wall, later connected with nearby huts that were excavated in an open area in 2007. We acquired a good stratigraphy from this rampart and the buildings of the acropolis.

The settlement was abandoned during the last half of the 8th century BC, after a short occupation of a few decades (1a), when the inhabitants re-used older huts and buildings. Even the inner line of ramparts, around the acropolis, was rebuilt as a palisade after a fire that affected the eastern part of this acropolis (Silva *et al.* 2013). At that time, the settlement was characterised by round huts and the domestic use of an older shrine.

This construction was built at the beginning of an older phase, 1b, well dated between 830 and 760 BC. In this period, we could identify a main social and economic change in the sequence of Ratinhos, when the Early Iron Age began, despite the lack of this metal. The shrine, called MN23, was built with two rooms and a larger courtyard, all with rectangular plans, and proving the existence of relationships with Phoenician colonists, as its plan repeats an ancient Oriental shrine model. This plan, the building techniques and, mainly, the modulation of this construction, allowed us to identify it as an archaic temple of Astarte (Prados 2010). But the most outstanding fact was that this site is placed more than 200 km inland, one century before the emergence of the first colonies along the western shores of the Iberian Peninsula (Arruda et al. 2009). Thus, in this phase, Castro dos Ratinhos was an indigenous settlement, as it had been at least from the 13th century BC (Soares and Martins 2010). Towards 830 BC, there was a complete renovation of the architecture of the acropolis. The sacred building MN23 was the result of deliberate and thorough planning, following Phoenician units and new building techniques unknown in the West until then. Moreover, the perfect alignment to the autumn equinox is an outstanding feature. Nearby, on the acropolis, other buildings show similar changes, such the huts made with mud bricks and wood poles, now with regular round plans. In two cases, the plans have the same number of modules as the shrine, and the same length, 20 modules of 0.52 m diameter (Figure 3). In addition, the walls of the acropolis reflect the new conception and also the new techniques of the shrine.

But the most surprising feature of phase '1b' is the small impact that this new architecture had on domestic effects, such as pottery. Phoenician pottery is represented by only a dozen shards among thousands of indigenous ceramics, and no fragment of iron was found. Even a set of seven gold buttons, found in the shrine and made with Oriental techniques, reproduces Atlantic and Continental models. Therefore, it is possible to conclude that this 'Phoenician presence', at such in early times and in such a distant site, was selective, only linked with rituals, beliefs and power, and not reaching ordinary people. This fact could explain the reasons for the fire that, around 760 BC, destroyed the buildings of the acropolis and the eastern end of the inner wall.

Late Bronze Age and Early Iron Age ramparts at Ratinhos

In the Late Bronze Age, Ratinhos was fortified by the construction of three lines of ramparts around the acropolis, a location that was the centre of a military, social and, perhaps, religious elite (Figure 2).

These works were carried out on the outer line of the walls, along the northern slope of the hill, just over the edge of the lower platform (Figure 4). To that end, the bedrock was carved in order to achieve a plain and regular surface about 3 m wide, along the edge of the terrace (Figure 4. A). In parallel, a line of large flagstones was placed at the inner edge of this flat surface (Figure 4. B). These flagstones work as the foundation of the inner face of the wall, which, according to the inclination of the flags, was tilted to follow the slope. Like these, the outer face was built on a sloping surface of small slate slabs, inclined toward a core made with consecutive layers of gravel and mud (Figure 4. C). We could not find the inner face, over the large foundation flags, but we believe that it would be similar to the outer one. The small slabs were pasted together with mud and clay. We also do not know how the wall ended at the top, but most probably with a row of slates and a vertical outer palisade (Figure 4. D). 10 m beyond the wall, and 4 m lower down, we found a ditch with a regular V profile (Figure 4. E-F). This was 2 m x 2 m wide and deep. The stones for building the wall were obtained from this ditch; it also provided a good solution for draining rain water, being about 100 m above a small spring that meets the Guadiana River below this site. Therefore, the function of the ditch was, like the rampart probably, symbolic rather than defensive. This architectonical function was strengthened by a regular verge, made with gravel from the slates, very small and firmly disposed on a clay layer.

In spite of the resemblances to other contemporary, and perhaps defensive, enclosures, such as Outeiro do Circo or El Trastejón de Zufre (Serra and Porfírio 2013; Hurtado *et. al* 2011: 38-52), we believe that the wall of Ratinhos was a true rampart. It was not the only one: Passo Alto and Corôa do Frade seem to have similar defensive constructions (Parreira 1998; Parreira and Soares 1980; Soares 2007).

The burnt rampart of Ratinhos

As explained before, from the 9th to 8th centuries BC the acropolis was defended by two lines of walls, probably following earlier ones. The transect Q1-T1 was disposed transversely to the inner of these two lines. But, here, the building techniques found were innovative, as they were for the shrine and the large contemporary round huts: a new kind of outer masonry, plain and piled up, new foundations, and the remains of a timber-laced



Figure 3: Single-layer plan of the constructions of the acropolis, and the relations of the measurements of these buildings, over the module of 52 cm(K), all of them dated at the end of 9th century BC. (phase 1b).





skeleton. Beams, timbers and joists could have been made from pine wood, as was used for the construction of the shrine (Figures 5 and 6).

Although we found no preserved fragments of beams or wooden structures in this wall, traces of fire could be seen in some thick and hard reddish layers (IIb-e) of fired clay and ashes, and small pieces of charcoal, very deep and widespread inside the foundation of the wall, and an irregular line of large slates and quartzites. Between this spot and the foundation line there were two holes for broad posts, R15 and R16, one full of small slate wedges and charcoal dust (Figures 5.A1 and A.2; 6.1.1a-1b). Over and inside these layers, we found some vitrified stones and fired clay plaster pieces, the latter with the shape and holes of the joists, as the clay made a type of plaster for the timber skeleton. We found just four stones with vitrification marks and three clay pieces with these holes of joists, with widths from 3.5 to 7 cm (Figure 6.2). The clay holes correspond to convergent joists that were supported by the posts, whose holes were between 0.4 and 0.5 m wide, probably for taking beams of 0.3 m of diameter. These posts had to be the central axis of an internal wooden skeleton. Joists and beams were supported using clay and leather ropes to secure the masonry construction. This allows us to propose a type of vertical building for the inner face of the wall, a new building technique unknown before then.

The spread of the remains, towards the southeast of hole R16, reflected the direction of the fall of one burnt post. The fire left small fragments of calcined slates,





probably in contact with the burning timbers. Larger stones were found along the opposite side, over the outer slope, only with a superficial reddening, a glossy patina and a light reddish colour, which contrasts with the natural grey-greenish colour of those slates. We think that these stones are evidence of a closer proximity to the fire. Therefore, this was not a general and widespread event that affected the entire wall, as Ian Ralston proved in his Aberdeen experiment (Ralston 1986). Later, in phase 1a, many of these larger stones were re-used in an open passage made over the ruins of the wall, surely because the result of the fire was the hardening of these stones.

The variety of these effects, calcined, reddened and vitrified stones, together with the spread of the fired

clay, ashes and charcoal layers, and the fired clay plaster pieces with holes, are evidences of a precise fire, just located in the easiest access to the acropolis, where perhaps the main gate was located, as well as the entrance to the Oriental shrine. In the nearby hut P21, one fragment of a white pine prismatic beam 10 cm long provided a date of 2490±80 BP (S.A.C.-2229: Soares and Matos 2010: 412). This confirms that the hut was abandoned around the middle of the 8th century BC, giving a *post-quem* date for the fire (Berrocal-Rangel and Silva 2010: 422-426).

Stones and clay pieces, from reddening to fired

The type of substrate rock at Ratinhos is a greygreenish slate. We took some samples of the vitrified



Figure 6: 1. Plan and section of the Early Iron Age rampart with the vitrified or fired remains. 2. Samples of fired clay and vitrified stones from this rampart (a. fired clay plaster piece L15; b. 3D model of the insertion of sticks in piece L15; c1-c2. reddened stone L20. Fragment c2 was used for the geochemical analysis.

and reddened stones to analyse and compare with other contemporary sites, also with vitrified greenish slates, such as Pozos de los Moros in the small Spanish village of Villasrubias (Salamanca). From this site, we collected a good number of samples of vitrified and reddened slates, some with a calcinated surface of just 2-3 cm thick, others with calcinated surfaces and pumiced core, and a third assemblage, just vitrified. These differences changed the original colour of the grey slates to a combination of browns and oranges (Figure 7.c2).

We determined the mineral composition of all these samples by X-ray diffraction (XRD), after grinding the samples with an agate mortar. We used the random powder method for the bulk sample and the oriented slides method for the <2 μ m fraction. The X-ray diffractometer is a SIEMENS D-5000 with a Cu anode. The XRD profiles were measured in 0.04 2 θ goniometer steps for 3s. The method consists of comparing samples of slates from outcrops of the substratum, without fire marks, and fired samples from the outer terrace, looking for the presence or absence of certain minerals and using them as geothermometers. When the rock shows two different structures, usually with two different colours, we took samples from both zones.

CRAT06/N3/L01 is a protolithic material from an eastern outcrop of Ratinhos, and shows a silicate composition, made of pyroxene, K and CaNa feldspars, a significant quantity of illite and, mainly, quartz. The absence of kaolinite is noteworthy (Figure 7).

On the contrary, sample CRAT06/R1/L20 (Figure 7) shows a grey core (L20-i) and an orange-reddish border (L20-e), an appearance that much resembles many of the samples from Pozos de los Moros, i.e. PZ005, where kaolinite is present. The grey core has a similar composition to the protolithic material: pyroxene, K-feldspars, illite and quartz, but there are also kaolinite and hematite, a variance that can be explained by the natural differences of the lithic substratum (ferric slates). More significant is the absence of CaNa feldspars and the presence of large amounts of K-pheldspar, which could mean that the core was less affected by a fire, because K-feldspar is preserved between 800° C and 1000° C. The presence of kaolinite works in this way, since this mineral disappears over 600/650° C (Sayanam et al. 1989). And, in fact, K-pheldspar has disappeared in sample 2, coming from the reddish border, clearly more affected by the fire. In this part of the rock, only quartz, and small quantities of kaolinite and hematite were identified. This absence of phyllosilicates and K-feldspars means a combustion temperature between 1000 and 1100° C, but the presence of kaolinite indicates that temperatures not exceeded 650° C (Campos et al. 2004; Frías et al. 2013). Therefore, despite the differences in colour, the temperature was quite similar inside and

outside the stone, between 600 and 650° C, which is not enough to vitrify, but to redden. Sample R1/L005 was believed to be vitrified, but the analysis has shown that it is a dolomite with quartz and hematite, both in the interior and the border, without marks of fire.

With reference to the fired clay pieces, we analysed both the interior and surface of sample R1/L15 (Figure 7). The results are quite similar – a silicated composition with a large quantity of quartz and smaller amounts of K-feldspars and illite: therefore, it was affected by temperatures under 1000° C. In this sense, the minor presence of CaNa-feldspar can also be understood. In the sample, coming from the interior of the clay piece, a small quantity of pyroxene was detected, a natural component of the substratum that disappears with temperatures over 1000° C.

Finally, we made the same analysis with a mud brick from Castelo de Monte Novo, Évora, a sample that shows fired traces and the hardness of a true brick (Figure 7). The results from the core emphasised the silicate composition, mainly with quartz, and Ca-Na and K-feldspars; chlorite, calcite, ferrihydrite and amphibol were also detected. Conversely, the sample from the border lacked components such as Ca-Na and K-feldspars, and showed a decrease in chlorite levels, consistent with a greater exposure to a fire (as the structure groups OH disappear over 600–700° C in chlorite. This range of temperatures corresponds to the replacement of calcite by neo-calcite, which clarifies the calcination process of the calcite, between 600 to 850° C (García-Giménez *et al.* 2016: 64).

Therefore, the fire marks detected in the inner wall of Ratinhos were directly located in a vertical burnt post and interlaced wooden frame, affecting the clay mass used as plaster and some slate stones. Although we could identify some of them as vitrified, the samples analysed showed a lower degree of change, described as reddening, consistent with temperatures from 600° to 850° C, as silicate rocks can be vitrified from 850° C (Nisbet 1982: 29).

Conclusions

The hill-fort of Ratinhos was a Late Bronze Age settlement in a central and strategic place, with wide visual control over a crossing point of the natural network of this territory. Because of this, large and complex defences were built, using raw materials and building techniques very well known by traditional indigenous builders. These techniques were documented in the outer line of the ramparts, the third wall of a complex system that could have already been present in those early times. In this type of walls, stones and clay were the only raw materials, and piling the only technique. Therefore, the walls were built as



Figure 7: Stone and clay samples with the mineral composition results obtained by X-ray diffraction (XRD). Main elements are highlighted in the text.

banks, of no great height, because they were built over steep slopes that made this unnecessary.

The situation was different at the eastern end of the acropolis - the easiest access to the highest terrace of the hill. In this location, over the Late Bronze Age occupation, an important Iron Age phase was identified, with clear remains of a strong, Orientalised occupation. It is here that the marks of vitrification associated with a fire were found. These marks appeared in a specific trench of the inner rampart, only at the eastern end of the acropolis. Fired layers, clay plaster pieces, reddened and vitrified stones, and two post holes proved the presence of interlaced timber and wooden implements in the structure at this part of the wall. These elements were absolutely unknown in the former Late Bronze Age and must necessarily be related to the building of the Oriental shrine MN23. Therefore, we suggest that this new way of building, with a timber skeleton, explains the appearance of the oldest vitrified sites in western Iberia, most dated in the transition between the Late Bronze Age and the Early Iron Age. In addition, since most of the examples are located in the easiest access points to the settlements, we propose that the new way of building was especially carried out in the main gate of the village; not only because of its defensive weakness but also because of its symbolic values.

According to our knowledge of the ancient ramparts of Andalucía, the Phoenicians brought this new technique to the Peninsula (Escacena 2002: 87; Moret 1996: 189, 194 and 209). The fact, therefore, that the main route between the Mediterranean and regions to the northwest goes through a highly forested region, i.e. the western Iberian Peninsula, could be the reason for the appearance of this phenomenon during the transition from the Bronze Age to Iron Age (8th to 7th centuries BC).

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Another post in the fence. Proto-urban delimitations in Final Bronze Age and Early Iron Age Northern Italy

Paolo Rondini and Lorenzo Zamboni

Abstract

This paper addresses the early-urbanisation phenomenon in north-eastern Italy, between the Final Bronze Age and the Early Iron Age periods (11th-7th centuries BCE), focusing on delimitation and perimeter structures as a key element of social and settlement changing. The Po Plain played a crucial role in the complex picture of urban civilisation phenomena, due to its position between the Mediterranean and central Europe, it has, however, been underrepresented in recent archaeological discourse. The main case-study of this paper is the site of Verucchio, where ongoing excavations are providing new evidences for the urban-like settlement, dating back to the 9th and 8th centuries BCE, including a wooden palisade and perimeter earthworks. This evidence will be compared to other data from relevant settlements of the southern-alpine region.

Keywords: urbanization, wooden palisade, Final Bronze Age, Early Iron Age settlements, Po Plain

Introduction

A review of the early urbanisation phenomenon in north-eastern Italy is presented in this paper, focused on the crucial period between the Final Bronze Age (11th-10th centuries BCE, hereafter FBA) and the Early Iron Age (9th-7th centuries BCE, hereafter EIA). The investigated region is the fertile alluvial plain situated between two major mountain ranges, the Alps and the Apennines, with the main river, the Po, and several tributaries and secondary streams (Figure 1). We adopt, as sample items, wooden and earthen structures, discovered through recent excavations in several key sites, and interpreted as delimitation, defensive, and boundary works.

Furthermore, the main objective of the research is to highlight, beyond the scope of the current literature, the role of this region at the transition between the 2nd and 1st millennium BCE, when the population patterns drastically changed, creating the first centralised and powerful sites of this European region.

According to an ongoing debate, ¹ signs of a centralisation process appear almost simultaneously on both sides of the Alps during the first part of the Iron Age. A crucial issue is whether it was a 'diffusion' from the south that drove early urbanisation in temperate Europe, or was there an independent local 'tradition' which led to urban models differing from the Greek and Roman types.² In this broader framework, northern Italy holds a strategic position between the Mediterranean world and central Europe, providing a long-term history of proto-urban civilisation, from the pile-dwellings of the Bronze Age to the first large settlements, seemingly coeval to those in central and southern Italy and in Greece. Despite an impressive increase in discoveries and excavations over the last twenty years, the region south of the Alps still remains largely overlooked by archaeological research, due to few published data, barely known to international audiences.

Moreover, scholars have paid more attention to the complex phenomenon of urbanisation and 'Early State' formation in central and southern Italy,³ where a more established tradition of studies - and the highest amount of excavation and survey data - have shown different development patterns of urban models for the main historical sites (i.e. Veii, Caere, Tarquinia, Vulci and Rome), including progressive growth, displacement, synoecism between previous villages, and the foundation of new towns.⁴ The more consistent conclusions of these studies, albeit different positions, have perhaps identified the consistency of an internal process already underway at the end of the Bronze Age, partially rejecting the traditional diffusionist perspective of a deciding influence from the presumably more developed Mediterranean civilisations. From our perspective, rather than diminish the clear relevance

¹ Buchsenschutz and Ralston 2012; Fernández-Götz and Krausse 2013; Fernández-Götz and Krausse 2016; Fernández-Götz 2017; Krausse *et al.* 2016.

² Collis 2016; Pétrequin 2013.

³ Alessandri 2013; Attema *et al.* 2016; Fulminante 2014; Guidi 2006; 2008; 2010; Pacciarelli 2001; 2016; Riva 2010; Steingräber 2008; Stoddart 2016; Terrenato and Haggis 2011; Vanzetti 2002 (all with previous literature). For Etruria and *Latium Vetus* more categories of evidence, besides settlement excavations, are available and enhanced, including burial and social aspects, religion, art, written sources, and, however controversial, ethnicity.

⁴ Guidi 2010: 17-18.





of Etruria and central Italy in this multifaceted process, the next step is to offer a detailed analysis to the northeastern part of the Italian peninsula.

In this paper, specific ideas on early urbanisation will be focused on the archaeological evidence of boundary, defensive and perimeter structures, which could be major factors in identifying the ongoing centralisation process in this region. Despite this perspective having already been stressed in Etruria and central Italy,⁵ it appears thus far much less well emphasised in the southern Alpine regions.

Addressing cultural issues, the specific environment of north-eastern Italy should also be considered, since the vast alluvial plain, rich in water and timber, could be a highly unstable landscape,⁶ and subjected to various climate changes over time. However, this environment could easily determine long-lasting architectonical and craft traditions, well adapted to the local resources. On the other hand, the continuity and stratification during the historical periods of many towns and cities have not contributed to the good preservation of wooden and earthen monuments, often almost invisible in the present landscape and only partially excavated and documented.

⁵ Cifani, Guidi 2016; Fontaine, Helas 2016; Guidi 2008; 2010: 15; Ziolkowski 2005. One last assumption concerns the estimated dimension of settlements (in hectares), frequently mentioned in the following paragraphs. It should be clear that these are merely the maximum assumed extensions of the whole settlement area through a certain period, often determined by the natural borders of the area (hillsides, ground elevations, or rivers), as well as by the eventual presence of various categories of landmarks, such as cemeteries, sanctuaries or extra-urban roads, and also based on some trenches and surveys, rather than extended and comprehensive excavations and geotechnical analyses.

The centralisation process in north-east Italy during the Final Bronze Age

The richness of the environment has allowed, during the Middle-Recent Bronze Age (1600-1150 BCE), the birth and bloom of the so-called *Terramare* culture,⁷ but also included the advanced stages of the longlasting lake pile-dwellings of the southern Alps. This cultural phenomenon, characterised by arranged and often fortified villages, sometimes built on piles, is rightfully considered as a first attempt at a 'protourban' civilisation.⁸ After having established longrange European trades and reaching a high level of

 ⁷ For an overview, see Bernabò Brea et al. 1997.
 ⁸ Pétrequin 2013.

Bellintani and Saracino 2015; Ortalli 2010.

⁷⁶

know-how in both water management and structural woodworking, this civilisation quickly regressed in the late Bronze Age (1200-1150 BCE), and then abruptly collapsed around the second half of the 12th century BCE.⁹

While the lands south of the Po appear completely abandoned during the following centuries of the Final Bronze Age (11th-10th BCE),¹⁰ with only minor sites placed on the highest hills of the Apennines (including among others Bismantova, Monte Valestra, Ripa Calbana, Monte Titano),¹¹ the northern and northeastern sectors display a different picture for the Final Bronze Age period (Figure 1).

In fact, after the collapse of the *Terramare* culture, in the wider picture of a strong decrease in human presence¹² for the first two stages of FBA, recent discoveries are bringing to light early evidence of a centralisation process, with the foundation and sometimes persistence of medium-sized settlements (from 4 to 14 ha). These sites are situated at crucial crossroads points in the Plain, such as the cases of Ponte S. Marco, Casalmoro, Montagnana, Frattesina (with its satellite villages), and Treviso (Figure 3, nos 4-5), and are often set on wide sites, slightly elevated, close to one or more rivers, but still protected from floods.

These sites are interpreted as 'central places',¹³ maintaining control of medium to high density settlement districts, and displaying an advanced economic network, with wide connections from the Baltic to the Aegean seas. Long-rage trade is well proven by many bronze hoards discovered near the main sites.¹⁴ The major villages, rich and powerful, were in control of great portions of land and, while their geographical approach marks a clear discontinuity from previous *Terramare* land management, their need for protection exhibits technological solutions inherited from prior experiences. In fact, even when naturally detached from the surroundings by their choice of location, some of them, during the FBA, enclosed themselves with peripheral structures, including palisades, moats, ditches, displaying an overall impressive timberworking capability, probably linked to the previous *Terramare* crafting tradition.¹⁵

In the western sector lies the remarkable village of Ponte S. Marco (south of Brescia), established between

the Recent and Final Bronze Ages in a regular plan of rectangular houses set in a geometric grid of streets and channels (Figure 3, nos 2-3).¹⁶ During the FBA the site planimetry was restructured, and the whole settlement (maximum area 11 ha) enclosed by a complex perimeter setup, that has been excavated in its eastern part. This structure was a double-ring perimeter of palisade, built with large posts put inside two trenches, and strengthened by large rocks (Figure 3, no. 1). This site controlled a great number and variety of raw materials, and its commercial and cultural links are clearly directed northwards, toward the Alpine region, controlled by the Luco culture.¹⁷

In the present Veneto region, the site of Montagnana, with its 14 ha of probable settlement area, was the central place of an important district (Figure 2, no. 1). This village had a wooden palisade during the middle 10th century BCE, enclosing the south-eastern sector.¹⁸

The most important site of this period is Frattesina,¹⁹ a settlement of approximately 10-12 ha, but surrounded by a noteworthy near-site area with dense archaeological evidence, which form the major central locale of the north-western Plain during the period addressed (Figure 2, no. 2). The site, only partially excavated, is characterised by a regular grid of channels, east-west oriented, with a main central ditch that was probably connected, through complex earthen and timber works, with the main ancient river, the so-called 'Po di Adria' (a northern branch now disappeared). Founded during the 13th century BCE, Frattesina thrived until the late 10th BCE. Its core role within the northern Adriatic region is indicated by the outstanding variety and span of raw and semi-worked exotic goods present (such as amber, ivory and glass).²⁰

Early urbanism of the Early Iron Age

During the following phase, between the last stage of the FBA and the very beginning of the Iron Age (end of the 10th and 9th century BCE), the previous central places were abandoned, along with their districts, and a different territorial organisation was established in northern Italy during the 9th and 8th century BCE (Figure 4).²¹ This new model displays the rapid expansion of newly established large and powerful sites, ranging from those of medium size, around 25-80 ha, to large ones, between 100 and even 120 ha. The new locations were carefully selected, situated on flat river

⁹ Bernabò Brea *et al.* 1997: 745-756; Cardarelli 2009; 2015: 165-179; Frontini 2011.

¹⁰ de Marinis 1999; Harari and Pearce 2000.

¹¹ Bottazzi, Bigi 2008; Bietti Sestieri 1997; Pacciarelli, von Eles 1994; Zanini 1999; Zanini, la Pilusa 2009.

¹² A remarkable general trend is around 95%, according to Cupitò *et al.* 2015: 303.

¹³ Guidi 2008: 180; Bianchin Citton 2015.

¹⁴ Bellintani 1994.

¹⁵ Mele *et al.* 2013; Cremaschi and Pizzi 2011.

¹⁶ Poggiani Keller 1994; Poggiani Keller and Ruggiero 2008; Redolfi Riva 2017; Ruggiero 2004.

 $^{^{\}rm 17}\,$ Poggiani Keller 1994, 102-105; for a general overview on the Luco culture, see: Marzatico 2012; Rageth 2010.

¹⁸ Bianchin Citton *et al.* 2015.

¹⁹ Bietti Sestieri *et al.* 2015; Bietti *Sestieri et al.* 2019.

 $^{^{\}rm 20}\,$ For the ongoing study of its cemeteries and their grave goods, see Cardarelli *et al.* 2015.

²¹ de Marinis 1999.

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Figure 2: Plans of different FBA and EIA sites from north-eastern Italy. 1) Montagnana (after Bianchin Citton *et al.* 2015);
2) Frattesina (after De Guio *et al.* 2009); 3) Gazzo Veronese (after Gonzato *et al.* 2015); 4) Oppeano (after Candelato *et al.* 2015);
5) Padova (after De Min *et al.* 2005); 6) Este (after Balista and Ruta Serafini 2008);
7) Oderzo (after Capuis and Gambacurta 2015); 8) Verucchio (authors).



Figure 3: Plans and reconstructive illustrations from the FBA sites of Calcinato Ponte S. Marco (1-3, after Poggiani Keller 1994), and Treviso (4-5, after Bianchin Citton 2004).

terraces, raised over the surrounding wetlands, and always at the confluence between two or more rivers. $^{\rm 22}$

The relevant site of Este, for example, at the beginning of the Iron Age appears to be a settlement of nearly 100 ha.²³ Large water management structures and wooden fences around the perimeter are known thanks to preventive excavations (Figure 2, no. 6). An oak timber waterfront foundation of horizontal beams, in the south-eastern part of the perimeter (Figure 5, no. 1), is dated by dendrochronology²⁴ to the end of the 9th century BCE (825-795 cal. 95%).

The near site of Padova, already up to 120 ha in the 8th century BCE (Figure 2, no. 5),²⁵ had a similar perimeter defined by a double wooden palisade (Figure 5, no. 2), dated to the end of the 9th century (840 ± 130 BCE).²⁶

Another example of a centralised site of the early Iron Age is Oppeano, a settlement of 80 ha in the FBA period onwards (Figure 2, no. 4), which, during the 8th century BCE, was fortified with an earthen rampart and a ditch.²⁷

Several other sites of the north-eastern part of Italy, including Gazzo Veronese (Figure 2, no. 3), Verona, Vicenza, Altino, Oderzo (Figure 2, no. 7), and Concordia, Palse,²⁸ all show similar features and technical solutions, such as orthogonal grids, square houses and defensive timber structures, established between the FBA and EIA.

Another pivotal case study is the ancient city of Bologna, called *Felsina* in the Etruscan period. The site is only partially known, due to the continuous stratification through the millennia, but rescue excavations over the last twenty years²⁹ have

²² Capuis and Gambacurta 2015.

²³ Guidi 2008: 181; Capuis and Gambacurta 2015.

 $^{^{\}rm 24}\,$ Meadows et al. 2014 (a later phase of the palisade, with vertical posts, is dated 640-695 BCE, 85%).

²⁵ Guidi 2008: 182; De Min *et al.* 2005; Capuis and Gambacurta 2015.

²⁶ Balista *et al.* 1993; Balista 2005: 17.

²⁷ Balista 2004; Guidi and Salzani 2008; Cadelato *et al.* 2015.

²⁸ See Gonzato *et al.* 2015, and Saccoccio 2016 for recent data on Gazzo Veronese. Regarding eastern Veneto and Friuli, see Malnati *et al.* 1996.

²⁹ Curina *et al.* 2010.







Figure 5: Wooden palisades of the EIA from Padova (1, after De Min *et al.* 2005), and Este (2, after Meadows *et al.* 2014).

unearthed outstanding archaeological evidence of an early urbanisation process (Figure 6, no. 1). According to the latest studies, Bologna was a new foundation in the 8th century BCE, likely after the abandonment of five surrounding villages of the Early Iron Age (Castenaso, Budrio, S. Vitale, S. Donato, Fiera),³⁰ and at the foot of the hill of Villa Cassarini, likely a sacred or funerary place during the previous FBA period. 31

Already in the early phases, the settlement size was impressive (around 180 ha), showing huge foundational

³⁰ Malnati *et al.* 2010.

³¹ Ortalli 2008; 2010; 2013; 2016; Sassatelli 2015.



Figure 6: *Felsina*/Bologna in the EIA: 1) plan of the site, with the settlement area in light grey, and the cemeteries in dark grey (after Ortalli 2010), and the boundary wooden structures ('a' and 'b'); 2) archaeological features in Piazza Azzarita (after Ortalli 2010); 3) the excavation in Piazza VIII Agosto (after Ortalli 2016).

structures, including large channels, and defensive structures in the northern sector.

The excavations in Piazza Azzarita, for example, uncovered a huge structure 40 m long with three channels at the front, to the north, and a complex alignment of timber palisades, at least three rows with planking (Figure 6, no. 2). The cemetery is located just outside these city walls.

An even bigger structure of about 100 m in length and 50 m wide was found in Piazza VIII Agosto, in the northernmost sector of the city (Figure 6, no. 3). Here, hundreds of large posts, with holes of more than 1 m deep, are aligned north-south in three rows, spaced 10 m apart. Each row is made of four posts placed every 3 m. According to the excavators, the hypothetical reconstruction indicates the presence of covered galleries, bridges, stairs and walkways, possibly for a complex fortification, a large workshop, or even a building for public meetings.³² It is worth mentioning that both the structures of Bologna, from Piazza Azzarita and Piazza VIII Agosto, were dismantled soon after their construction, during the 7th century BCE, for reasons not yet clear.

The Early Iron Age structures of Verucchio

In the south-eastern sector of the region, Verucchio was the main site for almost three centuries, between the 9th to the 7th centuries BCE. The settlement is positioned on a hilltop of maximum 45 ha (Figure 2, no. 8), in south-eastern Romagna, about 15 km from the Adriatic coast. This location granted control of both the mouth of the Marecchia river towards the sea and the Marecchia valley towards the mainland, which leads directly into the core of the peninsula, all the way to Etruria.

During the Final Bronze Age, the whole Romagna region was dotted with small settlements positioned on hilltops and cliffs, related to the Chiusi-Cetona *facies*, a material culture which linked the Po Plain sites, such as Frattesina in the north, to the northern and inner part of present Tuscany, Marche and Umbria to the south.³³ However, most of these sites were abruptly abandoned at the end of the FBA, while subsequently the site of Verucchio was chosen as the new centralised location. During the EIA, Verucchio displayed, through its unique grave goods, many signs of a highly hierarchised society, with a ruling class of powerful warriors and rich brides.³⁴

Between 2011 and 2017, the University of Pavia carried out new archaeological excavations inside the

settlement area of Pian del Monte, the south-eastern sector of the hilltop, where poorly documented discoveries were carried out in the late 19th and 20th centuries.³⁵ Our excavation discovered a series of earthen and timber structures, north-south oriented, composed of parallel furrows, two canals, a wide ditch, water wells, several pits, and a timber palisade.³⁶ Taking the excavations of the 1970s into consideration, partially documented in the archive data,³⁷ we estimate this earthwork system to have an overall length of over 70 m north-south, by at least 8 m wide (Figure 8, no. 1).

Regarding chronology, through three radiocarbon calibrations from the upper EIA layers the disuse of these structures is dated to the end of the 9th century BCE.³⁸ Pottery finds confirm this chronology, also suggesting a possible connection to the material culture of the previous FBA period, as shown, for example, by the typical impasto cup handles, shaped as anthropomorphic or zoomorphic figures (Figure 7, no. 4).

As a working hypothesis, this complex system of structures could be linked to drainage, water management and delimitation. As previously mentioned, water management was a basic skill of the former Bronze Age cultures from which, we assume, the know-how had been handed down.

The large timber palisade, discovered east of the ditches, shares their north-south orientation, documented with a maximum length of 11 m (Figure 7, no. 3). Its large posts were placed in holes 80 cm wide (maximum) and as deep as 60-70 cm, dug at the bottom of a ditch. Other smaller posts were placed between the large ones, at regular intervals (Figure 7, no. 5), with further evidence of a possible entrance or secondary feature being present.

Altogether, these considerable wooden and earthen works may have met both the functional defensive and delimitation needs of the settlement, although with the limited extent of excavations it is still unclear whether the boundary involves the whole centralised settlement of the EIA period, rather than a pre-existing, smaller village, eventually established on Monte dei Gigli, a low hill few meters east.

It is clear, however, that the dismantling of that large delimitation structure occurred well before the definitive collapse and abandonment of Verucchio, which took place only during the 7th century BCE.

³² Ortalli 2013.

³³ Bietti Sestieri 2012; Zanini 2013.

³⁴ Gentili 2003; von Eles 2015.

³⁵ Gentili 1988; Rondini and Zamboni 2016.

³⁶ Harari *et al.* 2017; Rondini and Zamboni 2016; Zamboni and Rondini 2018.

 ³⁷ Courtesy of the 'Soprintendenza Archeologia, belle arti e paesaggio per la città metropolitana di Bologna e le province di Modena, Reggio Emilia e Ferrara' Archive.
 ³⁸ Harari *et al.* 2017.



Figure 7: 1) Eastern Romagna in the FBA (P. Rondini); 2) Scheme of the 2011-2017 excavation trenches (authors);
3) The EIA ditch and the palisade; 4) An *impasto* handle, from a layer of the palisade (P. Rondini);
5) The palisade, view from the north (M. Harari, University of Pavia).



Figure 8: Verucchio Pian del Monte: 1) plan of the EIA boundary structures, north-south oriented (B. Peverelli), with in blue the large ditch, in light grey pits and canals, and in orange the palisade;
2) profile of the double ditch (L. Zamboni).

What we have discovered, the filling of ditches, canals and fences during the late 9th century BCE, is a sign of a new layout of the settlement of Verucchio, probably linked to an overall change in the social structure, as also suggested by the grave goods.³⁹

The presence on the hilltop of previous FBA settlements, as well as the elements of continuity seen in the material culture, suggest that Verucchio should no longer be considered only as a 'colony', founded during the 8th century BCE by newcomers from the mainland Etruria, as presumed in previous literature.⁴⁰ Verucchio is more likely also the outcome of a local protourban process, which is much more comprehensible within the broader picture of the early centralisation phenomenon that occurred in north-eastern Italy, and towards the north Adriatic region, as mentioned in the previous paragraphs.

From a technological standpoint, it is possible to identify a local high-level craft tradition, deep-rooted in the Bronze Age cultures of the Po Plain, in the dimension and types of earthworks, defensive and boundary structures, as well as in the water management systems and wooden artifacts.

Discussion and further developments

Ongoing excavations in north-eastern Italy are providing increasing data regarding an early centralisation process, at least between the end of the FBA and the first centuries of the 1st millennium BCE. Since it appears to begin before the establishment of the Greek colonies of southern Italy, this phenomenon could be interpreted as an independent process, spread from local experiences and long-lasting traditions, strongly connected to the specific wetlands of the Po Valley. From this perspective, it is possible to even suggest a direct transmission of technical knowledge from the last Bronze Age cultures to the early Iron Age ones, in terms of settlements planning, architectural solutions and exploitation of resources. Particularly, perimeter structures like ditches, ramparts and timber walls, seem to be key features for these early urban sites, being foundational and essential elements, especially for the new central and powerful sites of the Early Iron Age.

Of course, several aspects still remain to be addressed. First we must understand the relationship between settlements and their surrounding landscapes, including the possible effects of climate change, as done for neighbouring regions.⁴¹ Other categories of finds should be considered as well, including the dispersal and the layout of cemeteries, the presence and characteristics of sacred places, sanctuaries and shrines, as well as the scattered remains of extra-urban roads.

Another key aspect is the different lifespan of the delimitation works described. While in Este and in Padova, for example, wooden palisades appeared to be maintained for centuries after the foundation, in Bologna and Verucchio the dismantling and abandonment happened after a short period of use. This difference could be due to continuity versus change in settlement layout during the various phases of the Early Iron Age. In fact, the dismantling of a perimeter could be a sign of expansion or, instead, reduction of the shape and dimension of a proto-urban site. Only more extended excavations inside and outside the perimeter, while often prevented by the presence of modern disturbance in many present cities, could solve the question.

The latter aspect implies a broader issue of the continuity of the centralisation and 'urbanisation' process south of the Alps. As seen before in this region, there are cases of discontinuity, already during the FBA period (Montagnana), or during the EIA, as for example in the case-study of Verucchio, with the abandonment or displacement of major settlements, probably shifting towards different locations. Otherwise, there are several evidences of continuity, throughout the entire 1st millennium, even in historical times (Este, Padova), though the process is not always linear, and many events of crises and transformation are documented (Bologna).

Furthermore, these changes could be better understood when a social analysis of the proto-urban and urban settlements is approached, deepening the role of self-representation of the emerging aristocratic élites of the EIA, *vis-à-vis* possible more early 'egalitarian' instances,⁴² even addressing other categories of public monuments, households, and evidence of grave goods.

In conclusion, although this paper is more focused on the FBA and EIA periods, the process of urbanisation and the role of perimeter structures will have noticeable advances throughout the following centuries. It is only during the 7th and the 6th centuries BCE, also thanks to more direct Mediterranean contacts, that many of the central sites mentioned became cities (in the 'Classical' sense of the term), while new trading emporia were also founded from the Apennines to the Adriatic gulf. Amongst many examples, we could mention the case of Spina, founded during the second half of the 6th century BCE at the mouth of the Po, on the northern Adriatic coast. The excavations at Spina show the integration, within a new 'polis', of many architectural solutions of

³⁹ von Eles 2015.

⁴⁰ Guidi 2008: 180.

⁴¹ Fernández-Götz 2017; Magny 2013.

 $^{^{\}scriptscriptstyle 42}~$ As suggested, for instance, for Bologna (Ortalli 2013).

the 'traditional' types previously described, including an urban layout planned in a wet environment, based on a regular system of water canals and rectangular blocks,⁴³ as well as perimeter and defensive structures made of several rows of wooden posts, last rebuilt during the 4th century BCE.⁴⁴

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⁴³ Zamboni 2016; 2017.

⁴⁴ Buoite *et al.* in press.

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The appropriation of settlement space in Western and Central Europe during the Iron Age

Caroline von Nicolai

Abstract

Hillfort enclosures built of stones, timber, and clay are common features of the Iron Ages of central and western continental Europe. Specifically, the monumental fortifications of the late Iron Age *oppida* constitute the most prominent surviving element of the archaeological record in the landscape today. These fortifications are often interpreted as manifestations of a community's desire to protect itself against external attacks. However, ethnographic examples, as well as medieval textual sources have shown that building significant physical settlement enclosures was also an important means to take possession of a certain space; to create a sense of coherence; and to strengthen the identity of the community, which built and used these monuments. Unfortunately, there are no contemporary textual sources from western and central Europe that can illustrate the social and symbolic significance of settlement boundaries during the metal ages. Yet, a certain number of archaeological finds recovered near important settlement features, like walls, ditches, and entrance gates, indicate that Iron Age societies also used these locations to define the area of their settlement, both symbolically and ritually. Discussing the archaeological evidence known from continental Europe so far, this paper aims to outline by which means and for what purpose people appropriated their settlement space during the metal ages.

Keywords: deposit, boundary, ritual, fortification, deviant burial

Introduction

Hillfort enclosures are common features of the Iron Age of central and western continental Europe. Specifically, the monumental fortifications of the late La Tène oppida, dating to the 2nd and 1st century BC, constitute one of today's most prominent surviving elements of the archaeological record in the landscape. These fortifications have often been interpreted as manifestations of a community's desire not only to protect itself against external attacks (Kysela 2015: 79-80; Moret 2018: 173-177), but also to display symbolically its power and grandeur (e.g. Harding 2012: 198; Krausz 2008: 218; Krausz 2014: 196; Ralston 2006: 125-133;). However, ethnographic examples (Connah 2000: 45; Müller 1987: 27-32; Parker Pearson and Richards 1994: 24-25), and medieval texts from Wales and Ireland (Karl 2008a: 131-135), have shown that creating settlement boundaries - significant physical barriers as well as merely conceptual borders - was also an important means of taking possession of a certain space, of creating a sense of coherence, and of strengthening the identity of the community, who built and used these monuments, apart from defending the inhabitants from vicious influences and threats from the outside world (Brestel 2015: 46-47; Brück 1999: 154; Collis 2010: 31; Torres-Martínez et al. 2016: 77). Since written records only appear in western and central Europe at the very end of the Iron Age, and are to a large extent restricted to onomastic testimonies, archaeological finds recovered near important settlement features, such as walls, ditches, and entrance gates, constitute the only evidence that provides clues about the social and symbolic significance of settlement boundaries during the Metal Ages. This paper aims to show by which means and for what purposes people in this time defined their settlement space, both symbolically and ritually. It focuses on Late Iron Age hillforts, dating between around 500 and 50 BC, as these are the best-documented and most conspicuous examples of settlement enclosures. Geographically, the study concentrates on western and central Europe, including parts of today's France, Belgium, southern Germany, Switzerland, Austria, the Czech Republic, and Slovakia.

Ritual Activities Performed in Relationship with Settlement Boundaries

The construction of a settlement boundary was certainly an important act by which a community took possession of its future living space. However, the completing of the construction works of these boundaries must *not* be considered as the end of the acquisition and demarcation of a certain territory. It rather marked the beginning of a complex process through which the appropriation of this living space was constantly negotiated during the whole lifecycle of the settlements. Archaeologically, substantial accumulations of goods found close to important settlement features, i.e. walls, ditches and entrance gates, document this process of appropriation. Of course, ditches and pits have always been used to dump waste, thus functioning as 'artefact traps', and



Figure 1: Location of Late Iron Age hillforts studied in this paper (C. von Nicolai).

especially smaller objects, like brooches or coins, were always prone to getting lost. However, rubbish and lost objects are normally heavily fragmented due to trampling, weathering, frequent relocation and damage caused by animals. Furthermore, due to these negative influences, the finds generally show a random distribution. In contrast, findings that display certain patterns regarding their distribution, composition, and treatment (Fontijn 2002: 37-38; von Nicolai 2014a: 28-30), were probably neither accidentally lost during the construction process nor temporarily hidden in the ground as caches of valuables, that were – for one reason or another - never retrieved. Instead, they were deliberately and permanently buried in, or deposited on, the ground with the intention of being left there forever. They can therefore be considered as structured deposits that indicate formalised and repeated activities, which might be explained as symbolic and ritual behaviour (Trachsel 2008: 3). Accordingly, these deposits represent 'physical traces of past events' (Jones 2007:19) carried out in relation to settlement boundaries. In addition to closed deposits, which consist of one or several items buried at a specific place at the same time, larger collections of objects 'accumulated

during longer periods as a result of repeated acts of deposition' (Haselgrove and Hingley 2006: 149) are also witnessed; they are called 'accumulated', 'multiple' or 'open' deposits.

In this paper, a total number of 114 deposits from 61 Iron Age hillforts located all over western and central continental Europe are taken into consideration (Figure 1).¹ The deposits dealt with vary considerably in their quantity and composition, ranging from single finds and smaller deposits (including between two and several dozen objects) to larger collections (consisting of more than 400 items). Many of the latter are probably open, multiple deposits assembled during a time span of several decades or even centuries. Socalled 'simple finds' only include objects belonging to one functional category (e.g. weaponry), whereas 'complex' or 'mixed finds' consist of different types of functional categories. Among the complex finds,

¹ All sites and finds under consideration are described and discussed in detail in the present author's doctoral thesis, finished at Ecole Pratique des Hautes Etudes Paris (France) and Justus-Liebig-Universität Giessen (Germany) in 2010 and published in German in 2014 (von Nicolai 2014a).



Figure 2: Cross-section of a typical hill-fort rampart showing the possible locations of deposits and burials (C. von Nicolai).

tools and other metal implements, often combined in so-called 'implement deposits', were particularly frequent. They contained, for example, generalpurpose tools such as axes and knives; agricultural tools (ploughshares, sickles, scythes and reapinghooks); implements for metalworking, e.g. hammers, anvils, pincers, chisels and punches; implements for textile production - spindle whorls and loom weights; and raw materials such as currency bars as well as remains of casting bronze. Kitchen implements, hearth furniture, and other domestic objects, i.e. grindstones, ceramic and bronze vessels can also be found. Other deposits included weapons (swords, scabbards, chains, spearheads, shield bosses, chain mail and arrowheads); artefacts relating to transport (fittings and tyres of chariots and horse harnesses); personal ornaments and dress accessories (brooches, bracelets, finger-rings, belt hooks, pins, pendants and beads); objects relating to personal care (razors and tweezers); architectural elements made of iron (nails, keys, and hooks); as well as balance weights, balances, and coins. Statues and statuettes made of wood, stone or metal have also been recovered in association with settlement boundaries.

Furthermore, deliberate deposits can likewise comprise of single bones or more or less complete skeletons of domesticated animals, such as cows, pigs, horses, sheep and dogs. Animal remains can either occur separately or along with other functional categories, for instance weaponry, ceramics or artefacts related to transport. They often show knife cuts and other butchery traces.

Many artefacts had clearly been in use for a long time before they were deliberately abandoned in the context of the settlement boundaries. Other items – above all weapons, some kinds of tools, chariot fittings, and horse harnesses – had been damaged on purpose, bent or broken, before being deposited. Some also showed traces of fire. Also, the content of some deposits was apparently arranged in a particular way: the objects were stuck vertically in the ground, were tied into bunches, or one item was stuck into another. Examples like these certainly further endorse the idea that we are dealing with deliberate deposits and not casual losses. Besides, several single finds and deposits were covered by large stones, slabs or potsherds, or found within ceramic or bronze vessels. The existence of boxes or bags made of wood or leather, or the wrapping of objects in leather or textiles – organic materials that are now decomposed – can sometimes be deduced from the alignment and way of disposal of the artefacts.

From the exact position and composition of the deposits and the timing of their burial, it seems possible to determine the motivations that led to their deposition. Even the protagonists behind the ritual activities of which these deposits give testimony may be identified (Figure 2). Around or within hillfort sites deposits occur beneath the ramparts (Figure 2.1); within the ramparts or earthen banks (Figure 2.2); in pits subsequently dug into the ramparts (Figure 2.3); in pits located just behind or in front of the ramparts (Figure 2.4); and in ditches belonging to the ramparts (Figure 2.5), as well as in close proximity to the ramparts, that is within a distance of 50 m (Figure 2.6). Consequently, deposition could take place before and after the building of the fortification. The following examples illustrate these different find contexts.

At the late La Tène *oppidum* of Mont-Vully in Switzerland (canton of Vaud), a deposit was found beneath the hillfort's ramparts. Two lower jaw bones of a cow, aged approximately five years, were recovered in one of the post-holes of the southern tower, which flanked the main gate of the fortification and was built around 120 BC (Figure 3). These jawbones were stuck vertically and laterally reversed in the ground, covered by slabs of the berm. Their stratigraphical position indicates that the remains were buried after


Figure 3: *Oppidum* of Mont-Vully. Deposit of two lower jawbones of a cow in one of the post-holes of the southern tower (after Kaenel and Curdy 2005, figure 1).

the construction of the vertical front posts but before the berm and the vertical dry-stone wall were built. The burial was therefore clearly contemporaneous with the construction works. In addition, the incisors are missing and cut marks and alterations due to weathering are visible on the surface of the bones. This means that the bones had been kept somewhere in the open air before being deposited in the post-hole (Kaenel and Curdy 2005: 237-242). As the items found under or within the ramparts could not be recovered without demolishing the monuments, it is obvious that they were deposited before or during the construction process, with the intention of them remaining there forever. If this act of deposition took place during the building of the rampart, the remains can probably be linked to some kind of foundation ritual (Beilke-Voigt 2007: 49). Finds like weapons or tools can thus be considered as offerings, and skeletal remains of animals as the residues of sacrifices. Ceramic or metallic vessels, however, should be interpreted as containers for food and drink, and knives or axes as instruments used during rituals and ceremonies. Instead of being reused again, these containers and instruments were sometimes deliberately broken and abandoned, probably at the place where the ritual had taken place (Trebsche 2008: 73-75). According to the find context, these rituals were singular events, performed either only once at the new erection of a monument, or perhaps at irregular intervals when it was repaired or rebuilt.

In contrast, deposits placed in pits dug into or situated at the bottom of the ramparts, as well as deposits placed in ditches belonging to the ramparts, have to be interpreted in a different way. For instance, detectorists unearthed a Middle La Tène deposit of implements, which was buried in a deep pit (c. 60 cm) cut into the bank of the oppidum of Stradonice in Bohemia (district of Beroun, Czech Republic). Two fragmented scythes, two sickles, a broken bar of unknown use, an axe, a ploughshare, and a knife lay closely together in an area of 70 x 80 cm (Figure 4). Several of the objects were broken and incomplete. They date from the end of the La Tène period (Lt C2/D1-2) (Waldhauser 1995: 422-424). The excavations of the Late La Tène oppidum of Yverdonlès-Bains in Switzerland (canton of Vaud) brought to light another significant example of an intentional deposit. It was situated in one of the fronting ditches of the fortification, close to the western gate and the main road leading to this gate (Figure 5). First of all, a statue made of oak lay in the backfill of the ditch. The bottom part of the statue was broken, but it is still 70 cm tall and represents a man wearing a short tunic and a torque around his long neck. He holds another torque in his right hand. According to dendrochronology, the statue was made in 68 BC, whereas the backfill of the ditch was deposited later, around the middle of the 1st century BC. 38 complete bovine mandibulae (20 left and 18 right lower jawbones), as well as 19 fragmented bovine scapulae, all of which originated from cattle of different ages and sexes, accompanied the statue. Apparently,



Figure 4: *Oppidum* of Stradonice. Implement deposit placed in a pit cut into the bank of the rampart (after Drda and Rybová 1997, Figure 24 and Waldhauser 1995, Figure 1).



Figure 5: *Oppidum* Yverdon-lès-Bains. Wooden statue and its location in the backfill of ditch 2, situated in front of the rampart (after Brunetti 2001, Figure 12).

only one jawbone per cattle was chosen, which roughly corresponds to three tons of consumed meat. Cut marks on the bones suggest that the meat was actually consumed as food. In addition, bite marks also indicate that these bones had been accessible to carnivores for some time before they were finally buried in the ditch (Brunetti 2007: 509-521; Olive 2007: 488-508).

These examples show that rituals related to the ramparts, like sacrifices and offerings, were also organised after the construction of the earthwork was completed. The remains of these sacrifices and the instruments used during ritual ceremonies were then deliberately buried in the ditches or in pits dug into the walls or in places nearby. This might have happened very shortly after the erection of the monuments, but also years or even decades later. The deposit from Yverdon-lès-Bains, which could be precisely dated through dendrochronology, clearly illustrates the latter case: the fortification was built around 82 to 80 BC, but the statue was only carved after 68 BC, and the ditch filled around 50 BC. Furthermore, we may assume that rituals associated with hillfort ramparts did not only take place once on special occasions, such as the inauguration or the abandonment of the settlement. Illomened events - like murder or a solar eclipse - could result in ceremonies, which were meant to restore peace and harmony (Karl 2008b: 94-95). Rituals might also have been performed regularly or periodically, for example every year or every season on a certain day. In analogy to the classical Roman world, rites relating to fertility and protection of the settlement's inhabitants and boundaries might be suggested (Karl 2008a: 127; von Nicolai 2014a: 49-53. 171).

There are also numerous single finds as well as larger collections of artefacts located close to settlement ramparts, ditches and entrances. Many of these



Figure 6: *Oppidum* Altenburg-Niedenstein. Mass find in front of the rampart (after Söder 2004, Figure 15).

examples were found in secondary contexts during excavation, for instance at the bottom of the ramparts, as the original contexts had often been disturbed by later activities. Hence, their original stratigraphical relationship to the monuments is often unknown. At the Late La Tène *oppidum* of Vernon in France ('Camp de César', department Eure, Haute-Normandie), for example, mainly weapons, elements of horse harnesses, sheet metal and coins were scattered on the road surface of the entranceway, most notably close to the gatehouse. Many of the 30 registered items appear to have been bent, broken or pierced deliberately. They were later covered by the remnants of the collapsed gate, which they probably had been nailed onto before (Dechezleprêtre 2000: 23-43).

Between 1987 and 1990, illegal detectorists and then archaeologists excavated almost 220 artefacts on a surface area of 130×30 m on the south-western slope

of hillfort of Altenburg-Niedenstein in central Germany (Schwalm-Eder-Kreis, Hesse). The find complex included weapons, tools, iron ingots, agricultural implements, keys, metal parts of wooden containers, nave hoops, fragments of iron tyres, horse harnesses, fibulae and belt hooks (Figure 6). The different items of this find complex had been assembled over a longer time during the Middle and Late La Tène period (La Tène C1 to D1) and many weapons were intentionally damaged. The excavations did not reveal any archaeological features, but the finds were located within the topsoil or directly below the humus layer (Söder 2004: 107-111). Taking into account the context of their discovery, it seems plausible that the mentioned items might originally have been exhibited in public for a certain time before they were either taken off the walls and gates or fell accidentally to the ground, where they might have been displaced by erosion or human activities. It is interesting to note that these large collections of valuable metal objects were not recycled or reused, notwithstanding the fact that they were easily accessible to everyone (Müller 2007: 367-373). Fixed to the entrance gates or walls, or displayed in front of them on poles or platforms, they might also have been deliberate donations, such as offerings or trophies, displayed in a highly visible manner close to the settlement boundaries.

Human Skeletal Remains and Burials in Association with Fortifications

Apart from deposits containing metalwork, ceramics, animal remains, etc., inhumation and cremation burials, as well as disarticulated human skeletal remains, are also associated with the enclosure lines of Iron Age fortifications. For this paper, 18 burials and 13 skeletal remains from Iron Age hillforts have been studied. In general, inhumations occur much more frequently than cremations (14 inhumations, three cremations) and all burials are single ones. Burials equally concerned both men and women; infants and children as well as adults of all ages are represented. Individuals could be interred either without or with ceramic urns, coffins or stone cists, and with or without grave goods. These interments were located in the same locations as the deposits of material culture mentioned earlier: beneath and within the ramparts, in pits or ditches, or in close vicinity to them, as the following examples will demonstrate. The skeleton of a 40 to 60 year old man was discovered within the murus gallicus of the oppidum at Basle cathedral hill (canton of Basle, Switzerland).



Figure 7: *Oppidum* Basle. Skeleton discovered within the *murus gallicus*. Horizontal section of the *murus gallicus* at the bottom level of the skeleton (after Deschler-Erb 2013, Befundtafel 48).

The deceased lay on his back in the timber boxes of the rampart, without grave goods (Figure 7). His remains were then covered by the growing rampart. In medieval times, this burial was disturbed when a ditch was excavated, so the skeleton is incomplete (Deschler-Erb 2013: 40-44). Since the burials excavated underneath, within, or in close vicinity to the ramparts occur outside of the existing cemeteries, archaeologists tend to interpret them as 'foundation sacrifices' (e.g. Härtl 2005: 93; van Endert 1987: 15-16). There are, however, other possible interpretations. As the practices involved in such interments presumably differed considerably from the usual funerary rites, we might assume that they represent 'special', 'irregular' (Veit 2013: 12) or 'deviant' burials. These kinds of burials are generally characterised as being different from graves that are 'normative' for a certain period and a certain area in matters of body position, treatment of the deceased, location and external characteristics of the grave, as well as concerning the grave goods (Aspöck 2008: 17). The reasons why such a special treatment was accorded to some members of the society can be manifold: some people might have occupied a particularly low or a particularly high social status within the community, or they might have been outsiders (Veit 1996: 27-28). Archaeologically, this special treatment can be reflected in different ways. On the one hand, a 'non-ritual' way of burying someone might indicate a refusal of a 'regular' burial, to the point of not burying the deceased at all. On the other hand, a burial that differs considerably from the ones typical for the respective community might be a way of singling this person out from the

> 'ordinary' people, as it is the case with lavishly equipped monumental burials that are often characterised as 'princely graves' (Veit 2013: 19). If we accept the assumption that the human skeletons excavated under, within, or close to the lines of enclosure of prehistoric hillforts are 'deviant' burials, we presuppose that the respective individuals died shortly before or during construction works, which lasted probably several months or up to one or two years. The dislocation and secondary burial of individuals who died a longer time ago, but whose corpses were not yet completely decomposed, can also be taken into consideration. Normally, the causes of death remain unknown, as fatal strikes are only rarely attested. Such is the case at the oppidum of Kelheim (district of Kelheim, Bavaria, Germany), where the calvarium of a 50 to 60 years old man was found in a pit situated in front of the rampart. The man had been hit by a sword from behind and certainly died from this injury (Herrmann 1973: 141; Leicht 2000: 89-90). Other people might have suffered a sudden death due to suicide, childbirth,

punishment, etc. However, it is actually difficult to distinguish between 'deviant' and 'typical' burials during certain periods like the Late La Tène period in some regions of southern Germany or parts of Switzerland, where burials and regular cemeteries are missing to a large extent. Instead, human skeletons and disarticulated skeletal remains are often recovered in settlement contexts, in pits, ditches, or storage pits, sometimes intermingled with ordinary settlement refuse, sometimes associated with other finds. They are often interpreted as being the results of multistage funerary rituals performed in consecutive phases. These burial customs probably included openair exposure on a mortuary platform, decomposition, decarnation and dissection of the corpse on a mortuary site, probably followed by the removal of some relics and their transport to a settlement, where they were kept for an indefinite period of time (Jud 2007: 147-160). Considering these practices, the placing of corpses below, within, or in close proximity to ramparts does not appear to be this deviant any more. Consequently, the British archaeologist R. Whimster, who has studied burial practices in Iron Age England, has regarded these instances of burials as resulting from intentional and standardised customs that fulfilled particular functions for the respective community (Whimster 1981: 29-31; 179-189). Moreover, we also have to take into account the existence of older burials, which were - for some reason or by chance - covered by the growing rampart during construction works. This might have been the case at the oppidum of Bern in Switzerland (canton of Bern), where two burials were found under the rampart. The inhumation burial of a woman, interred without grave goods, was installed directly on the former occupation layer (Müller 1996: 56). The other burial was a cremation burial of a woman and a child aged two to five years, whose incinerated remains were inserted in an urn and placed together with two more vessels in a pit dug into this occupation layer. The pit was subsequently sealed with several stones and then covered by the *murus gallicus* (Müller-Beck and Ettlinger

1963: 43-54). Both burials and the rampart date from La Tène D2, but our dating methods are too imprecise to decide whether only several days or several years had passed until the latter was erected. Since another grave, which was excavated in close proximity to the first ones, had no stratigraphical relations to the rampart (Müller-Beck 1955/1956: 307-309), it is likely that all three were built before the enclosure line, but still visible at this time, so as to be intentionally included in the new monument.

Disarticulated human skeletal remains recovered at various locations under, within, or close to the ramparts of hillforts in central and western Europe can be interpreted in a similar way. In general, skulls or fragments of skulls prevail. Other kinds of bones, mainly long bones, only occur in combination with these skulls. Most of the skulls and long bones belong to adults, often men of all ages, whereas skulls of children are far less frequent. A characteristic example is known from the Závist oppidum in Bohemia (district of Prague-West, Středočeský kraj, Czech Republic). The skull of a young man was buried in a pit situated at the north-eastern wing of Gate A. The lower jaw of the skull and the cervical vertebrae were missing. The effects of a blunt force trauma were visible at the left front side. Alterations due to weathering suggest that the skull was originally exhibited in public for a long time before being deposited in the pit by the end of the 2nd or during the 1st century BC (Likovský and Drda 2003: 295-296; Motyková et al. 1990: 426-427). Moreover, the ditch close to gate D of the same oppidum also provided a human facemask, which was pierced in order to be able to suspend it somewhere (Motyková et al. 1990: 366; Drda and Rybová 1993: 66). Within the body of the rampart of the Wallendorf hillfort ('Kasselt' or 'Castellberg', Eifelkreis Bitburg-Prüm, Rhineland-Palatine, Germany), a site that was used during the 5th and 4th, and after a longer interruption again during the 2nd and 1st centuries BC, fragments of the skulls of a child and three adults were inserted (Figure 8). The



Figure 8: Wallendorf hillfort. Location of a child's skull deposited in the rampart (after Krausse 2006, Figure 127).

radiocarbon dating attributed the child's skull to 2146 ± 26 cal BP, calibrated 234 ± 92 BC. It was therefore older than the *murus gallicus*, which was probably erected during the last quarter of the 2nd century BC (Härtl 2005: 58; Krausse 2006: 203).

Like the burials, human skulls and other isolated human bones found in association with enclosure lines might be the remains of multi-stage funerary practices which finally resulted in the secondary (or tertiary) interment of some parts of the bodies, usually the skull, under, within, or next to the settlement rampart. Depending on the time that had passed between the death of the respective individual and the insertion of their mortal remains into the building, these remains might even have been considered as relics of ancestors (Härtl 2005: 94) who were important for the community. This idea is endorsed not only by the skull from Wallendorf, but also by an example discovered at Nahekopf (district of Birkenfeld, Rhineland-Palatine, Germany). Several fragments of skulls, mostly mandibles belonging to at least three adults of undetermined sex, were recovered behind the murus gallicus. Radiocarbon dating indicated an age of 2202 ± 38 BP, calibrated 380-179 BC, whereas the rampart was built later, during the second half of the 2nd or the 1st century BC (Miron and Sauer 2008/2009: 249-272). Another closely related hypothesis is plausible, too. As the alterations due to weathering on several skulls like the one from Závist show, skulls were often displayed in public for a long time, for instance at the walls or gates of a hillfort, before they were either buried in the rampart, in pits and ditches, or fell incidentally to the ground (Rousseau 2012: 132-133). They are therefore comparable to the human skulls known from settlements and sanctuaries in south-eastern France during the Iron Age in a twofold form. On one hand there are various genuine skulls, found in parts or complete, for example at Les Pennes-Mirebeau 'La Cloche' or Aix-en-Provence 'Entremont' (both department Bouches-du-Rhône, Provence-Alpes-Côte-d'Azur), that normally belong to adult men; iron suspension attachments and nails piercing these skulls clearly prove that they were originally exhibited openly at buildings or gates (Mahieu 1998). On the other hand, Iron Age sculpture in southeastern France has an explicit preference for human heads and masks (Arcelin and Rapin 2003: 188-192). Both actual skulls and their figurative representations are understood as têtes coupées ('cut heads') that could have either belonged to ancestors, whose relics were venerated and probably attributed a protective function, or be taken from killed enemies, thus being trophies (Arcelin and Gruat 2003: 201-209). This second hypothesis might also be true for the human skulls found close to entrance gates and walls in western and central Europe, like the one from Závist.

Conclusion: the Appropriation of Space in Iron Age Europe

Deposits related to the enclosures and entrance gates of fortified settlements occur all over western and central Europe during the Iron Age. They manifest both regional and chronological characteristics (von Nicolai 2014a: 180-188; von Nicolai 2014b: 115) but many, if not all, of these deposits seem to witness repeated and formalised activities, which can be classified as being ritual in nature. Interestingly, the practice of deposition in association with settlement boundaries is not restricted to monumental hillfort ramparts, but it is also attested at smaller sites, such as the enclosed farmsteads of the Late Iron Age in northern France, southern Germany and southern England (Cunliffe and Poole 2000: 93-100; Gransar et al. 2007: 553-556; von Nicolai 2009: 527-530). Even unfortified villages, whose boundaries are only marked by slight fences or palisades, have sometimes provided finds that can be associated with this phenomenon (von Nicolai 2014a: 116-117). Other regions in Europe, such as Britain (for example Hingley 2006: 224-229. 240-252; Haselgrove 2015: 29-32; Ralston 2006: 125-142), Spain or Italy (von Nicolai 2014a: 122-131), have equally yielded evidence for the close association between hillfort enclosures of the Metal Ages and deposits. In southern France, metal objects were deposited close to settlement enclosures during the Iron Age (Golosetti 2009: 298-300; Golosetti 2016: 244-249; von Nicolai 2014a: 127-131), but there is also evidence that stone stelae from older sanctuaries (dating from the 8th to the 6th century BC) were reemployed as lieux de mémoire (sites of memory) in the construction of settlement ramparts between the 6th and 4th centuries BC (Golosetti 2011: 149-156). Furthermore, the tradition of depositing objects close to or within boundaries is not only common in the Iron Age, but can be retraced to the Early and Middle Bronze Age (Figure 9). It became a common phenomenon during the Late Bronze Age, but subsequently the number of deposits dramatically dropped during the Hallstatt period. From the Early La Tène period onwards, deposits found close to settlement boundaries once more occur frequently. Gradually increasing over the Late Iron Age, a remarkable peak in the number of deposits can be recognised during the last phase of the La Tène period (La Tène D), between 150 and 25 BC (Figure 10). Deliberate, ritual deposition, either within or immediately adjacent to boundary features on fortified sites, continued during the Roman period in the north-western provinces of the Roman empire, although apparently on a smaller scale (von Nicolai 2016: 327-328). It is also attested during the Roman Iron Age in the Continental North Sea zone (Hamerow 2006: 23-26). In some parts of Europe, such as Anglo-Saxon England, this practice of depositing metalwork, human and animal remains even seems to persist until the early medieval period, from the 5th to the 9th centuries



AD (Hamerow 2006: 9-12; Hamerow 2012: 129-140; Naylor 2015: 133-137; Reynolds 2009: 218-219; Sofield 2017: 196-197).

How can we explain this widespread preference for settlement boundaries? In pre-modern societies, settlements as well as houses and territories structured people's living environments and constituted their regular spheres of activities. They formed a safe and familiar endosphere, which was always threatened by the dangerous, excluded exosphere. As a consequence creating a clear barrier to the outside world by symbolic and material signs was necessary. Thereby, the walls, ditches and entrance gates were perceived as 'spatial passages', being liminal, ambiguous and transitional areas within the microcosm of a settlement, as Arnold van Gennep has already pointed out in 1908 (van Gennep 1986: 28-33; see also Parker Pearson and Richards 1994: 24-25). Apparently, this liminal area was considered particularly suitable to act as an arena for ritual activities, which can therefore also be interpreted as collective rites of passage. These were performed at special occasions during the existence

of a settlement or at cyclical intervals. Foundation sacrifices and offerings made before and during the construction process belong to the first category of rituals, as foundation deposits 'mark the importance of what is being founded by establishing a privileged link between the structure involved and transcendent powers. The presence of foundation deposits indicates a particular relationship to and sacralisation of space on the part of those using the structure' (Osborne 2004: 7-8). They could also have had an expiatory meaning, conducted in order to reconcile local spirits thought to be disturbed by building activities. Hence, by erecting lines of enclosure, the occupants took possession of the space they intended to use and to exploit in the future. This appropriation of a certain territory was both a physical and a symbolic act, which was further reinforced by performing rites of passage and by communicating with the concerned supernatural powers. Rituals that took place periodically after the construction of the hillfort enclosure, as well as those organised at special events or critical moments, could grant the stability, the perpetuation, and vitality of the settlement, as well as the community inhabiting it. Both probably regenerated the separation between the endosphere and the exosphere and revived the protective mechanisms related to settlement boundaries. Likewise, human skulls, as well as other detached human remains displayed on walls and gates or placed within the body of the monuments in the context of multi-stage funerary practices, could have had a similar protective, but also an apotropaic effect, whether they were attributed to ancestors or belonged to enemies (Karl 2008a: 124-125). As liminal and transitional areas, the walls and ditches were also thought to be appropriate places to bury persons holding a particular position in the society (Harding 2012: 211-215). On the one hand, these could be regarded as ancestors, having a positive and apotropaic influence on the community. On the other, outsiders to the community were perhaps (hastily?) buried in a marginal area of the settlement, between the inside and the outside world. By mere archaeological means, it is difficult to decide in favour of one of the presented options or against it. However, what clearly emerges from what has been said so far is the importance people attributed to the settlement boundaries as structural elements that created and ordered their living environment. The lines of enclosure surrounding hillforts were an important component of social life because they symbolised the appropriation of space in a permanent and highly visible manner. Moreover, this appropriation was confirmed time and again during the lifecycle of a settlement by rituals which probably involved all inhabitants. As a consequence, both monumental buildings and deliberate deposits, which bear testimony of significant social actions, constitute one of the key elements for our understanding of the Metal Age communities of western and central Europe.

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Some symbolic and chronological aspects of rock art of the Hillfort Culture, northwest Iberian Peninsula

Fernando Coimbra

Abstract

For several decades, rock art in the area of the Hillfort Culture was understudied, mainly in the Portuguese region, where some rocks with cup-marks, among other figures, did not receive the attention of some researchers who were studying local protohistoric settlements. However this situation is slowly changing, after the progressive discovery of new carved rocks at several settlements in Portugal and Galicia and the publication of articles and monographs regarding some hillforts. Nevertheless, a global view of the rock art that exists in these settlements is still missing. In a general way, in the Hillfort Culture, almost all the carved rocks appear inside the area limited by the defensive walls, seeming on first observation to have been produced by the Iron Age inhabitants. However, this does not solve the chronological problems created by this kind of art. Indeed, if some motifs are easier to date, for several reasons, others can predate the protohistoric settlements where they still exist. Thus it is necessary to distinguish the Hillforts Rock Art from rock art *in* hillforts. This contribution, besides discussing the chronological problems mentioned above, tries to contribute to the establishment of a typology of motifs of the rock art produced by the populations that lived in the fortified settlements in the northwest of the Iberian Peninsula. Some of these examples also constitute real historical sources for a better understanding of the symbolic ways of thought in the 1st millennium BCE.

Keywords: Hillfort Culture, rock art, symbolism, chronology

Introduction

For several decades, rock art of the Hillfort Culture in the northwest of the Iberian Peninsula (Figure 1) has been understudied, mainly in the Portuguese area, where some rocks with cup-marks, among other figures, have been overlooked by some researchers studying local protohistoric settlements.¹ However this situation is slowly changing, after the progressive discovery of new carved rocks at several settlements in Portugal and Galicia, and the publication of articles and monographs on some of these hillforts. Nevertheless, a global view of the rock art to be found at these settlements is still missing.

Generally, almost all the carved rocks related to Hillfort Culture appear inside the area limited by the defensive walls, seeming on first inspection to have been produced by the Iron Age inhabitants. However, this does not solve the chronological problems created by this kind of art. Indeed, if some motifs are easier to date, due to the existence of parallels in the iconography of other Iron Age Cultures, others appear in earlier periods, such as the transition from the Copper to the Bronze Age, and others have later developments, with a revival beyond the change of era. This is the situation at several hillforts in the northwest of the Iberian Peninsula, where rock art manifestations previous to the arrival of Iron Age populations can be found. Thus it is necessary to distinguish the Hillforts Rock Art from rock art *in* hillforts (Alves and Reis 2008).

These hillforts, or fortified settlements, are known in Portuguese and Spanish languages as castros (from the Latin *castrum*, which means fortification).

One of the first inventories of hillforts with rock art was made by E. Pereira Garcia, F.J. Costas Goberna and J.M. Hidalgo Cuñarro (1999), in which the authors, among other aspects, make some considerations about the importance of the localization of the engravings inside or outside settlements, and the interest (or not) given to them by the inhabitants.

Two years later, J. Rey Castiñeira and M.J. Soto-Barreiro (2001) stressed the need to study the problematics of hillfort rock art according to the chronologies of these settlements. They presented a list of 64 cases of hillforts with rock art in the north of Portugal and Galicia (Spain). Some years later, L. Bacelar Alves and M. Reis (2008) reported 29 new cases in the district of Vila Real. However, so far the largest concentration of *castra* with examples of rock art is located in the province of Pontevedra (Galicia).

Although considering briefly symbolic aspects of some motifs of hillfort rock art, it is not the aim of this

 $^{^{\}rm 1}\,$ In a corpus on Portuguese rock art by Santos Júnior (1942), the author even refers to deliberately not mentioning rocks where only cup marks appear.



Figure 1: Area of the Hillfort Culture (indicated by number 1) (adapted from Silva 1986).

contribution to propose any interpretations of these figures, which would require a different approach.² In addition, the rectangular rock basins found at hillforts in Portugal and Galicia are also not considered here, as they are functional in character, being small mills.

Typology

Besides discussing the chronological issues mentioned above, one of the aims of this contribution is the elaboration of a typology of motifs of rock art that may have been produced by the populations that lived inside those hillforts. This typology is very diverse, but it can be organised into four main groups: anthropomorphic figures; zoomorphic figures; geometric figures; and symbols. Most of the engravings are made by pecking on granite outcrops, but there are also a few examples on schist, produced by filiform incision.

Anthropomorphic figures

This kind of figure is very rare in hillfort rock art. One of the few known examples is the warrior from Monte do Castelo, in Penafiel (Figure 2), with a short sword in his right hand and a round shield on the left (Correa 1927). These weapons have the same typology as those represented on Hillfort Culture warrior statues.

Regarding anthropomorphic figures, there is also the image of a man on horseback, with a spear in his hand, pecked on granite, found at Citânia de Sanfins



Figure 2: The warrior from Monte do Castelo (after Corrêa 1927).

(Portugal), in what seems to be a deer-hunting scene (Jalhay 1947; Silva 1983; Coimbra and Oosterbeek 2012). These engravings were cut from the original outcrop many years ago for fear of vandalism and are presently kept and displayed in the Museum of Citânia de Sanfins (Figure 3).

Iron Age deer-hunting scenes are rare in the north of Portugal, however one example exists from outside the area of the Hillfort Culture, on Rock 23 from Vale da Casa (Baptista 1983), where a man on horseback, with

 $^{^{\}rm 2}\,$ Nevertheless, in other publications we have provided some interpretative analyses of several rock art motifs (Coimbra 1999; 2008; Coimbra and Tosana 2010).



Figure 3: Hunting scene (?) from the hillfort of Sanfins (F. Coimbra).

a spear on his right hand, is trying to hunt a deer with the help of several dogs.

Human footprints may be considered as partial anthropomorphic figures, appearing more often in hillfort rock art than the previous examples. They can be produced by contour only, or by full pecking around the foot. Examples of these two techniques can be found at the hillfort of Briteiros in Portugal (Coimbra 2004; 2015: fig. 6), and respectively on Rock 4 and Rock 11 (Cardoso 2015).

In most cases these figures seem to have used, as a model, the own feet, bare or in a shoe (Gomes, Monteiro 1977), with the aim of testifying to the presence or passage of certain individuals. Authors such as M. Garcia Quintela and M. Santos Estévez (2000) argue that several footprints from Galicia may have been related to Celtic royal rituals. Interestingly, with the passing of time, popular imagination has many times attributed a sacred significance to footprints, i.e. the Pegada de Jesus (the Footprint of Jesus) at Cabeceiras de Basto; Pegadinhas de S. Gonçalo (the Footprints of St Gonçalo) at Perozelo, Penafiel; and *Pegadas de Santa Eufemia (the Footprints of St Eufemia)* at Covide, Terras de Bouro, among several examples. Despite all these not being related to hillfort rock art, they can contribute towards a better understanding of the carved footprints present in those settlements.

Footprints can appear isolated, associated with other motifs, or be depicted in a pair (left and right). The latter is rare,³ but it can be seen at Quinta dos Laranjais, at the base of the Sabroso hillfort (Cardoso 2015: fig. 369).

They can also be associated with cup-marks, as found on Rock 1 from hillfort of Roriz (Barcelos, Portugal) (Figure 4), in the hillfort of Assunção (Monção, Portugal) (Marques 1986), in the hillfort of San Martiño (Arbo, Galicia, Spain) (Santos Estévez 2003), and Monte Pinceira, Gondomar, Galicia (Pereira *et al.* 1999).

Isolated footprints can also be seen on Rock 4 (right foot) and Rock 11 (left foot) from Briteiros.

The depiction of human footprints sees a revival during the Roman period, on some ritual stele, such as examples from Itálica (Santiponce, Sevilla), Baelo Claudio (Cadiz) and Rosino de Vidriales (Zamora), among

others. Through the inscriptions on some of them, one becomes aware that, for example, the representation of two pairs of feet in two different directions constitutes a good luck charm for a good trip and a safe return (Coimbra 2008).

Zoomorphic figures

The animals represented in this group are horses, deer, fish, and snakes. So far, horses only appear at two hillforts: Formigueiros, Lugo, Galicia (Meijide Cameselle *et al.* 2009) made by filiform incision, and at Sanfins, in the above-mentioned hunting scene, which includes the only deer representation known so far inside hillfort walls (Figure 3).

Depictions of fish can be seen in the three beautiful examples from Formigueiros, all made through filiform incision (Figure 5). In terms of protohistoric art, fish and horses appear, for example, in the golden diadem from Moñes (Astúrias, Spain) dating from the 2nd century BC, with symbolism associated with the Otherworld (Marco 2008).

Snakes constitute the more represented case of animals depicted in this kind of rock art, all made by pecking. They appear, for example, at the hillforts of Santa Tecla, Troña, San Martiño, Cedeira, Coto de Penalba, Oia and Gargamala (all in Galicia) (Gomes 2010), and at the hillforts of Sanfins, Baldoeiro, Monte do Castro, Cárcoda and S. Jurge (in Portugal), among other examples.

In the Museum of Citânia de Sanfins there is a sculpture in granite of a snake head, related, perhaps, to some unknown protohistoric cult. Examples of snakes in rock art appear much more often inside hillforts than outside (Rey Castiñeira and Soto-Barreiro 2001).

³ It appears also at Fontes de Cid, municipality of Seia (Portugal), but outside the Hillfort Culture area (Ribeiro *et al.* 2010).





Figure 5: Incised fish from the Hillfort of Formigueiros (I. Vilaseco).

The dating of these figures is not easy, since they exist in the north west of the Iberian Peninsula before the appearance of the Hillfort Culture, i.e. the snake from Pedra da Beillosa, in the Province of Pontevedra (Peña Santos 1979).

Geometric figures

This group has the largest variety of motifs, consisting of circles, spirals, squares/rectangles, labyrinths, meanders, double triangles, 'hooks', cup-marks, and channels. At the same time, it is the group that brings more difficulties in dating, since some of them may predate the Hillfort Culture. This problem is particularly present in the case of circles, a motif that is 'omnipresent' in so-called 'Atlantic Rock Art', which predates the presence of peoples from the Hillfort Culture.

Therefore, rocks with concentric circles, which appear in hillfort areas such as Briteiros and Sabroso (Cardoso 2015), among others, may be prehistoric instead of dating from the period of hillforts. However, at Formigueiros there is an incised circle in schist, with 11 internal lines, as spokes (Meijide *et al.* 2009), associated with double triangles – which are usually dated from the Iron Age. In Briteiros, a similar circle, but with eight internal lines, pecked on granite (Figure 6), may, according to Cardoso (2015), be more recent than other engravings in the same area. There are some engravings on the back of the stele from the ritual baths in Briteiros, one of which is a circle with four internal lines (Cardozo 1931), having probably a similar chronology to the monument where it was made.⁴

Spirals can be found at several hillforts, e.g. Briteiros and Santa Tecla, and they present the same chronological problems as circles. However, a double spiral from Briteiros, carved on a granite outcrop

(Cardoso 2011: fig. 6; 2013) has probably a protohistoric chronology, due to the similarity with some patterns found on Iron Age pottery from the same culture (Coimbra 2015).

Squares/rectangles are quite rare for the Hillfort Culture, but they do appear at Castro da Cividade (S. Xurxo de Sacos, Cotobade, Pontevedra) and Troña, also in the province of Pontevedra (Pereira *et al.* 1999). Having said this, they are very frequent when it comes to incised Iron Age rock art found outside hillforts (Coimbra 2016).

Labyrinths can be seen at the hillfort of Formigueiros (Meijide Cameselle 2012), with two examples made by filiform incision. The best preserved engravings from this hillfort are depicted on the pavement of a small square, surrounded by houses, and seem to have been 'distributed with some apparent sense of order' (Meijide Cameselle 2012: 5). More engravings were found 'on small stones, reused in the walls of the houses, and

⁴ There is a similar rock-art figure from the Iron Age settlement of Crastoeiro (Mondim de Basto, Portugal) (Dinis and Bettencourt 2009: fig. 7), together with engravings typical of Atlantic Rock Art (Dinis and Bettencourt 2009: fig. 10). These authors consider that the circle was a later addition than the other figures.



Figure 6: Segmented circle from Briteiros (after Cardoso 2015).



Figure 7: Engravings from Crastoeiro (the arrows indicate figures added later) (after Dinis and Bettencourt 2009).

recovered during the process of excavation, some *in situ* and others within the debris from collapsed walls' (Meijide 2012: 6), with figures such as net-patterns, a triangle, a fish, and another labyrinth, more complex and elaborate than the other two.

Meanders appear in a slab from Monte Mozinho (Penafiel, Portugal) (Sousa 1998) and on the back of the stele from the ritual baths in Briteiros. Regarding the first example,⁵ in the middle of the meander it is possible to identify a swastika turned left (Coimbra 2015: fig. 4).

One example of double triangles can be found at Formigueiros (Meijide Cameselle *et al.* 2009), however

this motif is very frequent in incised rock art at several parts of the Iberian Peninsula, dating from the first millennium BC (Coimbra 2016).

So-called 'hooks' are present on a small stone found inserted on a wall of an Iron Age building at the hillfort of Guifões, near Oporto (Coimbra 1999), associated with small cup-marks and a swastika. Similar 'hooks' can also be seen at Crastoeiro, near a 'horseshoe' with an inner cup-mark (Figure 7).

Cup-marks constitute the most frequent rock art motif to appear in the hillfort area, but they raise chronological problems, mainly when they are represented in isolation, without the association of other figures, since some of them may predate the settlements where they are located.⁶ However, rocks or stones with cup-marks sometimes have a more secure

chronology, existing in archaeological contexts, e.g. a stone with 14 cupmarks found at the hillfort of Guifões (Santos 1962; Coimbra 2001), dated from the 1st century BC, and another stone found in an archaeological context at Valinhas hillfort (Arouca, Portugal) (Figure 8) in a level that can be dated from the Late Bronze/Early Iron Age.⁷

At Roriz hillfort (Barcelos, Portugal), some cup-marks are associated with footprints, thus possibly having the same chronology as the Iron Age settlement (Figure 4).

On several carved rocks, cup-marks appear associated with channels, e.g. at Santa Tecla hillfort (Costas Goberna 1988) and, *inter alia*, the hillfort of Assunção (Marques 1986).

Symbols

This group encompasses two swastikas, 'horseshoes', and the 'Solomon's Knot' motif. The latter is unique in protohistoric rock art; there was a known example from the hillfort of Santa Tecla (La Guardia, Pontevedra),⁸ but unfortunately its location is presently unknown,⁹ although there are photographs and a drawing of it (Martinez Tamuxe 1987; Coimbra 2015: fig. 3).

⁵ This slab is now in the Penafiel Museum.

 $^{^{\}rm 6}\,$ Cup-marks often appear associated with channels, but dating of them is still problematic.

António Silva, pers. comm.

⁸ This article is limited only to examples carved on rocks (outcrops) and not on stones used in architecture, where the 'Solomon's Knot' appears more often (Coimbra and Tosana 2010).

⁹ According to personal information from X. Martinez Tamuxe, it was probably destroyed during the enlargement of the road that extends to the top of the large hill of Santa Trega, where, as well as an archaeological museum, there are several facilities for tourists.



Figure 8: Stone with cup-marks from the hillfort of Valinhas (A. Silva).



Figure 9: The same stone displayed in the Arouca Museum (F. Coimbra).

There are two swastika examples, the more interesting of which was found at the hillfort of Guifões, associated with nine cup-marks, on the same rock that has the above-mentioned 'hooks' (Santos 1963; Cleto and Varela 1999; Coimbra 1999; 2015: figs. 1 and 2). The other example is the one on the previously mentioned meander from Monte Mozinho.

For the first of the two examples, a typological analysis shows that this swastika is very similar to the one found at Giadighe (Valcamonica), having the abovementioned nine cup-marks in a cross shape (Figure 10). The origin of this particular swastika form must have been Valcamonica, in the Italian Alps, where there are 16 examples of it (Farina 1998); they are all carved on outcrops, being locally known as *rosa camuna*, and with examples in England, Sweden and Mali (with only one example so far from each of these countries).

The motif known as 'horseshoe' can be considered as a symbol, because it represents something different from what its image suggests.¹⁰ Indeed, these figures do not depict actual horseshoes, which only appear in the 2nd/1st centuries BC in the Celtic world. Its origins can be looked for in the Upper Palaeolithic, in France (and, of course, a period long before the domestication of the horse, and many millennia before the discovery of iron. Furthermore, there are countless 'horseshoes' dating from Copper/Early Bronze Age in the

Spanish region of Castilla y Leon, i.e. Barranco de Ia Mata and Canada del Monte (both in the province of Soria), and also in the caves known as Cueva de Ias Herraduras I and II (Caves of the Horseshoes I and II) in the same province, among several other examples (Coimbra 2008).

As for hillfort rock-art finds, 'horseshoes' are present at Monte do Castro (Mondariz, Galicia) associated with cup-marks (Pereira *et al.* 1999). At Citânia de Sanfins there is a possible 'horseshoe', pecked in a granite area where there are some rocks with cup-marks (that have never been published).

Final Considerations

Prehistoric rock art known from several hillforts in the northwest of the Iberian Peninsula seems to have been considered by Iron Age populations in two different ways: some figures were probably favoured by the community, having therefore a cultural and ritual continuation, while others were dismissed, i.e. those covered by some house walls, which were built over them, as happened, e.g., inter alia, at Santa Tecla (Costas Goberna 1988) and Assunção (Monção, Portugal) (Marques 1986: fig. 1).

As well as this approach to the pre-existing rock art, the inhabitants of the hillforts also produced rock art of their own, as mentioned in the previous examples above. Furthermore, it is important to keep in mind that other Iron Age populations outside the area of the Hillfort Culture produced many examples of rock art themselves, i.e. in the region of the Côa Valley,¹¹ where,

 $^{^{\}rm 10}$ For a developed approach regarding the interpretation of 'horseshoes', see Coimbra 2008.

 $^{^{\}rm 11}\,$ Besides the mentioned example, in Valcamonica (Italy) about 80% of the 500,000 engravings identified so far are dated from the Iron Age.



Figure 10: Swastikas: from Guifões (left) and Giadighe (right), with cup-marks in a cross shape (after Coimbra 2015).

besides Palaeolithic rock art, there are countless finds of Iron Age rock art (Baptista and Reis 2008). Therefore, why shouldn't the inhabitants of the *castra* also have made their own engravings?

Modern works at some hillforts, carried out in the 20th century, destroyed examples of rock art, e.g. at Santa Luzia (Viana do Castelo, Portugal) (Bettencourt 2009), Santa Tecla (Martinez Tamuxe 1987), and others. This represents the loss of data that otherwise would have featured in studies about Hillfort Culture rock art, which is still understudied - at least in some regions of Portugal. The best way of understanding it is to make an exhaustive study of it and compiling detailed inventories that will contribute to its more precise dating and to a better understanding of the cultural processes affecting the populations that lived in these settlements during the Iron Age. Indeed, some of the examples of rock art found at the hillforts constitute real historical sources for providing a better knowledge of the symbolic ways of thought in the 1st millennium BC in the north of the Iberian Peninsula.

Other and different hillfort rock-art motifs, not mentioned here, may be discovered in the sequence of the development of future research. We hope that the typology presented here may, therefore, be enlarged with any eventual new discoveries.

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Fortifications of the Early Iron Age in the surroundings of the Princely Seat of Heuneburg

Leif Hansen, Dirk Krausse and Roberto Tarpini

Abstract

The Heuneburg was one of the most important centres of power during the Early Iron Age to the north of the Alps. In the first half of the 6th century BC an architectural form was employed for the mudbrick wall of the hilltop plateau and its protruding bastions that could have had its models in the Phoenician/Punic sphere. The chamber gate in the lower town was also constructed in the same manner. A monumental fortification was investigated on the Alte Burg near Langenenslingen, 13 m wide and at least 10 m high. The spur was extensively reshaped and in the Hallstatt period served as a cult or assembly place, perhaps also as a location for games and competitions. On the other hand, the Große Heuneburg was a fortified hilltop settlement that was protected by powerful two-shelled walls. The Heuneburg, the Alte Burg, the Große Heuneburg, and further hilltop sites in the region, will have formed a complex system consisting of a main centre with further dependent central places.

Keywords: Baden-Württemberg, Hallstatt and Early La Tène periods, mudbrick wall, two-shell wall, sanctuary

Between the towns of Sigmaringen and Riedlingen in Baden-Württemberg lies a unique prehistoric site: the Heuneburg near Herbertingen-Hundersingen (Lkr. Sigmaringen). It is unique not just because of the exceptional quality of the archaeological evidence, but also due to the level of research carried out there over the last decades (Fernández-Götz and Krausse 2013; Krausse et al. 2016; 2017a). The Hallstatt period central site was built over the remains of an earlier fortification of the Middle and Late Bronze Age (Gersbach 2006; Stegmaier 2017a). At the height of its prosperity in the first half of the 6th century BC the Heuneburg consisted of the hilltop plateau or acropolis (Burgberg, 3 ha in size), the lower town (Vorburg, c. 1.5 ha), and the outer settlement (Außensiedlung, some 100 ha) (Figure 1). At this time the Heuneburg can rightly be described as the most important centre of power north of the Alps (Krausse 2008; 2010). About 450 BC the Heuneburg was abandoned by its inhabitants and vanished from memory. It was only during the Middle Ages that the hilltop plateau, protected as it was by the remains of the extensive system of ramparts, was once again settled (Böhm 2017; Gersbach and Böhm 2013).

A whole series of hilltop fortifications are also known within a distance of some 20 km from the Heuneburg, which, judging by the few finds they have produced, were occupied during the Hallstatt period (Figure 2). This poses the question of the relationship between these hilltop sites and their connection with the Celtic Princely Seat on the Heuneburg. Within the framework of a long-term research programme financed by the German Research Foundation (*Deutsche Forschungsgemeinschaft*), and is planned to run for 12 years, the further environment of the Heuneburg has been the subject of systematic investigation since 2014 (Hansen *et al.* 2015a).

Fortifications at the Heuneburg

About 620 BC, initially a rampart was built on the remains of the Bronze Age fortification consisting of an earth and timber block construction. It was some 4.8 m wide and completely surrounded the plateau of the Heuneburg (Gersbach 1995: 4-9). Around 600 BC the Heuneburg was then completely restructured and a monumental and completely new kind of fortification, a wall of air-dried mudbricks, was erected. The new fortification consisted of a rubblestone foundation 3 m wide and up to 1.6 m high surmounted by air-dried mudbricks (Gersbach 1995: 10-94). The masonry plinth was intended to protect the mudbricks from rising damp. The mudbricks were laid layer for layer and were rectangular or square, with an average thickness of 8 cm and lengths between 34 and 62 cm (Figure 3). The wall was rendered with clay plaster, a measure that ensured damp could not penetrate the wall's core. The brickwork is preserved to a height of up to 2 m and will originally have been 3-4 m high. Together with the parapet walkway, the entire mudbrick wall is reckoned to have been about 5 m high. On the west side of the hilltop plateau there was a series of projecting, bastion-like towers with a ground area of between 29 m^2 and 55 m^2 (Figure 1). They too were constructed of mudbricks and built on a stone plinth. The towers not only provided protection, but also emphasised the prestigious character of the Heuneburg. Like the wall itself, at this time the bastions, too, were unique in the region north of the Alps.



Figure 1: Model of the Heuneburg with the hilltop plateau, lower town and outer settlement in the first half of the 6th century BC (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Faber Courtial).



Figure 2: The environs of the Heuneburg with further hilltop sites, rural settlements and burial mounds of the Hallstatt and Early La Tène periods (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, J. Abele).





About 530 BC the Heuneburg burned down, and the outer settlement was subsequently abandoned. The mudbrick wall was demolished and the architecture of the fortification on the hilltop plateau saw a return to traditional timber, earth and stone structures.

The source of inspiration for a fortification consisting of an air-dried mudbrick wall on a rubblestone foundation has been sought in various regions. Possibilities that have been suggested are south-west or south France, in particular Massalia and its colonies; Upper Italy/ Etruria; Magna Graecia and Sicily (Brosseder et al. 2003: 69-70; Gersbach 1995: 91-93). In the search for prototypes, the specific method of construction, that is a rubblestone plinth surmounted by a mudbrick wall, does not provide conclusive evidence. In the Mediterranean and the Near East, in other words in Mesopotamia, Asia Minor and Egypt, examples are known from the Bronze Age. Mudbrick walls are then widespread in Greece and Italy in the Archaic period (Burkhardt 2010). Wall towers are found in Greece and Magna Graecia from the second half of the 6th century BC at the earliest, while mudbrick fortifications with towers are completely unknown in Etruria (Hailer 2010). The Greek examples are thus later than the mudbrick wall on the Heuneburg. On the other hand, wall towers are already known from the Phoenician/ Punic sphere for the 7th and 6th centuries, and this is confirmed by Assyrian and Phoenician illustrations. Thus Phoenician/Punic areas - in particular Sicily - are the most likely source of inspiration for the mudbrick wall on the Heuneburg (Hailer 2010: 23-26; Rieckhoff and Biel 2001: 158-160).

Apart from the mudbrick wall, there is another imposing structure at the Heuneburg that could not

have existed without Mediterranean influence (Figure 4). This is the monumental gate in the lower town that was discovered in 2005 (Fernández-Götz 2013; 2018; Kurz 2008; cf. the contribution of Fernández-Götz in this volume). The gate building was 16 m long and 10 m wide, and, exactly like the fortifications of the hilltop plateau, consisted of a mudbrick superstructure on a stone plinth. Several examples of burned mudbricks were found in the demolition rubble and the ditch in front of the gateway. Both of the parallel tongues of the stone gate consist of walls with two outer shells set in clay. The passageway in the gate was over 7 m wide and was additionally narrowed by four opposing, symmetrically arranged protruding offset walls, so that ultimately an opening only some 2.50 m wide remained. Unfortunately the front of the gateway was not preserved, and it is not completely certain whether here too there were two symmetrical offset walls. Narrowing the gateway was a widely used principle of fortification in the ancient world to restrict access through a well-controlled space (Montanero Vico and Asensio i Vilaró 2009). In contrast to the fortification on the hilltop plateau, the lower town was not enclosed by a mudbrick circuit. Instead the gate was incorporated onto a bank and ditch structure. The bank was c. 4 m high and surmounted by a palisade, the ditch in front of it 14 m wide and up to 6 m deep.

The stone plinth of the mudbrick wall and the gate to the lower town were both constructed in the same way, with a rubble core filling the space between two masonry shells. In the case of the mudbrick wall the shell walls consisted of layers of tufa, limestone and sandstone, the core of layers of rubblestone, limestone slabs and stone chips (Gersbach 1995: 10-34). The shell walls of the plinth for the gate were made of carefully



Figure 4: The Heuneburg near Herbertingen-Hundersingen (Lkr. Sigmaringen). Masonry foundation of the lower town gate (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, O. Braasch).

worked limestone blocks with some molasse sandstone. Between the walls limestone slabs the size of the palm of a hand were layered horizontally in homogenous clay (Kurz 2008: 198).

Fortifications on the Alte Burg

A similar, but much more monumental construction is to be found on the Alte Burg near Langenenslingen (Lkr. Biberach), a spur-like outlier of the Swabian Jura (Hansen et al. 2014; 2015a; 2015b; 2016; Figure 5). New excavations have been taking place there since 2014 and have revealed that the entire hilltop was substantially modified in the period Ha D1. In order to obtain a level surface, the plateau, which is some 340 m long and between 55 and 65 m wide, was in places levelled or infilled. Terraces were also created (Figure 5 E-F), and outer fortifications and a surrounding bank and ditch system constructed (Figure 5 A-B; G). In addition, enormous works were undertaken to substantially extend the edges of the hillside, resulting in the regular, tongue-shaped form of the plateau today. To achieve this several massive radial dry-stone walls were built at right angles to the edge of the plateau and the spaces between them filled with stone and clay.¹ In the north-east the Alte Burg was originally protected by a gigantic two-shell masonry wall 13 m thick and at least 10 m high, in front of which was a deep ditch (Figure 5 C-D; Figure 6). Another drystone wall 5.8 m wide butted onto the inner face of this massive wall at right angles (Figure 5 J). There were three post slits set into the end of this wall ('Pfostenschlitz wall') that faced the plateau (Figure 7). The actual shells of the walls were *c*. 50-80 cm thick and consisted of local Jura limestone, and the stones bore no signs of having been worked. The space between the faces was filled with layers of rubblestone. All that could still be documented of the entrance way were two walls on the end of the main wall at right angles to each other and no higher than 1.5 m. They probably formed the north-western part of a gate chamber – much like the foundation of the gate at the Heuneburg. The other side of the gate chamber is probably not preserved due to quarrying activities and the construction of a modern pathway.

The current state of research does not allow any reliable conclusions as to the function of the Alte Burg, but there are first hints that it may have been an assembly and cult place. Indications for this are human skeletons that had been deposited in a shaft (Dürr 2014: 122; 124; Hansen et al. 2015a: 503-504; Kurz 2011: 122), the construction of the walls, ditches and banks, as well as the extensive levelling works that apparently served one sole purpose: the creation of the most smooth and level surface possible for the tongue-shaped plateau. There are no parallels for the shape and dimensions of the plateau among the known Hallstatt fortifications in south-west Germany. It is more reminiscent of the plans of ancient courses for horse or chariot racing (e.g. Humphrey 1986; Thuillier 1999, 59-79; Weiler 1981: 200-206). This interpretation is supported by the observation that there was a well-built Hallstatt road leading from Langenenslingen towards the Alte Burg (Figure 5 H; Böhm et al. 2011; Hansen et al. 2015a: 509-510 fig. 10; Morrissey and Müller 2011: 119-120), as well as the 'spina-like' step that divides the plateau lengthwise (Figure 5 I). The find of a bit (Dürr 2014: 120-121 fig. 66,371) confirms that horses, chariots, or horsemen must have spent at least some time on the

¹ Very similar measures are recorded from the Zähringer Burgberg, near Freiburg, but they are dated to the Alamannic period (Steuer 1990: 24-30). However, a number of Hallstatt and Early La Tène finds are known from the site (Hachtmann 2011). A full evaluation of all the finds and features is necessary to confirm the date.



Figure 5: LIDAR scan of the Alte Burg near Langenenslingen (Lkr. Biberach): A-B) Outer ramparts; C) Ditch; D) Main wall; E-F) Terraces; G) Hillside fortification; H) Old pathway; I) Step in the plateau; J) Wall at plateau edge (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, ArcTron and Ch. Morrissey).

Figure 6: The Alte Burg near Langenenslingen (Lkr. Biberach). Corner situation with the inner face of the main wall, which was preserved to a height of 4.2 m here. The wall at the plateau edge adjoins it at right angles here and its inner face has been exposed (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart , A. Striffler).



hilltop. Given the numerous finds that are impressive confirmation of the importance of elite horse-riding and driving in the region around the Heuneburg in the Hallstatt period (Hansen *et al.* 2018a; 2018b; Krausse and Ebinger-Rist 2018; Krausse *et al.* 2017b: 115-119; Kurz and Schiek 2002: 62-63; Riek and Hundt 1962: 132-152), as well as against the background of Late Hallstatt and Early La Tène illustrations of chariot and horse



Figure 7: The Alte Burg near Langenenslingen (Lkr. Biberach). The internal end of the peripheral wall with the wall faces (blue) and the post slits (arrows) (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, L. Hansen).

racing (e.g. Biel 1985: tab. 25; Lucke and Frey 1962: tab. 75; Teržan 2011), an interpretation of the Alte Burg in this direction seems at least plausible. What does not properly fit, however, is the position of the shaft with the human bones in the north-west half of the plateau. Only extensive excavations can bring more clarity.

The fortifications of the Große Heuneburg

A similarly constructed, impressive fortification is to be found on the Große Heuneburg near Zwiefalten-Upflamör (Lkr. Reutlingen). The complex is divided into a main hillfort (*Hauptburg*), more than 5 ha in size and today surrounded by ramparts, and a 1.5 ha fortified annexe (Vorburg) (Figure 8 A-B). The main hillfort and the annexe are separated by a ditch up to 17 m wide. Broad terraces run along the south and west flanks of the plateau of the main hillfort (Figure 8 C-D; Morrissey and Müller 2011: 324-355). Following first, poorly documented investigations at the end of the 19th century (von Föhr and Mayer 1892: 26-27; 32) in 1921 Gerhard Bersu excavated 40, mostly small trenches (Bersu 1922). According to the results, the rampart of the annexe had two and the rampart of the main hillfort six drystone faces set one in front of the other. Apart from a fireplace, the trenches in the interior produced no significant archaeological features. Most of the finds from the excavations date to the Hallstatt period, although some objects belong to the Middle Bronze Age and the Urnfield period (Biel 1987: 115-117; 330-336; Fiedler 1962: 19).

In 2016 excavations at the Große Heuneburg were restarted (Hansen *et al.* 2016: 124-126). One of Bersu's old trenches through the rampart in the north-west of the main hillfort was reopened, and produced not the six faces, but an impressive two-shell drystone wall (Figure 9). The inner and outer shell each consisted of layered limestone, the infill of rough pieces of stone (Figure 10,1). The wall was 3.6 m thick, and was preserved in the section excavated up to a height of 1.6 m; today, the inside of the west wall is in places still up to 2.6 m high (Morrissey and Müller 2011: 340). This means that the wall must originally have been much more massive, as is confirmed by the rubble collapse lying inside and outside the wall (Figure 10,2). A dark, humous culture layer was identified on the inside of the wall containing mainly Hallstatt finds (Figure 10,3).

An old trench by the east rampart of the annexe was also re-investigated. Behind a two-shell wall a bank of marly material was raised up that was covered by a layer of stone. So far no material has been recovered from this area to provide a reliable date.

A system of connected settlements?

The similarity in the method of construction of the plinths of the mudbrick wall and the lower town gate at the Heuneburg, the massive fortification of the Alte Burg, and the walls on the Große Heuneburg appear to present an architectural peculiarity of the Heuneburg region in the period Ha D1 and indicate that there were close connections between the sites. This is also suggested by an analysis of their mutual intervisibility. There was a direct line of sight between the 'Princely Seat' at the Heuneburg and the Alte Burg 9 km to the north-west that was emphasised by the positioning of burial mounds in the landscape (Steffen 2008). There could also have been visual contact with the Große Heuneburg: a person in the area of the main wall on the Alte Burg at an elevation of 13 m would have been able to see the fortification that lay 5 km to the north-east. The wall was at least 10 m high and its enormous width certainly made it suitable to have supported further structures. This suggests that the Heuneburg, the Alte Burg and the Große Heuneburg were complementary rather than competing sites. The presence of the white ground, red and grey painted pottery at both the Alte Burg and the Große Heuneburg, for example, would seem to confirm this. It is assumed that the Heuneburg was an important centre for the production of this



Figure 8: LIDAR scan of the Große Heuneburg (Lkr. Reutlingen): A main hillfort; B) annexe; C-D) Terraces (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, L. Hansen and Ch. Morrissey; Base map Landesamt für Geoinformation und Landentwicklung).

Figure 9: Große Heuneburg near Zwiefalten-Upflamör (Lkr. Reutlingen). View of the outer face of the two-shell wall in the north-west of the main hillfort. Remains of the collapse from the wall are visible in front of it (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, P. Scherrer).





Figure 10: Große Heuneburg near Zwiefalten-Upflamör (Lkr. Reutlingen). North section through the fortification in the north-west of the main hillfort. 1) Wall core with the wall faces highlighted in grey; 2) Wall collapse; 3) Layer with numerous finds (Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, P. Scherrer and L. Hansen).

ware, which was supplied to much of the Swabian Jura and South-West Germany (Stegmaier 2017b).

At any rate, it is becoming increasingly clear that the Heuneburg was far more than just a 'Princely Seat'. The hillfort plateau is no more than the tip of the iceberg of a much larger settlement that covered an area of more than one square kilometre and played a substantial role in shaping and structuring its hinterland. Besides the Alte Burg and the Große Heuneburg, the Bussen was probably also integrated into this system of main centre and dependent central places, as is indicated by rich burials discovered recently in the vicinity of the hilltop (Hansen *et al.* 2018a; Meyer and König 2016). This system, and not just the Heuneburg, must have formed an architecturally impressive agglomeration.

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The fortifications of the Heuneburg lower town: A summary and evaluation of the 2000-2008 excavations

Manuel Fernández-Götz

Abstract

The Heuneburg in southwest Germany is one of the most important settlements of the European Iron Age. Between the late 7th and the mid 5th century BC the site was surrounded by impressive fortification systems, most notably the early 6th century BC mudbrick wall on the hilltop plateau overlooking the Danube. However, recent research has also provided significant information on the fortifications of the so-called lower town. This contribution will provide an overview of the results from the extensive 2000-2008 excavations, which led to the revision of previous interpretations. Dendrochronological dates confirm the Hallstatt chronology of the banks and ditches that surround the plateau. Moreover, the discovery of a monumental gatehouse from the 6th century BC is an impressive testimony of the important symbolic role of the fortifications as emblems of community power and identity.

Keywords: Early Iron Age, fortifications, Heuneburg, lower town, stone gate

Introduction

The Heuneburg (southwest Germany, federal state of Baden-Württemberg) is one of the key sites of the European Iron Age, and in particular of the Late Hallstatt period (c. 620-450 BC). It represents the most thoroughly investigated Early Iron Age central place (see recent summary in Fernández-Götz 2014; Krausse et al. 2016), and has served to inform different interpretative models on the so-called central European Fürstensitze ('princely seats') (Kimmig 1969; more recently Brun and Chaume 2013; Fernández-Götz and Ralston 2017), considered by some scholars to be the first cities or towns north of the Alps (Fernández-Götz and Krausse 2013; 2016; Fernández-Götz et al. 2014). The new research of the last two decades has fundamentally changed our knowledge of the Heuneburg, which has proved to be much larger and complex than traditionally thought. According to these results, during the first half of the 6th century BC the entire settlement covered an area of *c*. 100 ha, with an estimated population of about 5000 inhabitants (Fernández-Götz and Krausse 2013; Kurz 2010) (Figure 1).

However, for a long time the focus of attention – with a few individual exceptions – was restricted to the 3 ha of the hilltop plateau (*Burgberg*) that overlooks the Danube (cf. Gersbach 1989; 1995; 1996; Kimmig 1983). Its Mediterranean inspired mudbrick wall and the well-preserved settlement stratigraphy were the aim of systematic excavations that set new standards in post-World War II German archaeology. Although the work of Siegwalt Schiek (1959) had already revealed the existence of an outer settlement (*Außensiedlung*) beneath the later tumuli of the Gießübel-Talhau necropolis, it was assumed that this would have been only a few hectares in size (Kurz 2000). It was only during the course of more recent work, carried out by Siegfried Kurz from the mid 1990s in the environs of the Heuneburg, that evidence emerged of the outer settlement being much more extensive than previously suggested (Kurz 1998; 2005; 2007). Moreover, excavations conducted by Hartmann Reim in the area of the so-called lower town (*Vorburg*), at the foot of the hilltop plateau, uncovered archaeological features that started to question the long-presumed medieval dating of its fortification systems (Reim 2000; 2002; 2003).

As late as the beginning of the 19th century, the defensive circuits around the lower town were still clearly visible on the ground as a 'triple rampart'. However, extensive works to extend and improve the quality of the arable land led to large sections of the defensive works being levelled (Schuppert 2013). For a long time scholars assumed that these defences were medieval, but this picture has been completely revised by the recent excavations. Since 2000, there has been a great deal of progress in work on the Heuneburg lower town, both with regard to the settlement evidence and the fortifications (Figure 2).

Settlement layers and bank-ditch enclosure (2000-2003 excavations)

Particularly important for our understanding of the lower town was the excavation in 2000 of an area covering 4000 m^2 (Reim 2000). This large-scale excavation was carried out in connection with the



Figure 2: Overall plan of the 2000-2008 excavations in the surroundings of the Heuneburg hilltop plateau. Green: areas excavated from 2000 to 2003. Red: areas excavated from 2004-2008 (S = main trench numbers). Fortification lines of the lower town: I) inner ditch surrounding the hilltop plateau; II) middle ditch; III) outer bank and ditch of the lower town fortification, which incorporated the monumental gatehouse (after Reim 2003 and www.fuerstensitze.de).

extension of the car park for the new open-air museum that was being built. Protected by a slightly later rampart, unusually well-preserved remains of several early Hallstatt D1 settlement phases were uncovered. Incised, red-painted and graphite Alb-Hegau pottery, as well as metal finds, including two bow fibulae (Bogenfibeln) and a Kolbenkopfnadel, underline this early date. Apart from individual post pits, the remains of two buildings were also found. While only a 6.5 m-long shallow right-angled ditch was all that was left of one, the second was a multi-phase sill-beam structure measuring 7.6 m x 4 m. It had a clay floor and a hearth 0.9-1.0 m in diameter that was renewed several times. The lowermost clay layer of the hearth was placed over the cranium of a 30- to 40-year old man (Figure 3), suggesting that the motivation for the deposition was cultic (Stegmaier 2013). The existence of Iron Age skull cults is well-documented (Armit 2012; Ralph 2007), and it is possible that the hearth was the location of an ancestor cult (Almagro-Gorbea and Lorrio 2011).

The described settlement remains in the area of the present car park were cut and partly covered by a massive ditch and bank system. A clearly recognisable layer of burning separated large sections of the settlement layers from the embankment that covered them. The burning must have been the result of a catastrophic fire, or the intentional destruction of the settlement. Apparently there was only a short period of time between the abandonment or destruction of the settlement and the construction of the fortification. Geological analyses confirm that, following the fire, the surface did not remain exposed for any length of time, so that no recognisable new layers of soil were formed. The ditch and bank system must have been constructed directly over the remains of the earlier settlement.

These excavation results by Reim produced the first evidence indicating that the fortifications at the foot of the Heuneburg hilltop plateau dated to the Late Hallstatt period, and not, as had long been assumed, to the Middle Ages. Since the finds from the settlement layers beneath the embankment correspond to Heuneburg periods IVc and IVb, but no settlement activity of period IVa could be identified, everything points to the construction of these lower town fortifications at an advanced stage in Hallstatt D1 (during the course of the period IVb, or at the very latest at the beginning of period IVa, according to Gersbach's stratigraphic sequence, see Gersbach 1989; 1995). It was also thanks to this work that the preserved remains of the embankment to the right of the stone gate could be attributed to the same ditch and bank system (see below).

During the course of the 2000 excavation, a 55 m-long and 6.5 m-wide stretch of the earth bank in the area of the car park was investigated. The ditch in front of it was 15.5 m wide and 7 m deep. In order to determine the further course of the defences, in 2001 a series of test trenches were opened at regular distances of 20 m along the track to the Talhof farmstead (Reim 2001-02; 2002). Surprisingly it turned out that the ditch did not – as had been assumed *a priori* – run further to the southeast towards the Talhof, but turned at right angles to the north-east up towards the Heuneburg.

Following these results, the archaeological fieldwork in 2002-2003 concentrated on the ditch that ran to the north-east in order to trace its further course, and at the same time gain information about the construction of the earth bank (Reim 2002; 2003). During the course of this work, Late Hallstatt settlement posts, pits and small ditches were uncovered in trenches 3-5. For example, in trench 5 a sunken house was documented, the fill of which contained a tambourine fibula (*Paukenfibel*) that dates the building to Hallstatt D2/D3. It is remarkable that in all three trenches the Iron Age structures were arranged at some distance from the ditch. The area between the ditch and the buildings, which is free of archaeological features, demarcates the course of the

Figure 3: Photograph of the skull fragment from the area of the Heuneburg car park excavations (C. Schwarzer, © Landesamt für Denkmalpflege im RP Stuttgart).



earth bank, and thus indicates that in trenches 3-5 there was no significant Hallstatt settlement activity before the construction of the lower town defences. The archaeological features that were uncovered in the area between trenches 4 and 5 date to the Bronze Age and were partly cut by the later Early Iron Age ditch; they are further evidence for settlement at the Heuneburg during the Bronze Age, which has been documented elsewhere (see Gersbach 2006; Stegmaier 2017).

In addition, a further trench was opened up to the north-east of the remains of the earth bank that are still visible to the right of the stone gate. The ditch of the lower town defences was 8.5 m wide here and dug 3.5 m into the layers of molasse. In the area of the levelled earth bank, numerous sherds of Late Hallstatt ceramics were found (Reim 2003).

While Reim (2000; 2001-02; 2002; 2003) assumed that the ditch and bank system in the area of the present car park was only constructed in Hallstatt D2 – i.e. during the period after the end of the mudbrick wall – Gerd Stegmaier (2010; and in press) was able to clearly demonstrate that the defences must have still been built during Hallstatt D1 (during the course or at the end of period IVb, or at the beginning of IVa). An indication that they could have been built during period IVb is provided by the observation that the three settlement phases beneath the earth bank are certainly compatible with an occupation during period IVc, but are probably not sufficient to cover the entire spectrum of structural phases that are to be expected during periods IVc and IVb.

The results of the 2000-03 fieldwork campaigns suggest the following picture of settlement development at the foot of the hilltop plateau at the Heuneburg:

- 1. During an early phase of Hallstatt D1, the extensive outer settlement reached almost to the foot of the hilltop plateau itself, but there were no defences separating the outer settlement and the lower town.
- 2. At a later stage, during Hallstatt D1, the traces of the settlement at the foot of the hilltop plateau described above were largely destroyed by a fire.
- 3. Soon afterwards, but certainly still during Hallstatt D1, a ditch and bank system was constructed that separated the Heuneburg lower town from the enormous outer settlement, so that the former was now an independent and enclosed settlement area. Unlike the outer settlement, which was largely abandoned at the end of Hallstatt D1, the lower town was still settled during Hallstatt D2/D3, as is evidenced, for example, by numerous tambourine fibulae (*Paukenfibeln*) and fibulae with a decorated foot (*Fußzierfibeln*).

The inner and middle ditches (2004-2006 excavations)

As already noted, the results of Reim's excavations produced the first clear archaeological evidence that the defences of the Heuneburg lower town were not medieval, but were already constructed during the Late Hallstatt period. Furthermore, at about the same time as Reim's work, Siegfried Kurz was able to show that the outer settlement covered an area that was much larger than traditionally thought (Kurz 2005). Thus, it became apparent that the hilltop plateau was no more than the tip of the iceberg, and that large parts of the Heuneburg agglomeration were still waiting to be uncovered. During the later Hallstatt D1 period, the Heuneburg was in fact divided into three separate zones: hilltop plateau, lower town and outer settlement.

Drawing on this very important information, from 2004 large-scale excavations commenced as part of a new German Research Foundation (DFG) priority programme entitled Early processes of centralisation and urbanisation - on the genesis and development of 'early Celtic princely seats' and their surrounding territory (Krausse 2008; 2010). The excavations in the area of the Heuneburg lower town were initially directed by Jörg Bofinger, later by Gabriele Kurz and finally Jörg Biel. The archaeological fieldwork was divided into 16 trenches. One of the main aims was to investigate the bank and ditch system immediately below the hilltop plateau. Following the results of Reim's (2000; 2002; 2003) work, sections were dug at three places across the inner and the middle ditches (trenches 1 and 10, trench 14 and trench 4, cf. Figure 2), revealing a great deal of unexpected information on the dating and maintenance of the ditch system (Bofinger 2004; 2005; Bofinger and Goldner-Bofinger 2008: 214-226).

The initial emphasis was on trenches 1 and 10 directly beneath the northern tip of the hilltop plateau, which were investigated in 2004-2005 (Bofinger 2004; 2005). Thanks to the geological situation, the preservation conditions for organic material were extremely favourable and numerous timbers were discovered just above the bottom of the ditch, which was some 7 m deep here (Figure 4). The wood finds had been excellently preserved in the impermeable layers of clay in the sediments at the ditch's base, and have since been analysed as the subject of an MA thesis at Freiburg University by Anita Goldner-Bofinger (2007). Significantly, many of the timbers had traces of being worked with tools, providing important information about their function and manufacture. The material consists of branches and twigs, but above all various structural timbers such as beams, posts, boards and pieces with various joints. Production refuse, for example shavings, also provided insights into the techniques used by craftsmen working with axes,



Figure 4: Thanks to the excellent preservation of the wooden finds beneath the northern tip of the plateau, traces of working with hatchet, axe and adze were visible (© Landesamt für Denkmalpflege im RP Stuttgart).

hatchets and adzes at the time (Bofinger and Goldner-Bofinger 2008: 222-224).

As regards the interpretation of the wooden remains, it is most likely that the finds are connected with a bridge structure that crossed the inner ditch, thus securing access to the east terrace of the Heuneburg (Goldner-Bofinger 2007). This explanation is also supported by the presence of posts on both banks of the ditch, as well as a smaller number at the base of the ditch itself. There are good reasons for rejecting alternative interpretations of the organic remains, such as the remains of structural timbers that had been cleared out from the hilltop plateau itself, or as a reinforcement for the ditch or its banks. On the one hand, post holes were discovered, in some of which the rotted remains of the posts were still visible. On the other hand, the massive posts, which were originally up to 5 m long, as well as the arrangement of the post holes in the area of the ditch are not consistent with a timber structure to reinforce the ditch. Furthermore, in trench 14, where the geological conditions were similar, the banks of the ditch had not been reinforced. Therefore, an interpretation of the structural timbers in trenches 1 and 10 as part of a bridge construction seems to be the most plausible.

Thanks to the extensive ensemble of timbers it was also possible to obtain dendrochronological dates for a whole series of finds (Billamboz 2008; Bofinger and Goldner-Bofinger 2008: 224-225), thus producing for the first time absolute dates for activity in the inner ditch system. One piece of oak production refuse was

dated to 589 BC, and a fragment of fir to 583 BC, while several beech timbers were felled in 579 and 578 BC. Thus it seems likely that all of the timbers recovered were associated with building activity during the first quarter of the 6th century BC. The bridge was apparently constructed around 590 BC, and during a period of use of at least 10 years improved or repaired on a number of occasions. The timbers at the bottom of the ditch provide a terminus post quem for the filling in of the inner defensive ditch of 578 BC. Further chronological evidence is provided by the neck of an amphora from Massalia that was discovered stratigraphically above the timbers and which provides a terminus post quem for the fill of the relevant layers of about 540/530 BC (Figure 5). Therefore, all the evidence confirms that the inner ditch was constructed during Hallstatt D1 at the latest.

Interesting observations on the gradual process of the filling in and the use of the inner ditch were made in the area of trench 14 at the foot of the north-west slope of the plateau. The trench was excavated in 2006 under the technical direction of Harald Deniffel (see summary in Bofinger and Goldner-Bofinger 2008: 217-219; Kurz G. 2008: 188). Halfway up the profile of the section a continuous layer of limestone was visible. Many of the limestone pieces had red traces of burning on them, and can be interpreted as the remains of the Pfostenschlitzmauer of Heuneburg period Ia that was destroyed by fire and had collapsed into the ditch. This is confirmed by grooved wheel-turned pottery of Hallstatt D3 found in the layer. Regarding the dating of the limestone layer, it should be noted that in the sediments between the layer and the base of the ditch



Figure 5: Neck of an amphora from *Massalia* discovered in the inner ditch at the foot of the hilltop plateau (www. fuerstensitze.de © Landesamt für Denkmalpflege im RP Stuttgart).

only Hallstatt period pottery was discovered, including white ground ceramics that are an indication that the ditch was already constructed during Hallstatt D1. However, there are also various indications that the ditch, which was originally 10 m wide, had not been properly maintained and cared for. A considerable humic component and the numerous botanical remains, such as twigs and leaves, that were recovered from the lowest layers of the infill are evidence for foliage that flourished either within or near the ditch soon after it was constructed. This lack of attention and landslips on both banks led to the inner ditch being more than halffilled when the Hallstatt settlement came to an end, as is also evidenced by the position of the limestone facing of the last *Pfostenschlitzmauer*. A similar situation was observed in the section of the ditch beneath the northern tip of the plateau discussed above (trenches 1 and 10). There, too, a continuous layer of limestone sealed the sequence of layers from Hallstatt settlement activity in the ditch.

Besides the important results on the dating of the inner ditch and the process of its filling in, the excavations carried out as part of the DFG priority programme also succeeded in providing new information on the middle ditch (Bofinger and Goldner-Bofinger 2008: 215-216; Kurz G. 2008: 188-189). Together with the inner ditch this formed a double hook-shaped system around the south-west foot of the Heuneburg that is still prominently visible on the ground today (on the course of the inner and middle ditch, cf. Figure 2, I-II). In 2004 a section was excavated across the middle ditch in the area of trench 4. Here it was 15 m wide at the top and the base lay over 6 m beneath the present surface, meaning it had the same enormous dimensions as the inner and outer ditches. The limited amount of material found in the layers of the upper part of the ditch provided no information on its construction or filling in, however one of the few wood remains from the bottom of the ditch produced a dendrochronological date of 542 + 20 BC. Although this date can of course not be directly equated with the construction of the middle ditch, it does indicate that it was still open around 542 + 20 BC. Just like the inner and outer ditches of the Heuneburg lower town, the middle ditch was already in existence during Hallstatt D1.

Thanks to the large amount of new data provided by the excavations of Reim (2000-2003) and Bofinger (2004-2005), there is no longer any doubt that the defences of the Heuneburg lower town are to be dated to the Late Hallstatt period. Thus, the medieval hypothesis proposed by the famous German archaeologist Paul Reinecke (1924), and which was further propagated by the longstanding director of the excavations at the Heuneburg, Egon Gersbach (1989), can now be definitely rejected. In other words, the ditch and bank system of defences that in places is still visible today is some 1500 years older than was traditionally assumed. It should also be pointed out that the dating of the defensive works to the medieval period, which was accepted for so long, had no solid basis in archaeological observations, but rather was the result of the prejudiced belief that they were quite simply too impressive to be dated to the Hallstatt period. To put it simply, it was not thought possible that the Late Hallstatt inhabitants of the Heuneburg could have achieved such monumental constructions; an opinion that must, of course, be revised given the results of recent excavations. Given the proximity of the rim of the inner ditch to the hillside it must be assumed that the work to steepen the slope of the hilltop plateau was carried out in connection with the construction of the inner ditch in Hallstatt D1. Clearly the ditch and bank system at the foot of the plateau and in its immediate vicinity will have made a significant and prominent contribution to the appearance of the Heuneburg in the 6th century BC.
The monumental gatehouse (2005-2008 excavations)

When the long trench 8 was extended to the northwest in the summer of 2005 to obtain more information about the structure and composition of the remains of the end of the earth bank, the new trenches 9, 11 and 13 provided by far the biggest surprise: a monumental gateway with stone foundations at least 16 m long and 10 m wide (Figure 6). This imposing structure was fully excavated by Jörg Bofinger and Gabriele Kurz between 2005-2008 (see discovery and first overviews in Bofinger 2005; Fernández-Götz 2013; Kurz G. 2008). Although it has proved extremely difficult to obtain an exact date for it, it is certain that the structure was erected during Hallstatt D1, that is during the period of the mudbrick wall on the hilltop plateau, and existed alongside it for at least some time. It remains an open question as to whether the gateway was built together with the mudbrick wall, or was a later addition.

Exactly like the mudbrick wall fortification of the hilltop plateau, the gate building consisted of a mudbrick superstructure on a stone plinth. Several examples of burned mudbricks were found in the demolition rubble and the ditch in front of the gateway (Figure 7). Its early date, the adoption of Mediterraneaninspired architectural technology, and its exceptional monumentality, make the gatehouse a unique structure in the entire region north of the Alps. However it is



Figure 6: Aerial view of the lower town gatehouse. The cross walls reduced the width to 2.50 m (O. Braasch, © Landesamt für Denkmalpflege im RP Stuttgart).



Figure 7: Strongly burned mudbrick fragments from the gatehouse's upper structure (www.fuerstensitze.de © Landesamt für Denkmalpflege im RP Stuttgart). important to note that the archaeological excavations only uncovered the incompletely preserved remains of the gate foundation, since significant sections of the structure had already been impacted by earlier building work and disturbances during antiquity and the 19th century. In light of these limitations resulting from the poor preservation conditions, various questions as to the form and appearance of the gate will likely remain unanswered forever.

Both of the parallel sides of the gatehouse consist of walls with two outer shells set in clay. The shells of both the east side, which is well preserved, and the heavily damaged west side are built of carefully carved blocks of limestone, with occasional blocks of blue-grey molassic sandstone, that enclosed the actual core of the wall. The core between the shells consists of palm-sized slabs of limestone that were layered horizontally in a homogenous clay fill. The stone foundation was topped with a level layer of flat limestone slabs, upon which the mudbrick superstructure would have been set. All in all, the quality of the working of the limestone blocks of the stone gate, which was exceptional for the Iron Age, is indicative of well-perfected technology and highly skilled masons.

The gateway was aligned north-west to south-east and had a total width of nearly 10 m. If we subtract the width of the two sides of 1.30 m each, then the interior width of the actual passageway was somewhat more than 7 m. This was additionally narrowed by four opposing, symmetrically arranged protruding offset walls, so that ultimately an opening only of about 2.50 m wide remained. The narrowing of the gateway was a widely used principle in fortifications of the ancient world to restrict access through a well-controlled space. Unfortunately, the front of the stone gate at the Heuneburg was not preserved, so that ultimately it is not completely certain whether there were also two symmetrical offset walls here. Therefore, there are two possibilities for a reconstruction of the structure. On the one hand, it is possible that there was a forecourt at the front, with the actual gate chamber set behind this. Alternatively, there may have been two chambers. In either case, the appearance of the structure would have been very much like the chambered gateways common in the Mediterranean (for an overview on ancient gateways, see Montanero and Asensio 2009; Schattner and Valdés 2006).

Next to the east side, a wall ran parallel to it that should probably be interpreted as a stairway that provided access up to the parapet walkway that ran along the top of the earth bank (Figure 8). The earth bank was crowned with a wooden palisade, which provided the defenders with additional protection. There was also a 14 m-wide and up to 6 m-deep v-shaped ditch in front of the gate crossed by a wooden bridge structure. The last remains of the wooden posts and some finds of pottery, a number of them richly decorated, were recovered in



Figure 8: Stone plinth of the gatehouse in the lower town: East side with the parallel wall that served as a base for stairs (R. Hajdu, © Landesamt für Denkmalpflege im RP Stuttgart).





the area of the ditch during the archaeological work (Figure 9).

However, it should be noted that the stone foundation is only representative of one period of the gateway's history, and that there are some indications that there may have been a wooden predecessor. What is clear at any rate is that after the stone foundation and mudbrick superstructure of the gateway were demolished, further Late Hallstatt structural phases using traditional timber architecture followed. Evidence for this is found in the form of various small ditches and post-holes, some of which were dug into the earlier masonry. As for the defensive rampart, three different structural phases can be identified, only the second of which was directly connected with the stone foundation and the mudbrick superstructure.

In addition to the gateway itself, its alignment is also of great interest. Employing modern geo-data and Geographical Information Systems it was possible to analyse the visual correlation between the Heuneburg and the surrounding monuments. As a result, Markus Steffen (2008) was able to demonstrate that the barrows of the Gießübel-Talhau necropolis were exactly situated in the landscape so that a line of sight between the gateway at the Heuneburg lower town and the Alte Burg hillfort near Langenenslingen divided the Gießübel-Talhau necropolis in the middle. This means that the barrows were constructed so that the Alte Burg could be seen in the centre of the background between the mounds. Such alignments and visual relationships are not coincidental. Rather, a kind of landscape architecture is visible here in the arrangement of the environs of the Heuneburg during the second half of the 6th century BC. The monumentalisation and aesthetics of the constructed space, the meeting points and sight lines of the open area can thus be decoded as the spatial programme of the community.

Conclusion: Monumentality and power at the Heuneburg lower town

Summing up, the imposing ensemble of gatehouse, earth bank and ditch can be described as a firstrate demonstration of power. The gateway that was integrated into the 4 m-high rampart, and the ditch in front of it spanned by a bridge, were clearly designed to create as monumental an impression as possible. In the Late Hallstatt period the superstructure of the gate, which was probably whitewashed like the mudbrick wall on the hilltop plateau, must have left an exotic and unforgettable impression on visitors.

It is important to stress that the main entrance to the lower town and the hilltop plateau of the Late Hallstatt Heuneburg led through the gatehouse, and not on the opposite side facing the Danube. This is further evidenced by the 17 towers that ran along the west and north-west front of the mudbrick wall and so were visible in the background of the gatehouse (Figure 10). We can even go one step further and propose the hypothesis that the exotic building technique of the mudbrick wall and the gatehouse, which was unique in these central European climes, was a further indication of the role of the Heuneburg as a regional centre of power. In other words, it would have represented a symbol of the centrality of the settlement, one that would have exercised a significant degree of attraction and fascination on the inhabitants of the further environs. Even though the mudbrick wall and the defences of the lower town will certainly have fulfilled a defensive role, the structures are to be understood, above all, as a conscious performance of power and status which underlined the role of the Heuneburg as a political and economic centre for a wider region.

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Figure 10: Idealised reconstruction of the gateway of the Heuneburg lower town. In the background, towers of the mudbrick wall on the hilltop plateau (Faber Courtial, © Landesamt für Denkmalpflege im RP Stuttgart).

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Compartment ramparts in the *castros* of northwest Iberia

Jorge Camino Mayor and Esperanza Martín Hernández

Abstract

The remarkable works of fortification have been one of most important aspects in the study and characterisation of Asturian hillforts. One of its supposed particularisms was the so-called modular walls, that, contemplated in ambiguous chronological contexts and in regional areas, were taken as a feature of the ethnic-cultural definition of the Asturian groups. But for some time now, the chronostratigraphic study of some of the most representative fortifications and the comparison with the constructive techniques of other regions, especially compartment walls, have allowed us to reconsider the formulated theories. The new data available in recent decades give rise to the re-examination of modular walls and the changes produced in poliorcetic techniques during Iron Age II in the western Mediterranean.

Keywords: Iberian Peninsula, Iron Age fortification techniques, Mediterranean relations

Modular Ramparts. The Controversy about their Dates

The study of fortifications has traditionally leaned heavily towards the investigation and characterisation of castros (hillforts) in Asturias (Spain). During the second half of the 20th century, such investigations lead to the discovery of a type of rampart defined by the presence of different longitudinal sections with inner and outer faces joined by transverse walls. This original design, first identified at San Chuis (Allande) was tentatively labelled as being made of 'islands' (Jordá 1984: 10), a term soon replaced by 'modules' after its identification at La Campa Torres (Maya 1983: 1988). Its late date at that site and its recurrence at other hillforts in Asturias, such as Castillo Veneiro (Tineo), El Picu Castiellu (Moriyón, Villaviciosa), El Castiellu (Cellagú, Oviedo), and El Chao de Samartín (Grandas de Salime) supported the idea of a local construction technique, even interpreted as a representative feature of the *Castro* Culture in Asturias. A modular rampart also appeared during the unpublished excavation of Castillo de San Martín, in the estuary of the River Nalón, but the fortification was built over round houses (Carrocera and Camino 1996: pl. 1), and tower-shaped fibulae suggest a very late Iron Age or even Roman period date.1

Late chronologies relied on dates for the foundation of the rampart at La Campa Torres. The lower layer yielded several radiocarbon dates ranging between the 8th and 6th centuries BC, due to the Iron Age plateau. Its researchers suggested a date around the 6th c. BC, based on typological arguments, including the presence of a double-spring fibula. Similar to the role played by the rampart of Sanchorreja for the chronology of the Iron Age in central Iberia, the date was extrapolated to San Chuis. It was justified by a date obtained from a geological test-pit lacking any cultural context or link to the wall, but hypothetically associated to it. The hillfort of Cellagú first yielded two older dates, ambiguously connected to the wall, but an attempt was also made to create such a link (Maya and Mestres 1998).

However, around the same time, those late chronologies started being questioned due to the excavations at the site of Moriyón (Villaviciosa). Its rampart clearly belonged to the Late Iron Age phase, according to several early 4th c. BC dates. The revision of chronostratigraphic data from the foundation of the wall at La Campa Torres (Camino 2000a; 2000b) played a major role in determining the origins of this type. To sum up, the inner wall presented stratigraphic and structural relations that differed from those initially interpreted. Without discussing the details of such confusions, one of the stratigraphic logs in the rampart revealed the presence of a filled ditch running along the base of the wall. Due to the large amounts of shells, it was originally interpreted as a shell midden (Maya and Cuesta 1999). The ditch cuts the connection between the rampart and layer VII, preventing the use of its radiocarbon dates for the wall. Otherwise, the dismantling of the rampart was observed through the base wall under the rampart and running tangentially to it, associated to layer VII according to the new interpretation. To put it briefly, it was suggested that the rampart at La Campa was associated to the Late Iron Age layer V, formed against it, which covers the

 $^{^{\}rm 1}\,$ The excavations were never published, and a part of the hillfort was destroyed by the authorised construction of a large villa. We are grateful to Elías Carrocera for the information.



Figure 1: Map and front view of Moriyón rampart (J. Camino).

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foundation trench. On the contrary, the base wall was an independent work, probably the remains of an older rampart linked to the Early Iron Age layer VII.

Concerning San Chuis, it is argued that the geological log only allowed a presumption of the existence of pre-Roman layers. The necessary stratigraphic connection to the wall being missing, the dates were invalid: a vain attempt to support the controversial interpretation of the La Campa rampart (Camino 2000: 32).

As a response to our critique, La Campa researchers have maintained their viewpoint. Among other dubious arguments, the interpretation of the foundation trench as an erosion ditch, the connection between the rampart and layer VII, and, as a consequence, with the base wall, are still defended – although its date is now acknowledged in the 7th c. BC (Maya and Cuesta 2001: 47).² In order to support this reasoning, new proof, including two pictures, have been put forward (Camino 2000: 50). One of them clarifies little, but the other, an aerial view (picture A), clearly shows, contrary to what is defended by the authors, that the foundation of the wall cuts into the infill of the base wall and a foundation ditch can be seen at the back, supporting our stratigraphic analysis of sector XIV (Camino 2000: 34). All these data clear away any doubt regarding the interpretation of the modular rampart at La Campa Torres (González Ruibal 2007, I: 192; Docter 2003: 126-127).

 $^{^2\,}$ It was a quick and almost posthumous response from José Luis Maya, the scientific director of the excavations. After he passed away, we did not wish to continue the debate and the subject of La Campa is now addressed with restraint.



Map 1: The Cantabrian area with modular ramparts.

New Data for the Chronology of Modular Ramparts

During the last two decades, new examples of such ramparts have been registered mainly in Asturias, both during excavations and surveys. At the same time, further research on known examples has provided new evidence and well contextualised dates.

Among this new evidence, the ramparts of San Chuis the other iconic site allegedly supporting older dates of the module technique - are of particular interest. Some test-pits excavated to explore the foundations of the inner wall revealed the presence of two overlapping ramparts (Villa and Menéndez 2009: 166ff.). The older one is a lineal work, cut or altered by the modular wall that fortified the settlement until the 1st centuries AD, under Roman control, showing stratigraphic relations identical to those observed at La Campa Torres. Also, similar to the latter, new radiocarbon dates point to an older Early Iron Age rampart and a modular wall between the 4th and 2nd centuries BC (Villa and Menéndez 2009: 170-172). The rampart at San Chuis thus supports the interpretation of that at La Campa Torres, but, ironically, against the excavators' poorly founded arguments (Cuesta, Jordá, Maya and Mestres 1996: 232-233).

Given the representative number of modular walls dated by radiocarbon with a context, those from settlements yielding previous dated phases have been selected in order to compare them. Dates can thus be divided into two groups: the earlier one, providing *termini post quem* for rampart constructions, and the contemporaneous or immediately subsequent one providing *termini ante quem*. Both groups frame the period during which the fortifications were built at each settlement.

The sites of Moriyón, La Campa Torres (Maya and Cuesta 2001), El Castiellu de Cellagú (Berrocal *et al.* 2002), El Pico San Chuis (Villa and Menéndez 2009) and Los Castrelos de Pelou (Montes *et al.* 2009) have been selected following those chronological criteria. It is relevant to add that the selected dates are fully coherent with each settlement's chronological sequence. This choice of hillforts also presents another unexpected advantage, not willingly selected, but geographically meaningful: almost the whole region is included, with the exception of its easternmost part. The following Table gathers the dates for each settlement, indicating their relation to modular walls.

The comparison of both groups of dates reveals, in the first place, that all five studied ramparts have dates ranging between the 4th and 1st centuries BC, and more likely between the 4th and 3rd centuries BC. In return, no calibrated sigma 2 range allows a date older than 400 BC as a reference milestone. This chronological range roughly corresponds to what we had previously suggested (Camino 2000). But already at the time, some evidence suggested that such a broad range could be reduced due to a decreasing tendency in the older dates: the most valid examples being La Campa Torres and El Picu Castiellu in Moriyón. The



first yielded a range between the 4th and 3rd centuries BC for a layer previous to the construction of the wall, as well as radiocarbon and typological dates from the 3rd and 2nd centuries BC for the wall's use layer. In Moriyón, under the modular rampart in sector S, a structured occupation layer yields radiocarbon dates starting around 400 BC. Assuming a period of use, and considering a calibrated sigma 2 range running until the 2nd century BC, it seems very unlikely that the wall was built before the second half of the 4th c. BC. Two new cases point in the same direction to support the idea of lower dates instead of the higher ones within the calibrated ranges. One of them is Cellagú, where an occupation layer yielded a chronological range starting in the early 4th c. BC. The other case is the rampart at Pelou hillfort, even more conclusive than the previous ones, as the underlying wall suggests a stable

settlement, and also yields construction dates starting after 400 BC.

As a result, among the five ramparts studied, four develop over occupations starting after 400 BC. It must be inferred that the earliest dates for these constructions must be lowered down at least to the course of the 4th c. BC, but more likely to the 3rd c. BC, without assuming contemporaneous construction processes. Other ramparts from three settlements, El Chao de Samartín (Villa 2002: 165 and f.), Los Leoneses in El Chano de Peranzanes (Celis 2002: 192-193) and La Muela in Villablino, León (Rubio and Quintana 2015: 102), strongly suggest a closed chronological range between the 4th and 2nd c. BC through radiocarbon dates, although with a more open higher end due to the lack of immediately previous occupations. The

Hillfort	Lab.	C14 Date	Cal 2 Sig	Context	Terminus
Moriyón-1	csic-875	2320±45	BC 536-209	Previous occupation	Post quem
Moriyón-2	csic-874	2200±50	BC 391-116	Later strata	Ante quem
La Campa Torres-1	ubar-513	2250±40	BC 397-204	Previous occupation	Post quem
La Campa Torres-2	ubar-512	2225±45	BC 393-193	Later strata	Ante quem
Cellagú-1	Ua-18183	2365±65	BC 757-236	Previous rampart	Post quem
Cellagú-2	Ua-18182	2225±55	BC 399-168	Previous occupation	Post quem
Cellagú-3	Ua-18180	2140±70	BC 378-2	Attached wall	Ante quem
Cellagú-4	Ua-18181	2140±55	BC 360-45	Later occupation	Ante quem
San Chuis-1	Beta-222459	2480±50	BC 776-416	Previous rampart	Post quem
San Chuis-2	Beta-2224583	2350±50	BC 746-232	Later strata	Ante quem
Pelou-1	Beta-236631	2190±80	BC 397-51	Previous rampart	Post quem
Pelou-2	Beta-236633	2110±40	BC 351-4	Later occupation	Ante quem



Figure 4: Table of C14 dates (calibration source: IntCal 13, OxCal 4.3; C.B. Ramsey 2018). The rectangles are marking areas of overlap (calibrated to 2 σ), between the *termini post quem* -above- and *termini ante quem* -below-in each seetlement, as field of probability for the construction of the walls.

first presents an earlier phase dated in the transition between the 9th and 8th centuries BC, which probably continued through the next centuries, but its chronological connection to the compartment rampart is unknown.

Although fewer and less precise, several radiocarbon dates from La Cogollina (Fanjul *et al.* 2009: 468-469) and Cabo Blanco (Fanjul *et al.* 2009: 258) link those occupations to a range between the 4th and 2nd c. BC.

 $^{^3}$ San Chuis-2 was published with a calibration range of 410-210 BC. The current result, with a peak in the first third of the 4th century BC, has a higher age compared to the rest of the module walls.



Figure 5: Cellagú hillfort: walls with modular divisions (Berrocal *et al.* 2002).

Regarding the fortification of La Loma (Cantabria), the attributed chronology relies on a large amount of material and its surrender to Roman domination in the late 1st c. BC (Peralta 2008: 18). Finally, a large amount of Roman material, although lacking chronological resolution, is associated with the compartment rampart of Tremado hillfort in Cangas del Narcea (Fanjul, Flórez and García 2005).

The attribution of all the modular ramparts known in northern Iberia to the Late Iron Age, and to a rather later stage, is solidly founded, as we observed several years ago (Camino 2001). Despite the rarity of data, it is also supported by the fact that no Early Iron Age phase wall presents, so far, a modular division. It is true that the ramparts from that phase are less well known, either because they have been less frequently recorded, or because they have been concealed or destroyed by later occupations. Whatever the reason, the most precisely recorded hillforts, such as La Campa Torres, El Chao de Samartín, San Chuis, and the well-preserved occupations from El Castillo de Camoca in Villaviciosa (Camino 1995: 156) and El Picu la Forca in Grado (Camino, Estrada and Viniegra 2009), sealed by their subsequent abandonment and largely excavated, have yielded no earlier examples of that specific compartment technique.

Compartment Walls in the Iberian Peninsula: Cases, Casemates and Guardhouses

The modular division technique in Asturian ramparts is not unique, as similar constructions based on two faces presenting inner compartments made of transversal walls frequently appear in the southern and eastern Iberian Peninsula. Further inland, walls presenting cases, casemates or guardhouses, have their own internationally acknowledged terminology. They actually correspond to two different construction modes: while stone-cases are used as solid infills, casemates or, more precisely, guardhouses form spaces inside fortifications serving different purposes, such as supplies or weapon storage, or troop lodging. However, with their poor preservation, partial excavation or superficial identification hindering such distinctions on archaeological grounds, it is no wonder that they are often considered as a single construction type.

Both types derive from Near Eastern, early 1st millennium BC, defensive designs. Their expansion to the western Mediterranean is attributed to Phoenician trade, together with other fortification techniques, continued by the Punics. However, the Greek cities of Greater Greece and Sicily also increasingly adopted this solution from the second half of the 1st millennium



Map 2: The Iberian Peninsula with compartment box ramparts.

BC, in a context of high defensive complexity. The existence of two distinct groups and the reception of compartment walls in the southern and eastern Iberian Peninsula, near Phoenician and Greek settlements, throughout the whole 1st millennium BC have fostered some confusion and diverse interpretations regarding the types of constructions, their influences, and even their chronology.

Recent discoveries have established the use of compartment ramparts, with an empty inner space, in Phoenician colonies of southern Iberian. This technique is associated to *emplecton* walls, outer bastions, coursed masonry, plastered walls, etc. Such ramparts are known at Castillo de Doña Blanca, since the early 8th c. BC (Ruiz 1986) and slightly later at La Fonteta, Abdera, Altos del Revegue and Malaka (Recio 1988). But most relevant to our work, indigenous fortifications nearby, such as Tejada la Vieja, Niebla and El Cabezo de la Fuente del Murtal in Alhama de Murcia (García Blánquez 1996) also adopted this type of rampart rather early, between the 7th and 6th c. BC, illustrating their cultural interactions. From the end of the 5th c. and the beginning of the 4th c. BC, new defensive influences arrive from the Greek colonies in Sicily and southern Italy, where compartment casewalls were used in towns such as Naples or Tarento, although their influence in the Iberian Peninsula is debated (Tréziny 1999: 261). Shortly after, within the Hellenistic crucible of the last decades of the 3rd c. BC, the Barcid expansion and refounding policy was deployed in the Iberian Peninsula, illustrated by the compartment walls of *Krt Hdsht*, Cartagena – imitating Carthage's fortification plan – *Carteia*, Carmona and the new fortification in Castillo de Doña Blanca (Montanero 2008: 117) and Giribaile (Gutiérrez *et al.* 2015).

Compared to a couple of decades ago, current investigations on compartment walls in southern Iberia, larger in number and better referenced, have revealed several remarkable aspects of this construction type. In the first place, high dates for the first examples are confirmed during the 8th c. BC. It is undeniable that their origin lies in Phoenician colonies importing oriental models, although their execution is adapted to local cultural, technical and topographic conditions. Not less important is its long-lasting use in this region, throughout the whole 1st millennium until the Hellenistic and up to the Roman periods. Such evidence explains, otherwise, the adoption of this technique by local communities as settlement fortifications appeared or were renewed. Its expansion to the interior regions is observed from the 4th c. BC on. A different matter is the defensive and cultural dimension of the distinction between casemates and case-walls (Moret 1991: 267-269; 1996: 213). Their geographic distribution, chronology and cultural attribution suggest a strong genetic and technical relation between them. Only clear functional differences and distinct levels of building complexity can be inferred so far, depending on each fortification's defensive needs, without contradicting a common origin for both techniques.

Precisely in a rather later period, between the 4th and 2nd centuries BC, interior communities started adopting case-sections and other defensive elements in the construction of ramparts. Several examples can be mentioned, such as El Cerro de las Cabezas in Valdepeñas, Ciudad Real, perhaps already during the 5th c. BC (Vélez and Pérez 1987), El Castrejón de Capote in Higuera la Real, Badajoz (Berrocal Rangel 2007: 267-269) and Los Rodiles in Cubillejo de la Sierra, Guadalajara in the late 4th or early 3rd c. BC (Cerdeño *et al.* 2008: 184-186).

Another core area of case-rampart construction is located in northeast Iberia along the Ebro valley. Turò de Montgrós in El Brull, Barcelona, dated from the late 3rd and early 2nd c. BC, is the only culturally Iberian example of a case-rampart influenced by Hellenistic Emporion (López, Manzano and Alemán 2010: 42). In El Tossal de Manises, the rampart has empty compartments, and is included in a complex Barcidperiod fortification. Apart from those two exceptions, compartment ramparts appear later in the area, during the Late Roman republic. In this context, Tarraco's wall played a central role (Serra Vilaró 1949) in the type's expansion towards La Tijera in Urrea del Jalón, Zaragoza, with a terminus post quem around the mid 2nd c. BC, provided by a Campanian B Morel 2.554 b 1 shape from the infill of one of the cases (Asensio 1995: 303), and La Caraza de Valdevallerías, Alcañiz, Teruel (Asensio 1995: 203-205). The case-wall at Sequeral, Calahorra, Calagurris Iulia Municipium Civium Romanorum, dates from the 1st c. BC.

Also interesting is the presence of a compartment stone wall at the Basque *oppidum* of Marueleza. On top of its Cantabrian location with clear Celtiberian influence, its combination with transverse timbers clearly reminds of *muri gallici* (Valdés 2009: 80-81). However, the central Meseta has yielded fewer examples of case-ramparts, despite the large number of compartment constructions with multiple walls. Compartment walls are recorded at Los Castillares de Herrera de los Navarros and maybe in other locations (Lorrio 1997: 75-77), such as Numancia's 3rd-2nd c. BC phase (González Simancas 1925-26: 8, 27; Jimeno, Fernández and Revilla 1993: 25), but the most significant one, from *Contrebia Leukade*, was eventually dismissed (Hernández *et al.* 2004: 83)

Structural Features of Modular Ramparts

Compartment ramparts found in northern Iberian hillforts are built in *emplecton*. They are made of two stone facings filled with more or less organised layers of rubble. Their width is considerable, frequently over 4 m, sometimes reaching 6 or even 7 m, as at La Campa Torres. Their length varies between some 200 and nearly 500 m, depending on whether they enclose a peninsula or the top of a hill. They may form several fortification lines together with ditches, banks and other earthworks. In those aspects, they follow local building traditions from the Early Iron Age.

Compartments usually present different features depending on the assemblage technique. The full type consists of two transverse walls, one for each module, leaving a narrow joint in between. However, semimodules occur when the division disappears within the infill and does not appear through the whole inner rampart. Some transverse walls between the inner and outer face even fail to match, forming two cases with different heights as in Moriyón. They would be better defined as 'foundation cases'. Also possible are open modules without transverse walls, or inter-modules, whose infill is contained by nearby modular walls (Berrocal et al. 2002: 99 and 102). This variant is closer to the case-rampart model, where a single transverse wall separates two sections. In the archetypal example of modular ramparts, transverse walls form a rounded angle with the inner and outer faces, which, together with the use of more regular stone blocks, provide a specific aesthetic finish. However, it is far from being the only model, since, as mentioned before, some single or double transverse walls join at right angles or insinuated curves.

There is no uniformity in module length, not even within each rampart, although large sizes predominate. At La Campa Torres they vary between 14 and 40 m, those over 25 m are frequent. In the pre-Roman wall of Cellagú the module length is around 38 m, while the Roman-period ones follow a pattern of 14 m with inter-modules of a few metres. Smaller dimensions are observed at San Chuis where the module length is 6-7 m, although some can reach 9 m. These shorter lengths appear together with some longer examples in El Chao de Samartín.

Other general structural features connected to tooling techniques and stone masonry are associated to modular works and allow a comparison with Early Iron Age examples. Thus, older ramparts are built in random rubble masonry made with barely tooled, middle-size blocks. They are laid in uncoursed *opus incertum*. Conversely, Late Iron Age ramparts are usually made of roughly tooled stones with flat surfaces, close to rock-faced masonry. The tooling was



Figure 6: Modular divisions at La Loma, Santibáñez de La Peña (in the background the Roman camp).

Castro	Rock Stonework		Masonry	Wedges
El Picu San Chuis	Sandstone	Random rubble	Opus incertum	Х
El Chao de Samartín	Sandstone	Random rubble	Opus incertum	Х
El Castrelo (Pelou)	Slate	Random rubble	Coursed	Х
Castillo Veneiro	Slate	Random rubble	Coursed	
Tremao	Slate	Random rubble	Opus incertum	Х
El Castiellu (Cellagú)	Limestone	Random rubble, tooled	Coursed	Х
La Campa Torres	Quartzite	Random rubble	Opus incertum	Х
El Picu Castiellu (Moriyón)	Sandstone	Random rubble, tooled	Coursed	Х

sometimes finished by faceting the corners and sides creating a 'bolstered' effect, as at Moriyón, Cellagú and La Campa. In addition some examples are also coursed. Those significant changes in masonry reveal the importance of stonework, connected to the local development of an iron metallurgy form the 4th c. BC, favouring the appearance of new and varied tools such as the pickaxe from Moriyón. As an example, if such an important technological precondition for large-scale stonework is considered, a double-face rampart, 400 m long and 4 m high, built with roughly 30 x 20 cm blocks, would require the tooling of 50,000 pieces.

It has been suggested that compartment ramparts from northern Iberia might have played a role in overflow water drainage due to high rainfall in Atlantic climates (Berrocal 2004: 53). This interpretation seems supported by a few cases where drainage ditches were dug, and aesthetically stone-paved, along inter-modular basewalls as at San Chuis and Castillo Veneiro. However, most examples do not include such ditches, and drainage systems are unknown in many settlements. It seems highly likely that a great amount of drainage from rainfall took place through the rampart walls, including between the two faces, unless narrow, covered paths existed. The walls presented structural problems, as the outer faces, founded at the base of the slope, not only supported the weight of infills but also frequently of settlement terraces. The issue was aggravated by the effect of rainfall. Without deep foundations and inner structures, rainfall water was problematic in these constructions, as it increased the infill load. The real purpose of these compartments is to contain sagging walls at risk of crumbling. After all, they might represent a technical response to adapt to grounds with low stability in coastal and abrupt areas, prone to flooding and seismic activity. This seems to be the case in the Phoenician settlement of La Fonteta, where the rampart was enforced with inner transverse walls to contain its undermining (González Prats 1998: 192).

Modular or Case Ramparts

The precise dating of modular walls in this northern area of the Iberian Peninsula is a key element to understanding their emergence. The analysis carried out using radiocarbon dates in terms of closed termini post/ante quem of a representative choice of sites supports their origin in the 4th, or, more probably, the 3rd c. BC. No other data drawn from the large amount of available records suggests any doubt on this conclusion, since the regional tradition of Early Iron Age fortifications does not include this feature. It is highly relevant that in this area no precedents are known for this technique in earlier centuries. Therefore, a local invention cannot be argued without comparing the situation of defensive techniques, in particular wall compartments, at the same time, at least at the scale of the Iberian Peninsula. As mentioned before, the division of walls in transverse sections, casemates or cases, was introduced in southern Iberia by Phoenician colonial groups in the 8th c. BC. This technique was thus already over 500 years old when it started being used in the northwestern Iberian Peninsula. The resource remained active during the next centuries, until the great transformations brought by the Hellenistic period spread its use among several political units -Punics, Greeks and Romans among others - causing a major territorial expansion. To a large extent, the

dissemination of the case-wall technique was linked to progress in the practice of warfare during the second half of the 1st millennium. Defensive and assault techniques became more complex and sophisticated, with ashlar and *emplecton* surely playing a major role, as well as the normalisation of masonry techniques linked ultimately to the generalisation of iron metallurgy (Tréziny 1999: 261). In that context of great 'international' renewal, the emergence of modular ramparts at northwestern castros occurs roughly at the same time as case-rampart fortifications in the central Iberian Peninsula, in what seems to be an expansive trend of compartment techniques. Despite this, a spatial diffusion model is not absolutely necessary to understand the origin of this modular rampart group, in a moment when technology and knowledge moved increasingly rapidly between regions, favoured by trade and, above all, the movement of mercenary parties (García-Gelabert and Blázquez 1988), at the time mainly hired by Carthage, whose armies must have known war and fortification techniques (Quesada 1994: 189, 242).

Against this interpretation, the technical variability between Mediterranean case-ramparts and northern modular walls has been put forward, criticising the resort to oriental diffusion to explain their origin (Maya and Cuesta 2001: 51ff.). As with southern case-ramparts,



Figure 7: Modular rampart of Troy VI (XV-XIII cent BC), a clear example of the aestetic use of modules and according to M. Korfmann the wall has features to prevent earthquake damage) (J. Camino).

the indigenous hypothesis argued in this case seems now obsolete (García Blánquez 1996; Montanero 2008; Bueno, García and Prados 2013).

The difference between case- and modular ramparts has already been admitted but they concern morphological aspects, not structural, functional or conceptual ones. The main formal differences lie in actual cases, on the one hand, with short, regular compartments of usually less than 5 or 6 m, and, on the other, that transverse separation single walls integrate into outer facings. Conversely, modules have variable dimensions, are often long, and in the most distinct examples, the separation is made of two walls closing four-walled compartments with rounded, often aesthetically finished, angles. However, as seen above, this type of distinction is largely conventional, as it hides other variants, including, for instance, single, right-angled, transverse walls.

The example of the inner enclosure of the Celtiberian oppidum of Los Rodiles is highly illustrative, as it not only presents long instances adapted to the topographic design of the wall, but the transverse wall also forms curves (Cerdeño et al. 2008: 178 and fig. 4). It obviously seems an example of transition between typical case-ramparts and a northern model. The walls of the Cantabrian hillfort of Loma and the Basque one of Marueleza, respectively subject to Vaccean and Celtiberian influences, open for the first time cultural horizons for modular ramparts beyond the Asturi. It can be expected that some Celtiberian walls, so far scarcely investigated, show the spatial connections linking southern examples to Cerro de las Cabezas, Los Rodiles, Castellar de los Navarros, etc. After all, the link between bronze and iron metallurgy in the central Cantabrian area in the Late Iron Age and the Vaccean-Celtiberian area must not be forgotten.

Having reached this point, we argue that compartment ramparts from the northwestern Iberian Peninsula are inspired by southern models, resulting from an oriental technical transfer to local communities. In a later moment, the resource might have been redesigned during its progression through the interior towards the northwest, in which mercenaries and craftsmen such as masons and metallurgists - might have been a driving force during a restless period. It is undeniable, in any case, that the module technique is reinvented in a new style, adapted to the mountainous topography of hillfort locations and the millenary architectural tradition of circular or round-angled constructions made of fragile stones. Despite some diversity, modular walls have come to stand for the Late Iron Age and early Roman Asturi's material culture. The poliorcetic meaning of this compartment type, as well as its role in defense strategies is illustrated by the compartment wall erected by the last Visigoths on the Carisa route, in the middle of the Cantabrian Massif, to contain the Islamic invasion of AD 712-714.

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The Iron Age hillforts of Gipuzkoa (Basque Country): settlement patterns, fortification systems and territory control

Sonia San Jose, Antxoka Martínez, Xabier Peñalver, Carlos Olaetxea, Javier Prieto Domínguez and Juncal Calvo

Abstract

We introduce a review of Iron Age hillforts in Gipuzkoa, as a result of the works carried out throughout three decades in different research projects. These studies have focused on their attention to different aspects, such as settlement pattern, fortification systems, relationships between hillforts, and the influence these factors had in defining a control model of the territory. In conclusion, the main features that go towards characterising Iron Age settlements and the articulation of their territories are summarised.

Keywords: Iron Age, hillforts, Basque Country, Gipuzkoa, fortifications, LiDAR

Introduction

This research compiles 30 years of research of the Iron Age hillforts in Gipuzkoa, thought a series of studies about their spatial features, defensive systems, organization, and construction techniques. The Department of Prehistoric Archeology of the Aranzadi Society of Sciences has researched the multiple sites from the Bronze and Iron Age in Gipuzkoa for several decades, resulting in a large number of publications (Olaetxea and Peñalver 1994; Peñalver 2001a; 2001b; Peñalver and San Jose 2003; 2011). This study brings the most relevant outcomes after years of archaeological research in the Iron Age hillforts discovered hitherto, both from survey and excavations. This territory, on the Basque Country northern watershed, has a peculiar orography and landscape that highly hinders the visual recognition of settlements. Thus, we know only ten hillforts¹ from more than 300 that have been documented in the whole of Basque Country, despite constant survey that have been undertaken for more than two decades (Armendáriz 2008; Llanos et al. 2009; Peñalver and San Jose 2011; Unzueta 2004). Notwithstanding, new technologies, such as LiDAR,² have been one of the most useful tools in recognition and recording of this kind of settlements, allowing to combine nonintrusive techniques in a large area with fast and effective outcomes.

Iron age hillforts in Gipuzkoa

As mentioned in the introduction, there are currently ten identified hillforts in the territory of Gipuzkoa (Figure 1). Although several non-fortified outdoor habitats have also been documented (Olaetxea and Ibáñez 2009; San Jose 2004). Notwithstanding, their defensive features remain unknown due to scarce research in the territory, which impedes to own their integration within the landscape.

The building patterns in the territory, in conjunction with the historical context, allows to date the settlements in the Iron Age. However, a few is known about their belonging to the archaeological subdivision of Iron Age I or II. Except for some C14 dating in organic materials (charcoal) from Santiagomendi (Izquierdo 2004: 301). The main assemblages from the excavations and survey carried out in Gipuzkoa belong to Iron Age II, and a few of them extend even into the historic age. A few is known about the first stage of the Iron Age in this territory.

Focusing on the known fortified settlements, the information is heterogeneous due to the various and multiple research projects carried out for a large number of years. In this light, it should be noted that the study of protohistoric period in Gipuzkoa is relatively recent, except for the survey in several cromlechs and some other works (Peñalver and San Jose 2011: 12-31). Systematic studies were initiated by X. Peñalver and

¹ One of these settlements, Santiagomendi (Astigarraga, Gipuzkoa), does not seem to have an artificial defensive system, despite the efforts of excavations carried out there to find it (Izquierdo 1998-2005; 2004; Carrere and Ceberio 2006; 2007; Ceberio 2008). Although it is included within the group as it is located in a highly strategic area and shares most of the characteristics of the rest of the hillforts. Nevertheless, it will not be taken into account in the defenses study. ² The study, based on technologies such as LIDAR, forms part of the Master's thesis of J. Prieto Dominguez (directed and supervised by Prof. L. Berrocal (Universidad Autónoma de Madrid)), one of the authors of this contribution.



Figure 1: Hillforts: 1) Akutu (Errezil-Bidegoian); 2) Basagain (Anoeta); 3) Belaku (Beizama); 4) Buruntza (Andoain);
5) Intxur (Albiztur-Tolosa); 6) Moru (Elgoibar); 7) Munoaundi (Azkoitia-Azpeitia); 8) Murumendi (Beasain);
9) Murugain (Aramaio/Arrasate-Aretxabaleta); 10) Santiagomendi (Astigarraga). Other archaeological sites:
11) Santa María La Real (Zarautz); 12) Boluntxo (Oiartzun); 13) San Esteban de Goiburu (Andoain);
14) Mulisko Gaina (Hernani-Urnieta); 15) Arrikrutz 53 (Oñati); 16) Iritegi (Oñati).

the Department of Prehistory of the Aranzadi Society of Sciences in the 1980s. The lack of basic data is one of the main reasons for this delay in researching this kind of settlements. The scarce record, the lack of knowledge about the patterns of the fortified sites and the techniques of survey restricted the list of known Iron Age hillforts to only one case: Intxur (Albiztur-Tolosa). The excavations carried out there by J.M. Barandiaran, at the end of the 1950s, revealed no finds, except for the defense lines visible from the air (Barandiaran 1957; 1961; 1964).

Currently, three hillforts have been excavated (San Jose and Peñalver 2009: 903) and another four are being excavated: Intxur, in Albiztur-Tolosa, 1985 and 1993 (Peñalver and Uribarri 2002); Buruntza in Andoain, from 1992 to 1996 (Olaetxea 1997; 1998); Basagain in Anoeta, from 1994 to the present day (Peñalver 1994-2016); Munoaundi, in Azpeitia-Azkoitia, from 2006 to the present day (San Jose and Olaetxea 1999; García et al. 2009; San Jose 2007-2014; San Jose et al. 2014; Martínez 2016-2017); Murumendi, in Beasain-Itsasondo, from 2009 to the present day (Arrese 2010-2016); and Murugain,³ in Aramaio-Aretxabaleta-Arrasate (Araba/ Gipuzkoa), from 2013 to 2015 (Peñalver and Olaetxea 1994; San Jose 2004; 2006; 2010; Telleria 2012-2016). Other survey projects are being carried out to locate new hillforts and their burial sites (without satisfying results until the present day). In addition, several hillforts have not been excavated but evaluated from trial trenches: Moru, in Elgoibar (Olaetxea 1991a, 1991b); Akutu, in Errezil-Bidegoian (Alberdi 2000); and Belaku, in Beizama (San Jose 2009).

Settlement pattern

In order to provide an archaeological framework, we list the descriptions of the main features of each of the hillforts, focusing on the results obtained by the archaeological interventions carried out at present. These features are the result of comparing the results of their intrinsic, but also shared features among them.

Akutu

The site of Akutu (Errezil-Bidegoian) is located on a small hill (661 m) of the southern slope of Mount Ernio (1078 m). It is in a regular summit that tilts slightly to the south, taking up an area of 0.66 m². It is relatively isolated, with a short but pronounced slope in the north, although it is accessed through a hill at the foot of the hill. It is one of the few sites in Gipuzkoa that is not located along the main networks but is situated in the vicinity of the Ernio, watching one of the communication routes between two valleys – the Oria and the Urola.

Close to the top there is a small flat area, and there is also another terrace at the southern part of the mountain,

 $^{^{\}rm 3}\,$ Recent excavation has focused more on the Spanish Civil War trenches dug within the protohistoric settlement.

Archaeological site	Sample C14	Date BP	Calibrated date BC 1 σ (68.2%)	Calibrated date BC 2 σ (95.4%)
Buruntza	Ua-231-0	3000±60 BP	1374-1127 BC	1402-1055 BC
Buruntza	I-16127	2810±90 BP	1072-842 BC	1210-808 BC
Intxur	I-16387	2720±80 BP	970-804 BC	1107-775 BC
Boluntxo	GrN-18865	2675±70 BP	902-797 BC	1013-593 BC
Moru	I-16862	2670±100 BP	994-776 BC	1110-536 BC
Mulisko Gaina	I-14100	2630±90 BP	912-590 BC	1004-490 BC
Santiagomendi	Ua-18874	2510±60 BP	787-543 BC	798-430 BC
Buruntza	Ua-10543	2475±75 BP	764-516 BC	781-411 BC
San Esteban de Goiburu	Ua-18151	2475±75 BP	764-516 BC	781-411 BC
Santiagomendi	Ua-18875	2445±70 BP	748-412 BC	768-404 BC
Munoaundi	I-18368	2420±80 BP	747-402 BC	780-388 BC
Santiagomendi	Ua-10980	2410±80 BP	746-400 BC	780-379 BC
Intxur	I-15489	2400±80 BP	746-396 BC	782-364 BC
Santiagomendi	Ua-19248	2395±40 BP	535-402 BC	748-392 BC
Santa María la Real		2370±40 BP	510-390 BC	740-380 BC
Basagain	I-19004	2360±120 BP	750-258 BC	794-192 BC
Santiagomendi	UBAR-692	2350±125 BP	748-232 BC	796-166 BC
Basagain	I-18461	2320±90 BP	536-210 BC	756-181 BC
Basagain	I-19003	2310±55 BP	428-212 BC	538-203 BC
Buruntza	I-17168	2270±80 BP	403-206 BC	728-101 BC
Intxur	I-15488	2260±80 BP	400-206 BC	538-64 BC
Iritegi	I-1775	2250±140 BP	482-94 BC	757-2 BC
Santiagomendi	UBAR-691	2195±110 BP	388-114 BC	514-52 BC
Munoaundi	Beta – 380002	2190±30 BP	356-198 BC	361-3 BC
Intxur	I-16386	2180±80 BP	364-122 BC	396-46 BC
Buruntza	I-17167	2180±80 BP	364-122 BC	396-46 BC
Basagain	I-18633	2170±80 BP	360-115 BC	396-40 BC
Moru	I-16861	2170±80 BP	360-115 BC	396-40 BC
Santiagomendi	Ua-18544	2145±65 BP	353-61 BC	375-40 BC
Munoaundi	Beta – 380001	2080±30 BP	156-51 BC	191-3 BC
Intxur	I-16923	2070±80 BP	194-5 BC	358-78 BC
Intxur	I-16924	2030±80 BP	160 BC-54 AD	352 BC-132 AD
Arrikrutz	GrN-23694	1980±80 BP	88 BC-125 AD	183 BC-220 AD
Basagain	I-18632	1600±80 BP	384 BC-555 AD	255 BC-615 AD

Table 1: Carbon-14 dating from the Iron Age hillforts of Gipuzkoa (listed chronologically, oldest first. Source: Peñalver and San Jose 2011: 224. Calibration program: OxCal 4.3 (online) 2018).

where prospecting revealed the presence of ceramics with 'characteristics similar to the ones documented in hillforts of the Iron Age located in Gipuzkoa' (Alberdi 2000: 123). The defensive system is unknown, which had brought some researchers to questions is actual identification of Akutu as a hillfort.

Basagain

The hillfort of Basagain (Anoeta) (295 m) occupies the top of a hill, 650 m from the Oria River with a fall of 200 m above it. It is an elongated hill that does not have high slopes. It has a linear wall surrounding the whole enclosure of 2.8 ha. The highest concentration of archaeological evidence is located in the terracing of

the eastern slope, especially in the central part, on a wide terrace where some living structures have been found next to the wall, identified by wedges of posts constructed with stones of considerable size, as well as by remains of collapsed walls formed by vegetal supportand wattle. The excavation area includes two platforms with a complex series of collapsing and occupation stages, some of them already extended beyond the change of era, as indicated by some materials and dates.

Belaku

Belaku (Beizama) hillfort, together with Akutu, controls the exchange and communication networks around

Ernio. It is a small peak of 807 m, located in a mountain. It presents a slight unevenness from north to east, but lesser than 100 m respecting to its immediate surroundings. Towards the northwest sector, it has an excellent view of the Urola valley, while the unevenness develops on the bottom of the valley as we approach Azpeitia (80 m). The area of the top is plain and regular, and the protohistoric enclosure takes up c. 1.5 ha. The interior space is organized in two large terraces. The first one takes up the top of the hill, while the second one is in a lower level. The entrance to the hillfort, one of the most distinguishing places in this kind of fortified sites, is not clearly visible. Thanks to some survey studies, it was possible to identify different materials closed to a wall, highly modified by a modern masonry wall (San Jose 2009).

Buruntza

The hillfort of Buruntza (Andoain) (439 m) is an isolated mountain, with excellent strategic control of the territory and networks. This hillfort stands out for being in one of the narrow passages of the Oria River, 9 km in straight line from the coast. The enclosure has small size, only 0.7 ha, restricted by the size of the mountain. It displays a fairly steep slope with a 70% difference fall in the northern area that facilitates the defense of the enclosure, completed with a linear wall of 215 m that ends at both ends of this slope. Limited by the wall, there is an artificial terracing of 4 m and 10 m wide. This terrace has revealed accumulations of archaeological materials, especially pottery, and some traces of housing structures.

Intxur

Intxur (Albiztur-Tolosa) (742 m) is located in the top of the mountain, from which it takes the name, and taking up 17 ha. It is located in a 400 m length plain area, restricted by two mountain peaks. Its width is 30 m. The hillfort is limited to the northern area of the top due to the northern slope is highly pronounced. Two houses with a rectangular plan have been documented, located in the southern slope near the summit, also a complex defensive system formed by several lines of walls and two ditches at the east and west ends of the site. The length of these walls is 1.5 km. Additionally, in the southern slope stands out a terrace of 4-10 m, which possibly continued in the north slope.

Moru

Moru is a small hilltop (456 m) close the low course of Deba River and Elgoibar. It has steep slopes around its perimeter, except in the northwest area, where a hill allows the access to the top (Peñalver and San Jose 2003: 24). This top presents a fairly regular surface with two wide spaces, which works fairly as a living area of *c.* 1.1 ha. In the summit's northeastern slope there is a perimeter wall of irregular masonry, poorly preserved, with irregular lines. There is a secondary wall in the southwest area that seems more modern due to its similarities with some ethnographic examples in the area. Overall, the presence of modern walls greatly hinders the interpretation of the defensive system of this site.

Munoaundi

Munoaundi is in a peak of 384 m and takes up 7 ha. It includes a combination of different areas, mixing both steep and low slopes, as well as a depression. The entrance is in northwest area of the hillfort, flanked by two massive towers. A linear wall closes the settlement on its west and south sides, while the rest of the perimeter does not need human-made fortifications due to the abrupt falls of the orography. Recent work carried out using LiDAR has shown that the whole settlement could have been enclosed despite it is not visible at the first sight (San Jose et al. 2014), although this has yet to be confirmed by more invasive techniques. This wall is interrupted in the area of the west gate, and from that point to the north there may be one or more lines of wall. Surrounding this wall there are two contiguous terraces, parallel to it. The upper one accommodated the living spaces of the settlement, at least at the southern part of the site. The second terracing, of smaller width in general, surrounds the embankment, which is visible from the lower and outer part of the wall. Although we do not have enough data to confirm it, it seems that the area of the west entrance served as access to the site.

Murugain

Murugain is in a peak between the territories of Araba and Gipuzkoa (Aramaio/Arrasate/Aretxabaleta). The perimeter wall encloses a space of *c*. 4.7 ha with a trapezoidal design (Peñalver 2001: 47). The fortification is based on a wall embankment, constructed on top of an exterior remaining wall of masonry filled with a backfilling of soil and stones to level the ground on which a palisade would be built (Tellería 2011: 148-149). This enclave is recognizable for its posterior use during the Spanish Civil War (1936-1939), in which the defensive structures of the Iron Age site were used to build trenches, as seen on the south-southwest slope.

Murumendi

Murumendi occupies a peak with an enclosure of 1.9 ha. It has a strong rocky escarpment to the east; to the north, south and east, it has steep slopes. It has a marked unevenness of almost 600 m with respect to the floor of the Oria valley. In the surroundings there are peaks close in height, and the difference in relation



Figure 2: Some of the materials from the hillforts of Gipuzkoa: 1) Intxur; 2 and 4) Munoaundi; 3) Basagain; 5) Buruntza.

to the access hill is *c.* 75 m. It dominates an extensive visual field from which the Oria valley and the passages towards the Aralar mountain range are controlled from the east and south, and from the north and west the ranges that give access to the interior of Gizpukoa. The defensive system has two consecutive wall lines with a separation between them of *c.* 40 m. They have a semicircular layout adapted to the shape of the terrain and it is well levelled. The access point in the exterior defense is in the center of its plan, and seems to be articulated from some system of diversion or 'funnel' (Arrese 2014; 2015), with an access lesser than 1.5 m wide.

Material culture

A brief reference can be made to the material culture as identified from the hillforts (Figure 2). Pottery is the material most collected in these sites, principally handmade, but there are also done by potter's wheel. Most of the pottery is highly damaged by the acidity of the land and humidity, which destroys the ceramics' calcite inclusions, turning them into extremely delicate materials to handle and study. Hence, there is no presence of bone remains neither, as a result to the aforementioned acidity of the ground. All types of metal artifacts have been recovered, among which we can highlight a truncated cone weight from Munoaundi (Peñalver and San Jose 2003); lithic elements, especially based on pebbles, a saddle quern and some circular querns, and other more 'exotic' objects, such as glass beads or a bracelet fragment made of glass from Basagain (Peñalver and San Jose 2010).

LiDAR: survey results

Recently, new tools and technologies of management and remote sensing, including GIS (Geographic Information Systems) and LiDAR (Light Detection and Ranging System), have been often used to complete the information blanks about defensive systems and access areas of Iron Age fortified villages in Gipuzkoa.

The use of LiDAR is currently achieving interesting results in most fields of archaeology (Berrocal *et al.* 2017: 195-215; Costa-García *et al.* 2016: 39-70; Rosales León *et al.* 2012) thanks to its high accuracy at detecting possible hidden structures by projecting laser beams from the air. The maps obtained thanks to this technology are processed, and they allow us to see thought the vegetation in the ground – a very useful tool in our territory under discussion here due to its extensive and high vegetation coverage, which hindes the visual survey and archaeological excavations.

The aim of LiDAR data analysis is twofold. On the one hand, it helps to confirm the existence of walls and other structures that might be hidden at first sight. On the other hand, it can help to locate the possible accesses to the hillforts. Very few of the latter are known, as mentioned above. The methodology used to carry out this study is the standardized one for such researches (Berrocal *et al.* 2017).

First results

Studies from the LiDAR application are still in process of investigation. What we can present here are working hypotheses, which must be checked alongside with the fieldwork, and, thus they are subjected to possible changes and future corrections (Figure 3).

It must be considered that anthropic action has a remarkable presence in our territory, especially by pine plantations and the building of forest tracks to access them, affecting the hillforts and modifying and altering the archaeological record. This makes more necessary an exhaustive research and fieldwork to corroborate the data provided by the remote sensing systems.

In Buruntza, a simple wall is clearly visible by LiDAR. Also visible is how it shuts the enclosure to the north, next to the crest of the hilltop, falling abruptly and taking advantage of the natural elements to improve the defense.

There are two gaps in the defensive wall, in the south (A) and east (B), which may indicate two possible accesses. Structure A seems to be skewed but, as it is similar as the adjacent excavation area, it cannot be stated that it is an entrance; structure B, due to its small width (1 meter approximately), and that it is cut by a modern fence, is less likely to indicate an access.

As can be seen in the aerial photography, and the topographic research of the hillfort of Basagain, the LiDAR data also confirm that the wall surrounds the hillfort, with the exception of two points. The first point is located in the center of the west slope (A), where there is an interruption in the walled enclosure, several meters long, that seems to be an access, but due to its amplitude and the dense vegetation there it is not possible to confirm it at this moment.

The second point is located to the south of the eastern slope (B), in the current excavation zone, where several houses of the site have been identified. In this area, a forest road destroyed part of the wall, impeding a proper reconstruction of its original features. The LiDAR data cannot provide definite clarification of this question, but it is one of the points of easiest access to the enclosure, thereby it was likely the entrance there. The archaeological study in the area of the east terrace shows new data about the wall, and it could be related to a zone of access to the hillfort.

According to the LiDAR data, there is a small walled enclosure of triangular shape, with rounded corners. It consists of a simple defensive system that embraces the whole settlement, likely in two levels. The first ine, on the top of the mountain and the second in west area the lowest one too, and in several areas of the northern and eastern terraces.

As it was aforementioned, the Intxur hillfort presents a very complex defensive system. The LiDAR study of the defensive elements, assessed by the topography work, are clearly visible: two large pits at the NE and NW; area of the SE ditch; numerous terraces and banks of varying lengths and widths of the southern slope; and the wall structure that runs through the top of the summit.

At the same time, LiDAR outcomes indicate how the enclosure is divided into several zones: a main or interior enclosure, surrounded by walls, embankments and with three gaps that could likely be some accesses to the settlement, other ones located at the NE area of main enclosure (A), at south of the structure (D) and two others (B-C) at the SW of the same place; and a secondary or exterior space, composed of several lines of terraces delimited by the two large ditches.

The LiDAR also indicates an interesting structure located to the NE (D), at the top of Mt Aldaba, similar to a rectangle shape, and pending to be identified. In any case, structures from the Carlist Wars (A.D. 1833 - 1876) have been identified in the vicinity, and therefore the structure could well correspond to this time.

The Murugain LiDAR results show clearly almost all the wall and the trenches of the Spanish Civil war. The excavated zone of the SW has been studied more deeply because it is the area where the Iron Age wall and the trenches of the Spanish Civil War overlap.

The accesses to this settlement have not been identified yet. It is possible that anthropic activity (the construction of a track to erect two television antennae) could have destroyed them.

At Murumendi the LiDAR data show a double ring structure, an inner and an outer wall, similar to the hillforts of Babio and Perigaiña (Aiara, Araba) (Peñalver 2001: 33-34). The defensive structures of the E area are close to the steep slope of the SE, taking advantage of the large gap to improve the defense. However, in the N side the two structures do not extend to the area of the mountain, which falls vertically, but are interrupted halfway, possibly because the walls have been disassembled.



Figure 3: LiDAR digital model and topographic redefinition of some hillforts of Gipuzkoa, with the generation of level curves 2 m equidistant from the MDT and the interpretation of the LiDAR data.

As for access to the fortification, the outer wall has a cutoff in the central area, already documented and excavated, supplemented by a possible small tower or bastion (Arrese, 2010: 422-421). On the other hand, according to the LiDAR, at the N end of the inner ring it seems that the layout had a skew, typical of accesses of this period (San Jose *et al.* 2015: 25-26).

The last two Guipuzcoan settlements discussed here, Moru and Akutu, despite identifying materials from the Iron Age, have revealed no defensive structures from the LiDAR results. Moru does provide a series of masonry structures, but only at some point in the perimeter, of rough construction, which are hard to compare with any other type of defensive structure.

Fortification systems

Some common guidelines that define hillforts defensive systems in Gipuzkoa can be put forward, and to this end, some aspects related to site location within the territory are taken into account, as well as the main construction features of the defenses within each site.

Seven of these hillforts are located along the main fluvial valleys that cross Gipuzkoa territory, more or less perpendicular to sea coast: four are on the left banks of the Oria River (Buruntza, Basagain, Intxur and Murumendi); the other ones can be found - from east to west -in the Urola valley (Munoaundi) and two in the Deba valley (Moru and Murugain). Only Akutu and Belaku are not in the main valleys, but they are in the middle-way of two valleys, Oria and Urola. Henceboth are in the way to the central territory, and very close to each other, controlling one of the natural pathways, important even today. It is noteworthy that four settlements are close in this area, occupying a relatively small space: Intxur (considerable large), Murumendi, Akutu and Belaku. For the moment, there is no known dating for the latter sites, but we may take into account that at least two of them are coeval, so the proximity between them - with a great visual control of the territory and visual contact among them⁴ – makes us think that they shared and defended a common space.

Except for Buruntza, which is located less than 10 km from the coast, no other hillfort has been located on the coastline so far.⁵ As these features are quite common along the Cantabria coastline, we may attribute the absence of them in Gipuzkoa to a lack of data.

As for the actual place names, most of them share the common lexeme 'muru' (*wall* in English). Many of these

sites still have evidence of walls: Murumendi, Moru, Buruntza, Munoaundi – before known as Muruil.⁶ In other instances, the names come from 'iri' (*city* in English) – i.e. Intxur. The settlements discovered later are located between the Oria and Urola mountain paths (near Ernio), and have Latin linguistic roots: Akutu (*acuti* – 'sharp') and Belaku (*Velacus* – an anthroponomy). Although there is no clear Roman evidence in this zone, located in the Gipuzkoa interior, there are many Latin place names in it, and even legends associated with the wars of Roman conquest.

If we pay attention once again to the locations of these settlements, we realize how predominant their positions were vis-à-vis respecting the natural pathways. They have in common an excellent strategic position in relation to their close surroundings, tending to be in areas that control fords (Buruntza), valley narrowings (Murugain), etc. Akutu and Belaku both seem to fulfill the same strategic function of territory control. Three of the sites (Akutu, Belaku and Moru), located along mountain routes, are quite small (less than one ha), so we may assume that their main function would not be as sites to accommodate large communities. They should, possibly, be more associated with functions of surveillance and control of territory.

In other cases, it is evident that, although strategic defense and control were important, other factors could have been considered when choosing a location, such as the control of fertile areas for agriculture (as might apply to Munoaundi), with extensive fluvial terraces in its visual area, or the control of metallurgical resources - Basagain. This latter hillfort is the only one that does not have a consistent natural defense, nor is it situated too high above its immediate surrounding; in fact, to protect it, it was required to be completely surrounded by an entire enclosure wall. The same slopes contain iron ore, and, although no signs of mining have been detected, the large amounts of slag recovered in the deposit excavation works offer a clear example of mining in protohistoric times (San Jose et al. 2009).

As for typology, we may distinguish several forms among the selected sites: two, Buruntza and Murugain (Figure 4), are the best examples of fortification: isolated in the mountains, at relatively high altitudes. In both cases the settlements are strategically placed on mountain peaks, occupying a minimum part of them. Especially in the case of Buruntza, we may think of this site as a 'watchtower', using more current terminology. It is important to take into account the distances between settlements and their nearest valley, which can entail a difference in height of 400 m.

 $^{^{\}scriptscriptstyle 4}\,$ One of them, Belaku, has also visual contact with Munoaundi in the Urola Valley.

⁵ Iron Age habitation in Zarautz (the coastal zone) is known (Olaetxea and Ibañez 2009).

 $^{^{\}rm 6}\,$ Pers. com. Migel Sasieta of the Munibe Taldea research group, Azkoitia.



Figure 4: High hillforts isolated from their surrounding environment.

The same may be said for Intxur, which, even if its isolation is not so obvious, is located at high altitude. In other settlements, many are isolated respecting to their surroundings; an exception is Basagain, which practically, is not raised above its immediate environs.

One of the factors ignored so far in Gipuzkoa is the role of the river as an active defense, at least for one of the sides of the settlement. Although sites are usually located next to rivers or streams, the Gipuzkoa water courses are either distant, or not as relevant, as for some other sites that can be found in other areas of Basque Country (Veleia) (Llanos *et al.* 2009). The geology of the terrain, which forms a relatively smooth landscape without remarkable steep cuts, precludes this kind of settlements.

About the visual relationships between the different settlements that occupy the territory, not much can be said at this stage due to the scarce number of known sites. Several sites do offer visual contact between them (i.e. Basagain–Buruntza; Munoaundi–Belaku; Intxur– Akutu–Belaku–Murumendi), but for the remaining ones, the contact is impossible due to the distances and the absence of settlements (as far as we know) filling the gaps between them. However, if we consider that ten known villages share visual contact (between the Oria and the passage of the Urola) it does seem to be an important factor when choosing the location or when organising the territory.

Respecting to the type with forestry features, cited above, there is the presence (or not) of natural defense. Virtually in all cases, the places, where these settlements are located, let using the orography features in favour of the defense in some of the mountain areas. Sometimes, vertical cuttings render a side completely inaccessible (Buruntza, Murumendi, Intxur, Murugain and maybe Akutu). Only Basagain has no natural defense for sure.

These natural defensive systems are complemented, in all cases, by several features and types of artificial defenses. In many cases these are provided by linear walls, usually interrupted in difficult access areas (Buruntza, Murugain, Akutu) and entrances (Munoaundi). This line closes completely where there is no strong natural protection (Basagain and, perhaps, Belaku). The Murumendi settlement is exceptional because it has two concentric wall lines, very close to each other: the exterior one is smaller than the interior (Arrese 2016).

According to current researches, we only have one example in Gipuzkoa of a highly complex defensive system– Intxur (bearing in mind that it takes up 17 ha, and is one of the largest hillforts in Basque Country).

This site consists of several wall lines that complement each other; although, the northern slope seems more abrupt, only defended by one or two wall lines. This is also the only example where pits located at the ends have been documented and which complement the wall defenses (Figure 5). In all cases, wall construction is adapted to the terrain, and a great effort is put during its construction and design (Figure 6). Local stone is commonly used and is quarried from the same area where the wall is to be built. Thus, the wall typology is clearly conditioned by the material geology. At Basagain, where Triassic



Figure 6: Views of the interiors of some excavated walls and a sketch model of an Iron Age wall from Gipuzkoa.

sandstone has been mainly used, the wall is made of stone slabs (although the foundations were made in massive blocks). Buruntza and Murugain are two notable exceptions, where walls are almost simple block accumulations of limestone, the terrain substratum being based on calcareous limestone. At Buruntza, the wall is built making use of the outcrops available in the area in order to save construction effort. It is also noteworthy that some of the used blocks are bigger than $120 \times 70 \times 30$ cm. Something unusual in the territory of Gipuzkoa.

There is also almost unanimity in the construction technique: two rough masonry walls, reinforced by an interior fill of rammed soil and gravel. The latter one was also made with local material. The widths documented during both excavations and surveys are not particularly large, usually around 2-2.5 m.

We know little about the heights of these walls, nor what other materials may have featured (apart from stone), i.e. whether they may have been complemented by organic materials. There is little information on the collapsed walls to help with a hypothesis on this issue. In some cases, such as Intxur, we can observe a maximum height of *c*. 0.8 m high in its northern area from the preserved remains.

As for access areas, so far, the main entrance of Munoaundi has been excavated clearly, as explained above (Figure 7). It consists of an entrance flanked by two towers, a masonry wall and earth and gravel,



Figure 7: Plan of the main entrance to Munoaundi (San Jose et al. 2015).

similar to the wall within which they are integrated. Murumendi also has an access to the enclosure in the outer wall (Arrese 2016), in the central area of this route, which seems to consist of some kind of bent shape that forms a narrow passage.

Conclusions

Looking at the characteristics of each settlement, using GIS and LiDAR, some general guidelines can be proposed about the known Gipuzkoa fortifications thanks to the data available from archaeological excavations carried out in recent years, and the analysis of them.

There is a preference in the selection of outstanding peaks in the immediate surroundings, which also offer some kind of natural defense, a wide visual control of the environment and the nearby communication routes. In some examples the reasons for the selection of these places does not seem to respond exclusively to defensive criteria: we also find cases where some control of local resources prevails (e.g. Basagain and its surrounding iron mines).

Fortification systems are based mainly on the construction of a single wall that completes the natural defense and frequently also fulfills the function of containing a terrace inside it. These walls are built with double facing with interior filling, usually with local masonry, not linear, but with an arrangement in more or less regular courses that offer external and internal facings and a fill of earth and gravel, or stones, of local origin. The ramparts of the walls are linear, adapted to the ground and levelled to look for a horizontal plane throughout the layout. The existence of pits is also documented in this case.

Access points tend to be combined with natural defensive features, creating some kind of obstruction to hinder sudden access, and improving the gate defenses in order to save resources.

These site-selection follows some general guidelines. Fortification systems and construction techniques are the most common within the Iberian Peninsula, and share some of their features with those ones found in other parts of Europe; thereby we can affirm they are coeval, and they correspond to the same episode.

Construction of these fortification systems implies a much superior technical knowledge than those that have often been assumed for Iron Age populations. The architecture, engineering and logistics required to achieve this kind of constructions, translates into a capacity to carry out large infrastructure works, such as walling. Maintenance and fortification system defense requires a large number of resources, while their preservation along the time necessarily implies the existence of communities with a high degree of organisation and internal cohesion to maintain them.

The spatial distribution of some settlements, such as the sites in the Oria valley, and the visual contact between them, allows us to presuppose the existence of relationships and coordination between hillforts. This does not necessarily suppose the existence of hierarchical relationships among sites. For example, depending on their size or economic potential, as indicated by Basagain and Intxur, which are close to each other and are also coeval, Basagain (with its 2.5 ha) would be more 'advanced' than Intxur (with its 17 ha), although they are located in the same valley and are relatively close.

So far, we have no data to confirm the continuation of this type of high-altitude settlement in Roman times. The data from that period indicate a change in settlement pattern, with an emphasis on coastal sites.

Finally, we ought to point out that, although the latest technologies – such as LiDAR – are useful tools, the information they have offered to study the archaeological context of Gipuzkoa must necessarily be supported by fieldwork research (especially by survey), due to the great amount of human activity that this territory has experienced.

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Excavations at Caerau Hillfort, Cardiff: Towards a narrative for the hillforts of south-east Wales

Oliver Davis and Niall Sharples

Abstract

The large-scale excavation of hillforts in Britain has tended to focus on sites in southern England, particularly Wessex. Understanding of hillfort use and function outside of these core areas of study is much less mature and often reliant on comparative analogy. This article draws upon recent open-area excavations at Caerau Hillfort, Cardiff, to explore one of these less well-known regions – Glamorgan in south-east Wales. Caerau is a large and architecturally complex hillfort, but like most in the region has seen little previous research. In this paper we demonstrate how targeted excavations of a single site, if of sufficient scale, can transform our knowledge of a region and challenge preconceived narratives.

Keywords: Caerau; Wales; Glamorgan; regionality; black-hole

Introduction

The interpretation of the role of hillforts has been a central focus for study of the British Iron Age for over 100 years. Over 4000 hillforts have now been identified in Britain (see Lock and Ralston 2017), but despite such large numbers, and their obvious importance to the societies that constructed and used them, surprisingly few have been excavated on a large scale. Those that have tend to be located in southern England, particularly Wessex (the modern English counties of Hampshire, Wiltshire and Dorset). Excavations in this core area of study, such as those at Danebury (Cunliffe 1984) and Maiden Castle (Wheeler 1943; Sharples 1991) have been highly influential, and central to our current understanding of Iron Age social, political, economic and religious systems throughout Britain. Yet, since the early 1990s many scholars have begun to question whether social and economic models derived from hillfort excavations in Wessex possess any currency outside of that region (see especially Bevan 1999). This has been a significant development which has led to the identification of important regional hillfort sequences in their own right, rather than reliance on a grand, national, narrative. Even so, the paucity of large-scale excavation of hillforts outside of central southern Britain means that our understanding of their function and social organisation remains almost a 'black-hole' in many regions (see Haselgrove et al. 2001; Davis 2017).

The aim of this contribution is to explore a region of south-east Wales, Glamorgan, which can be regarded as one of these 'black-holes'. The hillforts of this region, like in many areas of Europe, are an under-studied resource and our knowledge of their development and use is largely based upon comparative analogy with hillforts from better-explored regions. This seriously inhibits our ability to understand its regional character in relation to the significant technological and societal changes which occurred in the 1st millennium BC throughout Europe. By drawing from recent, and ongoing, excavations by the authors at one of the major hillforts in the region, Caerau Hillfort, Cardiff, we aim to demonstrate how targeted excavation of even a single site, if undertaken on a suitably extensive scale, can significantly advance our understanding of hillforts, and the societies who constructed them, in such blackhole regions.

Hillfort study in Wales

The Iron Age in Wales is characterised by a dense concentration of well-preserved hillforts (over 1000 according to the Hillfort Atlas, see Lock and Ralston 2017), but our understanding of their construction, use and function is poorly developed and uneven across the country (Figure 1). Many hillforts have been the subject of field survey, particularly by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW), which has resulted in an excellent corpus of detailed topographic plans. However, only a handful of these sites have subsequently been explored by extensive open-area excavation. A review of the state of hillfort research in Wales has recently been provided by Graham Guilbert (2018). He highlighted the paucity of large-scale excavation in the country and considered that '...viewed en masse, their study remains immature' (Guilbert 2018: 4). That is not to say that important regional sequences do not exist. In west Wales (the modern counties of Pembrokeshire, Carmarthenshire and Ceredigion, collectively known as Dyfed) large numbers of small (<0.5 ha), hillforts are known. A few,



Figure 1: Hillforts in Wales (data derived from Lock and Ralston (2017) with additions).

such as Castell Henllys (Mytum 2013), Walesland Rath (Wainwright 1971) and Woodside (Williams 1998), have been subject to expansive excavation so that their entire ground plans have been recorded. While artefacts, such as pottery, are almost completely absent, the structural evidence suggests intensive occupation, but by relatively small groups, perhaps only extended families. Systematic excavation of a number of hillforts
along the eastern border (the Marches), and northern coastal fringe of Wales, has also taken place. The hillforts in this agriculturally rich area tend to be large (>6 ha) and the interiors of three, the Breiddin (Musson 1991), Dinorben (Gardner *et al.* 1964; Savory 1971; Guilbert 1979; 1980) and Moel y Gaer (Guilbert 1975; 1976), have been sufficiently excavated to indicate that they were ordered settlements of large communities. These, however, remain the exception and few hillforts in the rest of Wales have seen more than small trenches.

Glamorgan: patterns and problems

The county of Glamorgan, in south-east Wales, is an area of around 2100 km² and can be divided into two distinct landscape areas (Figure 2). The northern part of the region is mountainous and cut by deep natural valleys that were heavily exploited for their coal reserves in the 18th and 19th centuries. It is not agriculturally productive and is today largely dominated by uncultivated, rough grazing land for sheep. By contrast, in the south, the landscape is dominated by a gently undulating lowland plateau stretching from Cardiff in the east to the Gower peninsula in the west. These lowland areas are generally agriculturally rich, particularly along the coastal fringe. Glamorgan was heavily urbanised during the industrial revolution and around 1.3 million people live in the region today, which represents almost half of the population of Wales.

Iron Age hillforts in the area have been surveyed by the RCAHMW (1976) and are also considered in a County History volume (Savory 1984), but little effort has been given to understanding their development and use through extensive excavation. Unsurprisingly, Guilbert (2018) does not consider a single hillfort in Glamorgan in his review of Welsh hillfort research and understanding of the chronology, and interpretation of the function, of hillforts in the region is problematic. It was these issues that led the authors to begin a research project at Caerau Hillfort, Cardiff, which is one of the largest and most architecturally complex in the region. This contribution will provide an overview of the present state of knowledge of hillforts in the region and then demonstrate how our excavations at Caerau are beginning to change our understanding of the Iron Age in the region.

Hillfort size, distribution and morphology

Clear regional differences in hillfort size and distribution can be observed in Wales. Hogg (1972) highlighted the dominance of small, heavily enclosed, sites in the generally upland region of Dyfed, while the much larger



Figure 2: Map of Glamorgan showing topography and location of hillforts (refer to Appendix 1 for hillfort names).

hillforts, some in excess of 10 ha were distributed in the more agriculturally fertile Marches. The large hillforts imply the existence of large communities (and small hillforts, small communities), and their distribution has been taken to reflect the contrasting land capability of eastern and western Wales (Davies and Lynch 2000: 161; Jackson 1999). Glamorgan has a mixture of small and medium to large hillforts, although no very large sites (in excess of 10 ha). In total 94 hillforts (including inland and coastal promontory forts) are known, with almost all of them located close to the lowland coastal plain.

Their distribution contrasts sharply with the preceding Bronze Age. While few Bronze Age settlements have been located in Glamorgan, numerous burial monuments are known dispersed throughout the region. Large numbers of cairns, and by implication people, cluster in the uplands and the absence of Iron Age hillforts in these areas has been interpreted as an actual movement of population, around 600 BC, from upland to lowland areas, possibly as a result of climatic deterioration (RCAHMW 1976). Several authors (Davies and Lynch 2000: 146; Ritchie 2018) have even argued that the construction of hillforts was a response to increased conflict due to such demographic displacement and resulting competition over resources. This argument is not particularly satisfying since it gives primacy to the apparent martial nature of hillforts, a position which has been heavily critiqued in recent years (Bowden and McOmish 1987; Sharples 2010; Lock 2011). In addition, neither the cairns nor the hillforts are well dated, which means that a temporal relationship remains hypothetical.

In terms of size, the vast majority (84%) of hillforts in Glamorgan enclose an area less than 1.3 ha with only 15 sites enclosing more than 2.5 ha. The main concentration of these larger hillforts is in and around the gently undulating lowlands of the Vale of Glamorgan, but also includes the univallate hillfort of Twmbarlwm, which lies on the edge of the uplands to the north-east of Cardiff. This group of larger Glamorgan hillforts should be considered as the south-western extremity of a supra-regional grouping of large hillforts which extends eastwards through Monmouthshire and into the central and northern Marches.

Smaller hillforts are found throughout Glamorgan but tend to be dominant in the western areas of the region, particularly the Gower peninsula, where a distinctive concentration of small promontory forts dominates its southern coastline. While similar sites occur elsewhere in the region, particularly along the coast of the Vale of Glamorgan, they tend to be larger and less numerous, and the hillforts of the Gower peninsula seem to have more in common with those sites in Dyfed rather than the eastern parts of the region. Taken as a whole, hillforts in the region exhibit strikingly variable morphology (Figure 3). Several of the larger hillforts, such as Caerau Hillfort, Cardiff, and Caer Dynnaf, possess complex multivallate boundaries and in-turned entranceways. Others, like Twmbarlwm or Castle Ditches, Llancarfan, are univallate, although the latter may have developed from an earlier, smaller enclosure (Hogg 1976). The smaller hillforts demonstrate even greater variability in plan, ranging from univallate sites with simple or sometimes elaborate entranceways (e.g. Llwynda Ddu), bivallate sites with close-set, or more rarely wide-spaced, boundaries (e.g. Castle Field Camp, Bonvilston Gaer), to complex multivallate sites (e.g. Summerhouse Camp). In the western, more upland, areas of Glamorgan there is an unusual group of large, multiple-enclosure sites. Examples, such as Gaer Fawr and Y Bwlwarcau, are characterised by relatively small inner enclosures with concentric, widely spaced, outer boundaries. The Bulwark, Llanmadoc Hill, on Gower can also probably be added to this group. They have been interpreted as specialised sites for livestock management (Davies and Lynch 2000: 176) with settlement, presumably only a single extended family, restricted to the small inner compounds. Unfortunately, none have been sufficiently excavated to elucidate the situation, but the character of their boundaries suggests long histories of development.

The large number of hillforts in Glamorgan which use the natural topography to augment their boundaries should also be noted. Part of the boundary circuit of around 65% of sites is defined by either a cliff or a steep slope. Some of these sites are coastal, but many inhabit inland locations atop natural promontories or along the edge of a plateau.

Ramparts and interiors

In the region 22 hillforts have been subject to some form of excavation. This number appears sufficiently high to provide us with a good sample of data for interpretation, but most of these represent antiquarian diggings or small-scale trenching in the mid-20th century. Excluding the authors' work at Caerau there have been only four excavations at hillforts since the 1970s using modern methods of recovery (Evans 2001; Lane and Seaman 2013; Wellicome and Connolly 2011; Yates 2002), although none of these can be considered to have been on a sufficient scale to talk in much confidence about hillfort construction and use.

The earliest recorded excavation was by Iolo Morgannwg at the large promontory fort of Dunraven, Southerndown in 1813. A small cutting was made through the rampart, which was described as formed of stone and clay (Waring 1850). The use of stone as a structural element within hillfort ramparts appears



Figure 3: Simplified plans of selected hillforts mentioned in text.

relatively common, particularly in the west of the region. A stone-revetted earthen rampart was revealed by small-scale diggings at the Bulwark, Llanmadoc Hill, on Gower (Davies 1964), while similar dry-stone faced banks were identified during Audrey Williams' (1939; 1940; 1941) campaign of excavation at the promontory forts of The Knave, Bishopston Valley and High Pennard in the 1930s and 1940s. Although nothing remained *in situ*, large stones contained within the fills of the exterior ditches suggest that a stone breastwork or revetment may also have been present at Harding's Down West (Hogg 1973) and Cil Ifor Top (Morgan 1911), also on Gower.

Small-scale, but important, excavations by A.H.A. Hogg on behalf of the RCAHMW at the large (4.2 ha) univallate hillfort of Castle Ditches, Llancarfan, in the Vale of Glamorgan, also revealed the structural use of stone. The hillfort boundary was formed by a rock cut ditch, 11 m wide and 3 m deep, which was flanked by a substantial 9 m-wide earthen bank revetted with large limestone blocks on both the exterior and interior faces (Hogg 1976).

Timber was used as a structural element within the ramparts of some hillforts. A narrow cutting through the earthen rampart of the small hillfort of Castle Field Camp, north-east of Cardiff (Wellicome and Connolly 2011) identified a posthole at its front that may be part of a timber revetment.

This meagre collection of narrow cuttings through hillfort ramparts in Glamorgan has revealed little about the potential complexities of their structure and sequence (for discussion about the shortcomings of small-scale sectioning of hillfort ramparts, see Guilbert 2018). However, the apparent preference for the revetment of ramparts with stone in the west of the region is interesting given that the pollen record suggests timber would have been plentiful in the surrounding landscape (Caseldine 2018). Toby Driver (2013) has recently argued that hillfort architecture and the deliberate choice of specific building materials may reflect 'cultural' preferences and the use of stone could be argued to provide a more durable and impressive façade to the hillfort boundary.

Our knowledge of the interiors of hillforts is poor. Surface evidence for internal features is rare, likely because many hillfort interiors have been cultivated in the Medieval period and later. However, roundhouse platforms are still visible in nine hillforts (Dunraven, Thurba Head, High Pennard, Harding's Down West, Cil Ifor Top, The Knave, Bishopston Valley, Maiden Castle, Oxwich, and The Bulwark, Llanmadoc Hill – see RCAHMW 1976: 9). Some of the platforms in the smaller hillforts have been explored by excavation. At The Knave, a platform excavated in the southwest of the interior revealed a possible post-built house with central hearth (Williams 1939), while platforms explored at High Pennard and Bishopston Valley revealed occupation debris, but no structural features (Williams 1940; 1941). The most informative excavations were probably by Hogg at Harding's Down West (1973). A small excavation over a levelled area within the centre of the hillfort, revealed a cluster of postholes argued to represent a roundhouse, around 10 m in diameter (hut 1), although recent reinterpretation (Walker and Davis, in prep.) suggests the presence of a more modest wall gully and post-defined structure, *c.* 6 m in diameter, which was replaced by a square four-post structure (most likely a granary or storage building) at a later phase.

It is difficult to use this evidence to estimate the total number of houses within any given enclosure. Surface evidence is easily destroyed by ploughing and erosion, or obscured by natural silting, particularly in the lee of ramparts (post-built structures showing no topographic relief were identified behind the ramparts at Bishopston Valley and High Pennard for instance). Nonetheless, some have argued that the apparent low density of occupation at the smaller sites is real and see them as elite family settlements, or places of refuge (RCAHMW 1976; Evans 2018). However, 21 house platforms are visible at Dunraven, and although the interior is unexcavated, a magnetometor survey in the 1990s of an area of 1600 m^2 in the northern area of the fort revealed the presence of at least two more houses that do not survive as earthworks (Barker and Mercer 1999a). Partial geophysical surveys at Castle Ditches, Llantwit Major, and Porthkerry Bulwarks also revealed concentrations of roundhouses, enclosures and pits (Barker and Mercer 1999b; 1999c), indicating that the larger hillforts may have been intensively occupied, probably by large communities.

The paucity of excavation means that it is difficult to assess with any certainty the economy and subsistence of hillforts in the region. Pottery is present, but not abundant; small assemblages representing a handful of vessels have been recovered from nine sites. Most sherds are small fragments of plain coarse wares which are not easily dateable, but vessels of South Western Decorated (Glastonbury) Ware are known from a few sites (The Knave, Castle Ditches, Llancarfan, Tyn-y-Coed and possibly Harding's Down West), which were probably deposited in the last two centuries BC. Iron working slags have been found at Castle Ditches, Llancarfan, Harding's Down West, Bishopston Valley and Castle Field Camp, and spindle whorls have been recovered from Castle Ditches, Llancarfan, The Bulwark, Llanmadoc Hill and High Pennard, but the quantities are modest and it is difficult to argue with any confidence that these hillforts were centres of metal or textile production.

Livestock management presumably played a significant role in the Iron Age economy at hillforts. The bones of cattle, sheep, pigs and horse have been recovered from a number of sites, but the only quantified assemblage is that from Castle Ditches, Llancarfan (Hogg 1976). This showed roughly equal proportions of cattle and sheep (c. 40-45%) and a relatively high proportion of pig (c. 10%) when compared to other areas such as Wessex (see Hambleton 1999 for comparative analysis of animal husbandry regimes in Iron Age Britain), but it is not necessarily representative of hillforts in the region as a whole. Wild resources were also exploited: red deer bone is recorded from Worm's Head, Bishopston Valley and Castle Ditches, Llancarfan, which indicates hunting; shellfish were also collected at coastal sites such as The Bulwark, Llanmadoc Hill, The Knave, Bishopston Valley, High Pennard, Worm's Head and Porthkerry Bulwarks, although fishbone is absent.

That animals were exploited as part of a mixed farming regime is highly likely, but evidence for arable cultivation is scant. Carbonised cereals (spelt, emmer and oats) have been recovered in small quantities from Castle Field Camp (Wellicome and Connolly 2011) and Castle Wood (Evans 2001), but most hillforts in Glamorgan were excavated before modern sampling methods and no other charred grain assemblages exist. However, proxy evidence such as quern stones from Castle Field Camp, Worm's Head and Llwynheiernin, and a potential four-post granary at Harding's Down West, indicate that arable farming may have been an important part of the agricultural economy.

The limited evidence from hillfort interiors means that the interpretation of their social and economic role is fraught with difficulty. Attention has tended to focus on the monumental character of their boundaries, which has been assumed to be related to the status of the inhabitants (Cunliffe 2010; Davies and Lynch 2000). Cunliffe (2010: 305) has argued that the hillforts in Glamorgan were the homesteads of elite families and their entourages, but there is little material evidence to support such a position.

Chronology

Unsurprisingly, given the dearth of excavation and the limited pottery assemblages, the chronological framework for hillforts in Glamorgan is poor. Only seven radiocarbon dates exist, derived from just three sites: Tyn-y-Coed, Castle Field Camp and Beech Court Farm (Table 1), but all are problematic. The radiocarbon samples from Castle Field Camp were from secondary ditch fills and so cannot be taken to date its construction, while Tyn-y-Coed and Beech Court Farm appear to be 'unfinished' hillforts. Some attempt has been made to assign dates based upon the limited ceramic evidence (summarised for the Vale of Glamorgan by Davis 2017), but there is little precision. In a few cases it has been possible to show sequences of construction. Two phases of rampart have been demonstrated, at Cil Ifor Top and Burry Holms for instance, while Castle Ditches, Llancarfan appears to have developed from an earlier, smaller hillfort, but all remain undated. Morphological characteristics such as mulitvallation or in-turned corridor entrances, such as at Caer Dynnaf, Caerau, Llantrissant, and Caerau Hillfort, Cardiff, appear to suggest, on analogy with other areas, a Middle Iron Age date for these sites, although there is little understanding of the chronological development of these features in the region. The period to which the smaller univallate hillforts belong and how they relate to the more complex sites is also unclear.

Despite the uncertain nature of the evidence some have argued that hillforts in Glamorgan were relative latecomers originating in the 4th century BC or later (Savory 1984; Davies and Lynch 2000; Howell 2009). This

					Calibrated age ranges		
Site	Lab ID	Sample Material	Context	Radiocarbon Age (BP)	1 sigma (68.3%)	2 sigma (95.4%)	
Beech Court Farm, Ewenny	GrA-27318	Prunus sp. Roundwood, charcoal	From layer above primary silts in enclosure ditch	2230 ± 40	369 – 210 cal. BC	388 – 202 cal. BC	
	OxA-14142	Prunus sp. Roundwood, charcoal	From layer above primary silts in enclosure ditch	2099 ± 26	169 – 61 cal. BC	190 – 50 cal. BC	
	NZA-21146	Fraxinus charcoal	From posthole just inside entrance	2500 ± 30	767 – 552 cal. BC	788 – 537 cal. BC	
	Beta-304092	Charcoal (undefined)	Secondary fill of enclosure ditch	2030 ± 30	88 cal. BC - cal. AD 20	156 cal. BC – cal. AD 53	
Castle Field Camp	Beta-304091	Charcoal (undefined)	Secondary fill of enclosure ditch	2060 ± 30	153 – 39 cal. BC	170 cal. BC – cal. AD 4	
	Beta-304090	Charcoal (undefined)	Secondary fill of enclosure ditch	1850 ± 30	cal. AD 128 – 215	cal. AD 85 – 235	
Tyn-y-Coed, Southern Banks	UBA-35027	Organic residue	From residue on Glastonbury Ware sherd from primary fill of enclosure ditch	2019 ± 26	46 cal. BC – cal. AD 16	92 cal. BC – cal. AD 54	

Table 1: Published radiocarbon dates from hillforts in Glamorgan.

position seems difficult to sustain with any confidence. Late Bronze Age and Early Iron Age construction dates have been established for hillforts in the Marches (e.g. The Breiddin, Musson 1991) and Dyfed (e.g. Dale, Benson and Williams 1987) and it would be surprising if at least some hillforts in Glamorgan did not date to this period.

Excavations at Caerau Hillfort, Cardiff

Caerau Hillfort is one of the 15 larger hillforts in Glamorgan (enclosing more than 2.5 ha). It is located on a promontory projecting from the eastern escarpment of the Vale of Glamorgan that overlooks the valley of the river Ely. It is currently contained within the urban context of west Cardiff and is surrounded by modern housing (Figure 4). The promontory is a relatively flat plateau, c. 70-80 m OD, with steep drops to the west, north and south. The hillfort is distinctly triangular in shape and covers a total area, including the boundaries, of 8.8 ha. The steep north and south slopes are both enclosed by three closely-set earthwork banks with accompanying ditches. This system probably extends around the north east corner of the hillfort but in this area the earthworks were badly damaged by the construction of a Medieval earthwork castle, a church and an accompanying external settlement. The south eastern boundary where the promontory joins the main escarpment enclosure is defined by a substantial bank, around 10 m in height and 24 m in width, and accompanying ditch, fronted by a low counterscarp bank. This is morphologically very different to the other boundary earthworks, which suggests that it may relate to a different phase of enclosure construction (conceivably either earlier or later).

The earthworks are penetrated by four major entrances orientated to the cardinal compass points in the north, south, east and west. The eastern entrance is the most elaborate. The ends of the boundary earthworks on the eastern side were in-turned into the hillfort to create an elongated corridor *c*. 50 m in length. The southern entrance is flanked on one side by an in-turn of the eastern hillfort boundary, but the multiple ditches on the southern side of the entrance are not in-turned. A simple gap through the hillfort boundaries at the western tip of the promontory may be an original entrance. Geophysical survey in the north-east angle of the hillfort suggests a fourth entrance, consisting of a simple gap through the boundaries, existed in this location (Davis et al. 2015). A smaller gap through the boundaries, immediately to the south-east of this northern entrance, and adjacent to a springhead, may be another, small and narrow, entrance.

The hillfort is both the largest and most architecturally complex in the region, but before the outset of our work had received little archaeological attention except for a topographic survey undertaken by the RCAHMW (1976). In part this may be due to the hillfort's location – it is nestled within a deprived housing estate facing serious economic and social challenges, not least high



Figure 4: Location map of Caerau Hillfort showing 'urban' context.

unemployment and poor educational attainment. The site suffers from a range of anti-social behaviours and as such is not the conventional location for a long-term research project. However, Cardiff University's School of History, Archaeology and Religion has a strong tradition of community engagement and outreach and from the beginning our project was focussed on challenging stigmas that are associated with living in the area and developing educational opportunities for local people through the practical skills of excavation and archaeological science. Under the auspices of the project name 'CAER Heritage' four seasons of excavation on the hill have now been completed with more planned for the summer of 2019 (see Ancarno et al. (2016) and Davis *et al.* (2019) for evaluation and discussion of the community engagement aspects of the project).

Results of the excavations

The interior of the hillfort is currently given over to grassland for the pasture of horses and cattle although it has been repeatedly ploughed in the recent past, which has destroyed any upstanding prehistoric remains. A geophysical survey of the interior was undertaken (GSB Prospection 2012; Davis *et al.* 2015) and revealed a complex pattern of activity, with numerous linear ditches criss-crossing the interior and a scatter of obvious roundhouses and other anomalies indicating dense occupation (Figure 5). Our initial programme

of excavation set out to investigate these anomalies, attempting to characterise and date them, and explored around 0.15 ha of the interior (which equates to almost 50% of the area of all other excavations at hillforts in the region added together).

The rampart sequence

The inner rampart was explored in two places on the northern and southern sides of the hillfort. Further work on the middle and outer earthworks is planned, but they are heavily wooded and require intricate excavation. On the south side, a section of around 15 m of the rampart was exposed in an area excavation. At the base of the rampart was a line of postholes, presumably the remains of a timber fence. A posthole was also identified at the base of the rampart in a narrow 4 m-wide cutting on the northern side of the hill, suggesting that this fence wrapped around the hill (for *c*. 1000 m) and was part of the primary enclosure of the hilltop (Figure 6). This feature currently remains undated but is most likely Late Bronze Age or Early Iron Age.

The fence was sealed by a low earthwork bank, 5 m in width, and fronted by a timber revetment, which clearly represents a significant addition to the hillfort rampart. An articulated cattle pelvis from beneath this earthwork, possibly a foundation deposit, produced



Figure 5: Composite geophysical survey plan of the interior of Caerau (geophysical survey copyright GSB Ltd and GeoArch Ltd.). Location of trenches shown.



a date of 355-54 cal. BC (95.4%), but two carbonised cereal grains recovered from deposits building up against the back of it produced dates of 397-207 cal. BC (95.4%) and 536-381 cal. BC (95.4%), suggesting the bank was constructed in the early to middle 4th century BC. The middle and outer ramparts may also date to this period.

A second phase of rampart was built over the tail of this primary bank and comprised a dump of clay originally at least 4 m wide and 1.5 m high. This bank overlay a soil horizon and, on the western edge of the area excavation of the south rampart, a substantial Romanperiod midden. A barley grain from a dump of charred cereals sealing this bank produced a radiocarbon date of cal. AD 774-968, suggesting the bank was an Early Medieval refortification of the hillfort.

Occupation within the interior

Eight trenches have now been excavated within the interior of the hillfort (see Figure 5). Surprisingly,

several of the linear anomalies have proven to be the Early Neolithic ditches of a large causewayed enclosure. This is a significant discovery in Wales but will not be discussed further in this article (see Davis and Sharples 2017).

The nature of the Iron Age occupation was most thoroughly explored by a large 20 m by 30 m area exposed on the south side of the hillfort (Figure 7). It was positioned over an obvious circular geophysical feature which clearly represented a roundhouse. However, occupation activity here proved to be much more intensive than originally anticipated. The earliest occupation was represented not by one, but by two, roundhouses (CS1 and CS2) defined by conjoined, shallow circular gullies. The pair of penannular gullies are too wide to have been foundations for the house wall and such features are usually interpreted as drainage ditches designed to capture water from the eaves of the roundhouse roof (e.g. Harding 2009). No structural features from the construction of these two houses survived, probably because the wall supports were not



Figure 7: Simplified plan of Trench 3 showing roundhouses and other features.

dug into the soil but sat on the ground surface. A small assemblage of Early Iron Age pottery, probably dating to the 7th to 6th centuries BC, was recovered from the house gullies, while a particularly fine high-shouldered small ceramic cup or bowl of a similar date was found placed within a small pit immediately to the east of CS1. A radiocarbon determination from a single barley grain recovered from the gully of CS1 produced a date of 795-545 cal. BC (95.4%), indicating their possible Early Iron Age date. The geophysical survey suggests that a row of such houses runs along the line of the rampart on the southern side of the hillfort and this is likely to represent the earliest Iron Age occupation of the hilltop. Although currently unconfirmed, it is possible that the primary enclosure of the hill by a timber fence line dates to this phase.

Around the middle of the 4th century BC, when the first earthwork rampart was constructed on the north and south side of the hill, the organisation of the

internal settlement was modified. The gully-defined roundhouses were replaced by a large post-built roundhouse which was rebuilt on the same spot at least four times. These houses do not show up at all on the geophysical survey, so it is difficult to estimate their density within the rest of the hillfort. However, other post-built structures were identified in some of the smaller trenches scattered around the interior, suggesting the hillfort was intensively occupied at this time.

This arrangement may have lasted for one or two centuries, but by the 1st century BC the interior of the hillfort underwent a fundamental change. Occupation on the south side of the hillfort ceased and it is possible that the hillfort was abandoned as a settlement by this time. An oval, ditched-defined enclosure, 45 m by 35 m, was subsequently constructed in the south-east corner of the hillfort. It is possible that this was the enclosed residence of an important family, suggested by the recovery of a colourless glass bead with a unique yellow glass spiral decoration from the enclosure ditch (Foulds 2014). Even if settlement continued in other areas of the hillfort interior as yet unexcavated, the construction of an enclosed space for occupation suggests a dramatic social change in the way some individuals distinguished themselves from the broader community. The enclosure ditch was deliberately backfilled at some point in the 1st century AD, possibly around the time of the Roman conquest.

After a short hiatus, in the late 1st or early 2nd century AD, a midden began to accumulate over the remains of the Iron Age roundhouses on the southern side of the hillfort. Although contemporary settlement structures have yet to be identified, clearly the hillfort was once again occupied at this time. The Romano-British ceramic assemblage suggests this occupation continued into the middle of the 4th century and it seems to have been associated with small-scale iron working. Interestingly, this occupation appears contemporaneous with that of Ely Roman villa, located c. 1 km to the east of the hillfort. The villa was abandoned in the mid to late 4th century (Peter Webster, pers. comm.) and it is intriguing that the hillfort rampart appears to be refurbished at some point after this date. While Wales was largely aceramic from the 5th to the 10th centuries, were Caerau to have been a major centre during the immediate post-Roman period (after c. AD 410), we might expect to see some continental imports, especially of fineware and amphorae. These are represented at the nearby Early Medieval hillfort at Dinas Powys (Alcock 1966), but are, so far, missing from Caerau. However, a pear-shaped pit, interpreted as a corn dryer, excavated on the southeastern side of the hillfort produced a radiocarbon date of cal. AD 428-637 (95%), suggesting the hillfort was occupied during this period.

The agricultural economy

Over the course of the excavations we have implemented an intensive sampling strategy of all archaeological deposits in order to recover palaeo-environmental remains. Over 440 samples have now been taken and floated. The resulting flots and coarse residues are still undergoing assessment by Wendy Carruthers, but such an intensive approach has rarely been undertaken at any hillfort in Wales and has the potential to tell us much about the agricultural economy of the site.

Initial results from Iron Age contexts indicate that the major cultivated crops were emmer and spelt wheat and barley. Chaff is scarce, but when processing waste has been identified it suggests that crops were being brought to the site already partially processed as spikelets, or semi-clean grain for storage (Wendy Carruthers, pers. comm.). The highest concentrations of charred cereal grains appear to derive from cut features located on the northern side of hillfort rather than adjacent to the occupation areas on the southern side. A number of these grain-rich features are likely to be part of four-post storage buildings and there is the tantalising possibility that the interior of the hillfort may have been divided into an area for occupation in the south and storage in the north, although more extensive excavation is required to confirm this pattern.

Although more than 6000 animal bones have so far been analysed, preservation is generally poor and only around 10% of these are identifiable to species (Jones 2014; Madgwick and Hodkinson 2015). Provisional patterns suggest an Iron Age faunal economy dominated by cattle (57%), with sheep representing only 25% of the assemblage and pig 18%. These proportions are unusual in comparison to other Iron Age hillfort faunal assemblages in southern Britain, where sheep tend to dominate. However, they are consistent with the findings from recent excavations at nearby Llanmelin Hillfort, Gwent (Jones 2013), and relatively high proportions of pig were also identified at Castle Ditches, Llancarfan (Hogg 1976). Only very few specimens from Caerau are complete enough to provide ageing data, but where this has been possible it appears to suggest animals in wide-ranging age categories. Although only tentative conclusions can be drawn from the small number of available animal age profiles, the presence of mature sheep could be indicative of wool production, and a single foetal sheep specimen may also suggest onsite breeding. The presence of mature and juvenile cows also hints at secondary product production, potentially milking, although with the current small dataset this is not possible to demonstrate convincingly.

The evidence suggests that the Iron Age occupants of the hillfort practised a mixed-farming regime with a focus on the cultivation of wheat and barley and keeping of cattle. The scarcity of chaff and comparative abundance of grains suggest that the earlier stages of crop processing, such as threshing and winnowing, were undertaken elsewhere prior to bulk storage at the hillfort. It is difficult, however, to assess the relative importance of arable and livestock within the farming system at Caerau. Van der Veen and Jones (2007) have argued that the presence of large quantities of grain on sites indicate large-scale production and consumption. The charred grain assemblage from Caerau is small, if compared to hillforts in southern England such as Danebury (Jones 1984), and in these terms suggests arable cultivation was small-scale. However, the majority of the crop evidence from hillforts like Danebury in southern England comes from the fillings of abandoned grain storage pits which act as artefact and ecofact 'traps' at these sites. Such pits are neither present at Caerau, nor throughout Wales, and their absence may bias against the recovery of charred grain assemblages.

Production and exchange

While intensive occupation of the hillfort in the Iron Age can be demonstrated, the material assemblage is meagre. Pottery, for instance, was clearly not widely made or used in the earlier parts of the Iron Age at Caerau (7th to 3rd centuries BC) and only 37 sherds have been recovered dating to this period. Their forms and decoration, which include carinated shoulders and fingertip impressions, can be paralleled at sites across southeast Wales and into southern England, but they are all made from locally available raw materials. Later Iron Age (2nd to 1st centuries BC) ceramics characterised by simple, burnished, handmade jars with beaded or short everted rims, are also present in small quantities (58 sherds). Again, they could all have been made locally, but several sherds were decorated in the 'Glastonbury' or 'South Western' style, which has a wide distribution along the Severn Estuary in southeast Wales and southwestern England. It is not correct to describe the Iron Age at Caerau or in southeast Wales as aceramic, but clearly pottery was not common, and a variety of wooden, leather and horn vessels must have served the role ceramic containers played in other parts of Britain. That the scarcity of earlier Iron Age ceramics is not a bias of recovery or preservation is evidenced by the large quantity of sherds (c. 1300) recovered from Caerau dating to the 1st century AD, and also from the Neolithic enclosure ditches. Clearly at these times pottery did form an important element of the domestic assemblage and provided a means for the community, family or individual to express themselves.

Other material culture, such as worked bone, metal or fired clay, are poorly represented at Caerau. Three spindle whorls (one of lead, one of fired clay and one of bone) have been recovered and attest to the production of textiles, but these were all from contexts of the 1st to 2nd centuries AD. The most common objects are those of stone. A range of hammerstones, rubbers, slingstones and querns (both saddle and rotary) have been recovered. The querns attest to processing of cereals, and slingstones are a common find on Iron Age hillforts throughout Britain. The hammerstones and rubbers must have had a variety of functions from dressing skins to polishing and sharpening metal tools.

The material assemblage, as with many sites in Glamorgan, is as notable for what is absent as for what is present. Few metal objects survive, except for small fragments of iron and iron slag, probably because iron was recycled (Crew 1995), and the range of domestic equipment made from organic materials, such as baskets and wooden and bone tools, must have been extensive. Personal ornaments at Caerau are also rare, but several fragments of shale bracelets have been recovered,

one of which was broken during manufacture, which suggests production on site. The shale has not yet been provenanced, but the raw material is available along the southern Glamorgan coastline (Neville George 1982: 118-119). A single glass bead, probably manufactured at Meare, Somerset (southwestern England) in the 2nd century BC has also been recovered (Foulds 2014).

Emerging narratives

How should we understand the social implications of the construction and occupation of Caerau Hillfort, and in what sense has our work contributed to answering some of the questions about hillfort chronology, economy and function in Glamorgan? As we have outlined, the sequence and dates for the construction, use and abandonment of hillforts in Glamorgan is very poorly understood. On current ceramic evidence, the vast majority of the excavated smaller hillforts appear to belong to the Late Iron Age (Davis 2017), but the evidence from Caerau suggests that some of the big hillforts in the region may have been constructed and occupied as early as the 7th or 6th century BC. This is interesting, as very few settlement sites have been identified which belong to this period (the Late Bronze Age/Early Iron Age transition), most likely because settlement at this time was unenclosed and dispersed. Field systems or other landscape boundaries are also unknown at this time and our evidence for people is largely restricted to funerary monuments, such as cairns and barrows, and bronze metalwork hoards, of which there are many. This situation is suggestive of relatively mobile communities in which the exchange and consumption of material culture (particularly bronze) played an important role in the negotiation of social relationships and access to land.

The hoarding of bronze metalwork around Caerau Hillfort is particularly intense, with 11 Ewart Park or Llyn Fawr hoards, or single finds (dating from the 10th to 7th centuries BC) known within 5 km (Figure 8). Hoarding activity has often been interpreted as ritual deposition of material acquired in gift exchange (Barrett and Needham 1988). As a result, the exchange and deposition of bronze may have possessed considerable symbolic value as a means to develop and maintain social relationships between communities (Sharples 2010). The hoarding of bronze appears to abruptly cease around 600 BC across south Wales. A variety of reasons for this has been offered, from a crisis in the supply of copper and tin to the conscious rejection of bronze for iron (see especially Needham 2007). Whatever the reason, it is clear that the social value of bronze was undermined, and groups sought new ways to build relationships. The construction of hillforts such as Caerau can be seen as a response to the bronze crisis, in which rampart construction events became the key arena for the negotiation of relationships between



Figure 8: Late Bronze Age metalwork finds recovered from around Caerau Hillfort.

groups (Sharples 2010). The initial boundary enclosing Caerau was a timber fence. This would have required considerable felling, preparation and transportation of timber, along with significant resources of food to sustain the construction team. Involvement in this exercise provided a means for creating new relationships and alliances between groups through the acquisition and control of the timber and food resources, and the provision of labour.

The initial creation of Caerau's boundary was an important act to establish social cohesion, but it was also an obvious claim to the control of land and provided a place where political power and social issues could be negotiated. Initially several houses contained within penannular ring ditches were built within the interior. These presumably represent the centralisation of households who had previously been dispersed throughout the surrounding countryside. It is interesting that these houses were contained within gullies. Such features are usually interpreted as drainage features (Harding 2009) but given that later roundhouses at Caerau did not possess them suggests that they may have had a social rather than a functional purpose (see Davis 2013; Davies 2017). If we consider gullies as a form of enclosure, then placing a house within one could be interpreted as an attempt to delimit space, and by implication a socially, independent unit within the hillfort. In this sense the rural settlement and social pattern had been translocated to Caerau. Such a situation has been observed in the early life of other hillforts throughout Britain and Europe (see Davis 2019; Fernandez-Gotz 2014).

In the Middle Iron Age (c. 350 BC) the ramparts at Caerau were significantly aggrandised and the internal organisation of the settlement was modified. The gully-defined roundhouses were replaced by post-built structures, and storage buildings may have filled much of the northern area of the interior at this time. The absence of gullies surrounding roundhouses may have been a conscious attempt by the authority controlling the hillfort to break down the social independence of households living at Caerau. Although pottery styles suggest the community had knowledge of a broader Iron Age world in western Britain, it was essentially self-sufficient. There is little evidence of marked social distinctions between households living within the hillfort, suggesting decisions may have been taken at a communal level. The power of this community was presumably derived from agricultural production, the control of land, and the centralised storage of agricultural surplus.

At the end of the 1st millennium BC the social system which produced hillforts like Caerau appears to have been in decline. The emergence of large numbers of small enclosures in the landscape surrounding Caerau suggests that households had moved back into the countryside and the hillfort was itself occupied by one of these small enclosed farmsteads. The creation of field systems appears to coincide with the emergence of these small enclosures, which could be interpreted as an attempt by individuals to claim ownership of previously communal land and resources. It is noticeable that this period also sees the increase in the production, exchange and deposition of all forms of material culture, particularly those associated with individual status, such as personal ornaments and decorated ceramics. The control of the resources required for the production of such material, as well as the exchange networks to acquire it, would be a source of power for some individuals with the potential to undermine the communal system of hillforts.

Although Glamorgan lacks the large material assemblages, the tentative narrative which is emerging from our work at Caerau Hillfort appears to suggest that the development of hillforts in the region shares remarkable similarities with that proposed for Wessex (Cunliffe 2006; Sharples 2010). This sees hillforts emerging in the Early Iron Age, possibly as a response to the breakdown of Bronze Age exchange relations. In the Middle Iron Age a few were aggrandised and occupied by large populations, before most were abandoned in the 1st century BC and the surrounding countryside repopulated with small, enclosed, settlements.

Cunliffe placed Glamorgan at the interface between his 'Central Southern' and 'South-Western' socio-economic zones in Britain (2010: figure 21.2). Interestingly, the larger, more material-rich hillforts, like Caerau, cluster in the east of Glamorgan, while the smaller sites are more densely distributed in the west of the region. The larger hillforts apparently have more in common with the hillforts of central and southern England and the smaller hillforts are more similar to those found in Dyfed. Where the boundary between the two actually lies is not clear and it is probably best to consider Glamorgan as a frontier zone between two socio-economic and settlement systems which merge imperceptibly into one another.

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No.	Name	Easting	Northing	Site Type	Internal Area (Ha)	Excava- ted?	Area Excavated (m ²)	References
1	Beech Court Farm, Ewenny	290472	176558	Inland Promontory Fort	0,78	Yes	Unknown	Yates 2002
2	Bishopston Valley	256930	187800	Inland Promontory Fort	0,1	Yes	270	Williams 1940
3	Blue Pool Bay	240780	192880	Coastal Promontory Fort	0,07	No		
4	Bonvilston Gaer	306350	174740	Hillfort	1	No		
5	Buarth y Gaer	276550	193600	Hillfort	1,1	No		
6	Burry Holms	239880	192580	Coastal Promontory Fort	1,2	Yes	20	Hague 1978
7	Cae Summerhouse Camp	286390	177980	Hillfort	0,9	Yes	Unknown	Davies 1966b
8	Caer Blaen-y-Cwm, Margam	283330	188070	Inland Promontory Fort	0,1	No		
9	Caer Dynnaf	298350	174250	Hillfort	3,8	Yes	80	Davies 1966a; 1967a; 1967b
10	Caerau Hillfort, Ely	313370	174980	Hillfort	5,1	Yes	1.344	
11	Caerau, Llantrisant	306450	183200	Hillfort	3,6	No		
12	Castell Moel	305390	173430	Hillfort	0,8	No		
13	Castell Morlais	305000	209500	Hillfort	0,8	No		
14	Castle Ditches, Llancarfan	305910	170030	Hillfort	4,2	Yes	250	Hogg 1976
15	Castle Ditches, Llantwit Major	296020	167420	Coastal Promontory Fort	2,5	No		
16	Castle Field Camp	320440	184020	Hillfort	0,41	Yes	39	Wellicome and Connolly 2011
17	Castle Wood	304460	168230	Inland Promontory Fort	0,48	Yes	30	Evans 2001
18	Caswell	258800	187560	Coastal Promontory Fort	0,2	No		
19	Chapel Hill Camp, Merthyr Mawr House	288870	178060	Inland Promontory Fort	0,4	No		
20	Cil Ifor Top	250580	192340	Hillfort	2,9	Yes	58	Morgan 1911
21	Cliff House Enclosure I	304880	168990	Inland Promontory Fort	0,16	No		
22	Cliff House Enclosure II	304900	169080	Inland Promontory Fort	0,34	No		
23	Coed Llancadle	303060	168330	Inland Promontory Fort	0,27	No		
24	Coed-y-Mwstwr	294340	180990	Hillfort	2,5	No		
25	Craig Ruperra	322300	186700	Hillfort	1,1	No		
26	Craig Tan-y-Lan	295860	179580	Inland Promontory Fort	1,29	No		
27	Craig-y-Dinas, Hirwaun	291500	208100	Inland Promontory Fort	2,67	No		
28	Crawley Rocks	251870	187960	Coastal Promontory Fort	0,1	No		
29	Cwm Bach	289720	171750	Coastal Promontory Fort	0,3	No		
30	Cwm Cewydd	290840	170360	Inland Promontory Fort	0,31	No		
31	Cwm Col-Huw Enclosure	295679	167643	Inland Promontory Fort	0,53	No		
32	Danish Fort, Sully Island	316870	166970	Coastal Promontory Fort	0,4	No		
33	Dinas Powys (Cwm George)	314830	172240	Inland Promontory Fort	0,23	Yes	850	Alcock 1966
34	Dunraven	288700	172710	Coastal Promontory Fort	6,5	Yes	Unknown	Waring 1850
35	East Orchard Wood	302780	167850	Inland Promontory Fort	0,49	No		
36	Fleming's Down	288920	176820	Inland Promontory Fort	0,57	No		
37	Fort At Craig Ty Isat	275650	193380	Inland Promontory Fort	0,2	No		
38	Gaer Fawr Lower Camp, Mynydd y Gaer	276570	194250	Inland Promontory Fort	3,4	No		
39	Graig Fawr	261850	206850	Hillfort	0,5	No		
40	Gwersyll	302700	204030	Inland Promontory Fort	0,2	No		
41	Half Moon Camp, Margam	279960	186730	Inland Promontory Fort	0,2	No		
42	Harding's Down East	243700	190640	Hillfort	0,6	No		
43	Harding's Down West	243430	190780	Inland Promontory Fort	0,6	Yes	194	Hogg 1973
44	Hen Gastell	255430	195770	Coastal Promontory Fort	0,1	No		
45	High Pennard	256770	186620	Coastal Promontory Fort	0,4	Yes	348	Williams 1941
46	Horse Cliff	243490	186040	Coastal Promontory Fort	0,4	No		
47	Howe Mill	300490	172130	Inland Promontory Fort	0,12	No		

Appendix 1: Glamorgan hillforts.

No.	Name	Easting	Northing	Site Type	Internal Area (Ha)	Excava- ted?	Area Excavated (m ²)	References
48	Ilston Prish Enclosure	254880	189210	Inland Promontory Fort	0,05	No		
49	Kenson Wood East	304670	168760	Inland Promontory Fort	0,12	No		
50	Kingsland	302198	171908	Hillfort	2,61	No		
51	Lewes Castle	241430	187330	Coastal Promontory Fort	0,3	No		
52	Llancadle Gorse A	304070	168510	Inland Promontory Fort	0,14	No		
53	Llancadle South A	303770	168070	Inland Promontory Fort	0,82	No		
54	Llandough Enclosure	299440	173540	Inland Promontory Fort	0,41	No		
55	Llanfythin	305470	171810	Inland Promontory Fort	0,44	No		
56	Llanrhidian	248300	192800	Coastal Promontory Fort	0,2	No		
57	Lle'r Gaer	305010	187030	Hillfort	0,5	No		
58	Llwynda-Ddu	310870	181000	Hillfort	0,51	No		
59	Llwynheiernin (Kilvey Hill)	267370	194720	Hillfort	0,25	Yes	Unknown	Morris 1968
60	Maendy Camp	295730	195510	Hillfort	0,9	Yes	Unknown	Williams 1902
61	Maiden Castle	250920	185480	Coastal Promontory Fort	0,6	No		
62	Mew Slade	242130	187460	Coastal Promontory Fort	0,3	No		
63	Mill Wood West	307010	168750	Inland Promontory Fort	0,94	No		
64	Mynydd Twmpathyddaer	284050	180370	Hillfort	1,2	No		
65	Mynydd y Gaer	297350	184950	Hillfort	1	No		
66	Mynydd-y-Castell Camp, Margam	280610	186550	Hillfort	2,7	No		
67	Nash Point	291480	168490	Coastal Promontory Fort	0.4	No		
68	North Hill Tor	245300	193810	Coastal Promontory Fort	0.4	No		
69	Norton	286760	175790	Inland Promontory Fort	0.68	No		
70	Old Castle	240920	187980	Coastal Promontory Fort	0.6	No		
71	Paviland Manor	244810	186110	Hillfort	0.3	No		
72	Pen v Castell Cwmafan	278850	191740	Hillfort	0,3	No		
73	Pen y Castell Kenfig Hill	284220	182700	Hillfort	0,2	No		
74	Pennard Pill	253820	188510	Coastal Promontory Fort	0.2	No		
75	Pen-v-Gaer	253650	195520	Hillfort	0,2	No		
76	Porthkerry Bulwarks	308130	166320	Coastal Promontory Fort	4.1	Ves	222	Davies 1973
77	Rills Valley West	302620	168380	Inland Promontory Fort	0.24	No	222	Davies 1975
78	Stembridge Camp	246960	101/50	Inland Promontory Fort	0,24	No		
70	Summerbouse Camp	240900	166450	Coastal Promontory Fort	0,2	No		
80	Tair Cross Down	299470	176560	Lillfort	1 21	No		
00	The Bulwark	291000	170300	Timort	1,21	NO		
81	Llanmadoc Hill	244320	192750	Hillfort	0,9	Yes	18	Davies 1964
82	The Knave	243180	186370	Coastal Promontory Fort	0,1	Yes	309	Williams 1939
83	Thurba Camp	242140	187040	Coastal Promontory Fort	0,3	No		
84	Tor-Gro	246120	193530	Coastal Promontory Fort	0,4	No		
85	Twmbarlwm	324217	192611	Hillfort	4,14	No		
86	Tyn-y-Coed, Southern Banks	314910	172020	Inland Promontory Fort	0,2	Yes	130	Lane and Seaman 2013
87	Ty'n-y-Waun Camp	294850	185270	Inland Promontory Fort	0,4	No		
88	Warren Hill, Briton Ferry	273650	194100	Hillfort	0,8	Yes	Unknown	
89	Whitmore Stairs	289850	171480	Coastal Promontory Fort	0,4	No		
90	Windmill Lane	299500	174100	Hillfort	0,42	No		
91	Worm's Head	239350	187570	Coastal Promontory Fort	0,6	Yes	Unknown	Cunnington 1920
92	y Bwlwarcau	283880	188550	Hillfort	4,1	No		
93	y Bwlwarcau, Eastern Enclosure	285162	188668	Inland Promontory Fort	0,25	No		
94	Yellow Top, Paviland	243750	186000	Coastal Promontory Fort	0,1	No		

Appendix 1: Continued.

The *oppidum* of Manching: Examining the construction and defensive capability of a Late Iron Age fortification

Thimo Brestel

Abstract

The military role and function of the *oppida* in Late Iron Age warfare is still a matter of debate. The discussion is dominated by two generally opposing views: On one hand, *oppida* fortifications are seen as a specific form of military architecture. On the other, the fortifications are interpreted as mainly representative architecture. The *oppidum* of Manching in Bavaria provides us with a good set of data to discuss these two perspectives. The 7 km long multi-phased rampart at Manching clearly shows the adaption of new military technology and we have some evidence for conflict situations. At the same time it is evident, that the circular shape of the wall is based on religious beliefs, symbolic and aesthetic conceptions.

Keywords: Late Iron Age, La Tène Period, warfare, oppida, fortifications, murus gallicus

Introduction

Few things are known about the military role of the large fortified settlements of Late Iron Age Central and Western Europe – the *oppida*. As the most monumental architectural remains of the La Tène period their walls are still visible in the field today, and have been the subject of archaeological research for more than a hundred years.

But our knowledge of their construction, and especially about their military capability, is still very limited. In the 20th century the walls of oppida were mainly seen as a type of military architecture, whereas in recent decades discussion has been dominated by a sociological view of the fortifications. Whereas in German archaeology the focus generally remained on the military functions of the oppida fortifications,¹ 'especially in the Englishlanguage literature',² but also in France,³ their role as representative architecture was strongly emphasised. At the same time, their value as fortifications was sometimes even doubted.⁴ These perspectives were strongly opposed by other researchers.⁵ This ongoing discussion shows the contradictory nature of oppida fortifications. In 2015 the present author published an article highlighting the symbolic meaning of boundaries, and the way in which they modified the perception of the rural and urban landscape.⁶ This contributed now aims to focus equally on the military capabilities of these fortifications.

But what are our sources for interpretation of Late Iron Age fortifications and warfare? The first sources, of course, are the excavated features: the fortifications.⁷ The second source is the armament found at *oppida*; these weapons give us information about Iron Age warfare. The third authority are the authors of the Mediterranean world – mainly Caesar's *Commentarii de Bello Gallico.*⁸ Combining these three sources in the following discussion, it is intended here to examine the fortifications surrounding the *oppidum* of Manching in Bavaria, which has been intensely researched, and therefore offers an ideal case study to understand the defensive capability of fortified *oppida.*⁹

The oppidum of Manching

The modern town of Manching is located in the district PfaffenhofeninUpperBavaria. The arguments presented here are based on evidence from the excavations undertaken during the last 100 years – mainly by the Roman-Germanic Commission (RGK) of the German Archaeological Institute (DAI). The excavations have opened up approximately 30 ha (around 8%) of the 380 ha of the site, making the *oppidum* of Manching one of the best-researched large Iron Age settlements. In the

¹ With some exceptions: e.g. Rieckhoff 2010: 289–292.

² Ralston 2006: 125.

³ E.g. Krausz 2008: 218; Fichtl 2005b: 70; Fichtl 2005a: 79–84.

⁴ Büchsenschütz et al. 1981.

⁵ Deyber 2009; Deyber 2013; Moret 2018. Generally concerning prehistory: Keeley *et al.* 2007.

⁶ Brestel 2015.

⁷ As Keeley *et al.* (2007: 82) state: 'The very specific military functions of some features of fortifications allows archaeologists to infer, from their form and scale, some aspects of the arms and armor that were in use when and where these fortifications were built.'

⁸ All translations are by W.A. McDevitte and W.S. Bohn. A collection of the important remarks concerning *oppida* and warfare in Caesar's work: Dehn 1995.

⁹ Publications concerning the fortification in Manching are: Weber 1907; Wagner 1938; Wagner 1942; Gensen 1965; Krämer *et al.* 1970: 26–37; van Endert 1987; Streit 1987; Köhler *et al.* 1992; Burmeister *et al.* 1992; Wendling 2009; Sievers 1999: 104–111; Sievers *et al.* 2003; Leopold *et al.* 2006; Köppen *et al.* 2010; Sievers 2010b; Fichtl 2014; Brestel 2015; Brestel 2017.



Figure 1: Manching. Schematic map of the *oppidum* with the excavated areas and the sections through the rampart (image by T.J. Brestel and RGK).

19th century, when the research started, the rampart surrounding the *oppidum* was still an impressive monument visible in the plain of the Ingolstadt basin. Thereafter, it has been the subject of archaeological research for more than a hundred years. In the present day a large number of sections through the wall give us a very deep knowledge of the construction of the wall and its biography. This article will concentrate on the 18 sections through the rampart carried out between 1936 and 2009 (Figure 1).

The location of the *oppidum* of Manching on a lowlying gravel terrace on the Danube, one of the most important trade routes of the period, was critical for the 300 year history of the settlement.¹⁰ Using the dating of the burials in the nearby 'Hundsrucken' cemetery, it is possible to trace the settlement back as far as phase LT B2, i.e. to the 4th century BCE. In the middle La Tène period, Manching developed from a minor settlement to an urban centre and the population grew steadily until the end of the period LT C2 (*c.* 220–120 BCE).

At the end of this extensive urbanisation phase, from LT C1 to LT C2,¹¹ the settlement area (380 ha) was surrounded by a 7 km long ring-wall. At this point Manching became an *oppidum* by definition. Hence the date of the erection of the wall (probably in the middle of the 2nd century BCE) means that, for a long time,

neither for representative nor for military reasons, was it necessary or possible to fortify the settlement. The time period during which the *oppidum* was fortified with a rampart lasted from approximately 130/120 BCE, until the second quarter of the 1st century BCE, when the eastern gate of the wall burned down and was not rebuilt.¹² During this period of less than 80 years, the excavations show three different construction phases and the massive impact the erection of the wall had on the landscape.

The construction of the rampart

As the different sections through the rampart illustrate, the wall consisted of two parts: the wall or *murus* itself – meaning a construction of wooden beams, limestone and iron nails – and the ramp or *agger* (the term used in the northern Italian peninsula)¹³ made of soil. The wall was built in the so-called *'murus gallicus'* technique'.

Unfortunately, the limestones of the wall were later used by Roman soldiers, from the nearby military camp at Oberstimm, for the production of quicklime, causing severe damage to the archaeological features.¹⁴ Because of these disturbances, today only the lowest one or two stone layers of the wall can be found, but the multiple layers of soil from the ramp provide us with a complex

¹² van Endert 1987: 30–32.

¹³ Frey 1984: 14–15.

¹⁴ Brestel 2017: 237 fig. 159.

¹⁰ Sievers 1999: 5.

¹¹ Eller *et al.* 2012: 308.





stratigraphy that allows to understand every step of the construction process (Figure 2).

The wooden parts of the wall – the internal timber framework – were totally decomposed by the time of the excavation. Nevertheless, it is possible to reconstruct the timber framework by tracking the varying colours of the soil, the position of the *murus gallicus* nails, and the gaps between the stone layers. The framework consisted of three – or four in some other parts of the wall – longitudinal timbers and transversal timbers (on average every 1.30–1.60 m). The 15–30 cm long iron spikes were set into the intersections of these timbers to stabilise the framework. As is typical for *muri gallici*,

not all intersections were reinforced with nails, and we have to assume the use of other joining techniques, for example wooden nails, that are difficult to detect in excavation. The space between the timberwork in the wall-core was filled with limestone-rubble (Figure 3). The wall was 3.20–4.50 m wide.

The internal face of the wall was a sloping ramp that was, on average, 8.00–9.00 m wide in the first phase (Figure 4.A). It was constructed using heterogeneous soil material from the surroundings. The different colouring of the soil makes it possible to analyse the stratigraphic sequence, and thereby reconstruct the different steps of the construction process. During



phase 1 the ramp and the wall were at least 3 m high (without the parapet), as is apparent in different sections, although it cannot be excluded that the height varied along the 7 km long course of the wall.

The dry-stone front of the wall consisted of roughly hewn white limestones. Small gaps in the stone front show the position of the visible beam-ends of the transversal elements of the timber framework. Unfortunately, the dry-stone-front was deconstructed to reuse the stones in the construction of phase 2, so that we do not know much about its appearance, though it can be deduced from other better-preserved *muri gallici*, such as Bibracte.

The *murus gallicus* construction belongs to the first phase of the fortification. Despite the fact that it remained in use in other parts of the La Tène world for about a hundred years, the *murus gallicus* was replaced by a *Pfostenschlitzmauer* (which had a long tradition in central European fortification architecture)¹⁵ in the second and third phase of the fortifications at Manching.

In all sections through the rampart, a row of post-holes was discovered at a distance of 0.20–1.30 m from the wall front of phase 1. The plan (Figure 3) shows overlapping post-holes, indicating two different construction phases

(phases 2 and 3). The wall front of the Pfostenschlitzmauer was made of vertical earth-fast posts (0.30–0.50 m in diameter) interspersed with dry-stone walls. Whether the dry-stone front was reinforced with horizontal beams (as documented in other oppida)¹⁶ is unknown, due to the poor preservation of the wall front. The front of phase 2 was completely deconstructed to reuse the stones for the dry-stone front of phase 3. It is unclear how the vertical posts were anchored in the wall core of phase 1 (usually transversal beams are hypothesised).¹⁷ The sections of the post-holes prove furthermore that the external wall face was built with a slight batter,¹⁸ clearly to counter the pressure from the wall core and the ramp to improve the stability. The stratification proves that the ramp was widened up to 15 m and raised to 3.80 m (Figure 4.B), indicating that the height of the wall was also raised in the same way.

In phase 3 the wall front was relocated slightly nearer to the wall core of phase 1 (Figure 4.C), perhaps because the construction of phase 2 caused some stability issues. Aside from this small change, the builders maintained the construction scheme of phase 2. Even though the

¹⁶ Known from Ernolsheim-Lès-Saverne in Dép. Bas-Rhin (Féliu 2010: 215, figs 5, 6), from Mont Vully in Canton Fribourg (Kaenel 1994: 5–6, Abb. 5), from Yverdon-les-Bains in Canton Waadt (Brunetti 2010: 190; fig. 8) and from the Donnersberg *oppidum* in Rhineland-Palatinate (Zeeb-Lanz 2010: 232 fig. 4; 234 fig. 7).

⁷ E.g. Ralston 2006: 49 fig. 16,6.

¹⁵ Dehn 1960, 49–50.

¹⁸ This is also well known from other Late Iron Age fortifications (Ralston 2006: 57).



Figure 5: Manching. Plan of section XIII featuring the eastern gate with the '*Holzkastensperre*' (image by T.J. Brestel and RGK).

Roman disturbances destroyed most of the wall front, some layers of the dry-stone front remained intact and give us an impression of the masonry. The size of the limestones used to build the dry-stone front varies significantly. Besides roughly shaped stones measuring approximately 0.40–0.60 cm in width and 0.15–0.30 cm in height, smaller (only a few cm thick) stones were also used. The appearance of the limestone frontage differs along the course of the wall. This could be a sign for the varying levels of masonry skills the different workers had. The ramp was again widened in phase 3 to 15.00– 18.00 m and also raised again (probably up to a height of 4.50 m).

The different excavations of the wall show some variations in the construction, but the general construction scheme stayed the same. It can thus be assumed that the specifications of the construction plan were known by the workers, but were adapted to the specific requirements of the different terrain along the course of the rampart.

The gates

Only two of at least four gates from Manching are known (the southern and eastern gates) (Figure 6). The

northern and western gates were completely destroyed, but can be located on the basis of the road system in the *oppidum*.¹⁹ The known gates were built in the form of a *Zangentor* or 'pincer-gate', meaning that the wall was in-turned, thereby forming a corridor that forced any attackers entering the gateway to expose their flanks to the defenders, who were then able to attack from three sides.²⁰

The excavation of the eastern gate also revealed a grand *Torhaus* ('gatehouse') with three different construction phases (Figure 5), corresponding to the phases of the wall – thus it is obvious that the whole course of the wall and the gates were renewed twice.²¹ The eastern gate also provides us with a dendrochronological date from the beginning of phase 2 (the first *Pfostenschlitzmauer*). The dated sample was taken from a 1.40 m deep pit dug in front of the access road and paved with wooden planks – the so-called '*Holzkastensperre*' (Figure 5).²² Certainly, this was a

¹⁹ Sievers 2001.

 ²⁰ 'Enfin, si l'on regarde le plan des portes des oppida de La Tène finale, on s'aperçoit qu'elles sont parfaitement efficaces contre un assaut.' (Fichtl 2005b: 57).
 ²¹ van Endert 1987: 37.

van Endert 1987: 26, 28.



Figure 6: Manching. Schematic plan of the *oppidum* with the excavated areas, archaeological features and the hydrography (image by T.J. Brestel and RGK).

temporary measure to block the access to the gate. The dendrochronological date from the beginning of phase 2 (105 ± 6 BCE) gives us a hint of how long each phase was in use.²³ Depending on the chronology, the end of Manching was likely around 80 or 50 BCE. This indicates a time span of a minimum 10 years to a maximum 31 years for phases 2 and 3 – each. While the eastern gate of phase 1 and 2 seem to be rebuilt due to irreparable structural problems appearing over the years, the gate of phase 3 was destroyed by a fire and not rebuilt thereafter.²⁴

The military capability of the fortification in Manching

Without a doubt, the effort and massive amount of material necessary for the construction reflect the importance the fortification had for the *oppidum*, and the security of its inhabitants. Enormous quantities of stone, wood and iron were needed to build the fortification in Manching.²⁵ Calculations have shown that 370 ha of forest were necessary to harvest enough oak for the *murus gallicus*.²⁶ The trees in the forests directly surrounding the *oppidum* would have only been able to supply part of this;²⁷ the rest must have been brought in from further afield. The limestone for

the wall was brought from the area of Neuburg an der Donau (15 km west of Manching). $^{\scriptscriptstyle 28}$

In addition to the construction of the wall, an artificial modification of the natural environment took place. Research on the hydrology of Manching has revealed the redirection of the watercourses crossing the oppidum.²⁹ The Igelsbach, which originally flowed into the Danube to the northeast, was altered in its course by digging a new riverbed so that it flowed into the River Paar to the west. The Egelgraben/Riedelmoosgraben, that formerly flowed into the Igelsbach, was redirected to flow around the south-eastern part of the ring-wall (Figure 6). The watercourses themselves were given the round shape of the *oppidum*, and they were used as a moat to reinforce the fortification. Three quarters of the 7 km long ring-wall were now protected by a natural or an artificial water course - without doubt an improvement on the defensive capabilities (particularly because we have no other ditches in front of the wall, as is known from some other oppida).

Unfortunately, we do not know how the upper part of the wall looked; it is certain that there had to be a breastwork or battlement.³⁰ Still unanswered is the question whether there had been towers. Caesar tells us

²³ van Endert 1987: 67, 70–71.

²⁴ van Endert 1987: 30–32.

²⁵ Lorenz 1986: 25–30; Köhler *et al.* 1992: 350–352.

²⁶ Köhler *et al.* 1992: 350.

²⁷ Küster 1992: 443; Wiethold 2013: 154.

²⁸ Streit 1987: 117–118.

²⁹ Peters *et al.* 2001: 69–70; Peters 2002.

³⁰ In the case of a Pfostenschlitzmauer, the vertical posts were most likely carried on up to the wall-head, supporting a parapet (Ralston 2006: 56).



Figure 7: Manching. Proposed graphical reconstructions of the eastern gate. A: phase 1; B: phase 2 (both after van Endert 1987: fig. 20 and 21); C: phase 2 (after Fichtl 2014: fig. 16).

about towers on the wall of Avaricum/Bourges (which were probably built as a reaction to the Roman siege techniques) but the extensive disturbances from the Roman and Medieval period make it impossible to say if there had been towers on the wall.³¹ At the eastern gate in Manching the large postholes of the *Torhaus* suggest that there was second floor, perhaps with a tower-like construction, as depicted in the reconstruction drawings of the eastern gate (Figure 7).³²

Weapons and warfare at Manching

From several sources we know that the Celtic societies of central and western Europe lived in a time of regular military conflicts.³³ The findings from Middle and Late La Tène sites show us that weaponry played a significant role in everyday live, as well as in sacred and mortuary contexts.

A large number of weapons are known from Manching³⁴ – altogether more than 800 objects (weapons or fragments of weapons).³⁵ Assuming that weaponry finds are representative of the armament of the LT C and LT D periods, we can note the following weapons: numerous finds of sword blades or fragmented

scabbards that indicate the importance of swords at Manching;³⁶ a large number of ferrules and spearheads of different types;³⁷ defensive weapons, including shield bosses and a few helmet fragments (only from LT C1 contexts) and parts of chainmail.³⁸ Spurs show us the presence of cavalry. S. Sievers has suggested the use of spurs since at least LT C2. Simultaneously, the swords became longer so as to be better suited for mounted combat (so-called *Reiterschwerter*).³⁹ This was probably the beginning of a development that reached its peak in the mid 1st century BCE in *Gallia Celtica*, when cavalry assumed a dominant position in warfare.⁴⁰

The weapons found at Manching give us some information about how the army of the *oppidani* looked: we have infantry and cavalry both equipped with swords, spears, shields; some were also equipped with defensive weapons. Furthermore, a few finds indicate the presence of fighters with long-range combat weapons, like archers and slingers. The number of finds alone, however, does not allow us to suggest which military branch was dominant at Manching.

An important innovation to Iron Age fortification architecture was the introduction of a ramp or *agger* on the rear of the wall. The *agger*, in combination with the dense network of roads in the *oppidum*, enabled

³¹ Towers have been suggested for other *oppida*, e.g. Mont Vully (Kaenel *et al.* 2004: 214) and Závist (Fichtl 2014: 249).

³² van Endert 1987: 18–19. The recent reconstruction of the eastern gate at Manching by St. Fichtl states the existence of two tower-like structures (Fichtl 2014).

³³ Brunaux *et al.* 1987: 19.

³⁴ Sievers 2010a.

³⁵ Sievers 2013: 645.

³⁶ Sievers 2010a: 7–18.

³⁷ Sievers 2010a: 23–31.

³⁸ Sievers 2010a: 31-38.

³⁹ Sievers 2010a: 38-39.

⁴⁰ Dobesch 1996: 51–52.



Figure 8: Manching. Distribution of the weapons during LT C and LT D. Hatched areas mark high concentrations of weapons (images after Sievers 2010: figs 23 and 33, modified).

defenders to move quickly from one point of the ringwall to another, and to access the battlement of the wall from any point along the course of the wall:⁴¹ a necessary tactic to maintain the ability to defend growing fortified settlements.

Weapons come mainly from the more densely populated areas of the settlement near to the centre (the 'Zentralfläche') and the artisanal guarter 'Altenfeld' (Figures 8 and 9). They were made, used, disjointed and deposited inside the *oppidum*:⁴² some of the swords, for example, show signs of use in battle.⁴³ The distribution of weaponry in the oppidum however gives no evidence for a battle. The gates, as the most vulnerable parts of the fortification, would have been a potential battle ground, but even though the eastern gate burned down, excavation has revealed no evidence for armed conflict.44 In addition, a sword with scabbard from the Riedelmoosgraben water course in front of the wall in the southeast (300 m east of the southern gate) is more likely to be a ritual deposition than an indication of armed conflict.⁴⁵ The only potential evidence for conflict is the concentration of caltrops in the northern part of the 'Zentralfläche' area (Figure 9).46 They were found in the centre of the settlement and not in the area of the gates, where one would expect them.⁴⁷ Skeletal remains also give us some information about violence at Manching: a large number of skulls show traces of lethal violence.⁴⁸ These injuries were possibly caused during a duel and not a battle.⁴⁹ Other injuries observed on the lower limbs of two individuals are the result of fighting from horseback.⁵⁰

Warfare in the La Tène culture and the role of oppida

No written sources give us information about the fortifications of *oppida* north of the Alps in central Europe. Nevertheless, the fortifications Caesar described in the Gallic Wars in the mid 1st century BCE are a useful source for Late La Tène in southern Germany. The *murus gallicus* in Manching is the most easterly, and one of the earliest examples of a fortification of this type (figure 10); it shows us that Gaul and the Bavarian territory were interlinked at this time.⁵¹

The Gallic Wars have been intensely studied by archaeologists.⁵² Thus, here only a few important remarks from Caesar are emphasised and contextualised with what is known from the *oppidum* of Manching.

⁴¹ Sievers 2001; Brestel 2017: 51–53.

⁴² Sievers 2010a: 98–109.

⁴³ Sievers 2010a: 67–68.

 $^{^{\}rm 44}\,$ Only a few insignificant parts of weaponry were found there (van Endert 1987: 38–39).

⁴⁵ Sievers 2010a: 89; von Nicolai 2014: 300 No. 15a.

⁴⁶ Sievers 2010a: 106; 135; Sievers 2013: 648.

⁴⁷ Sievers 2010a: 40; 99 fig. 52.

⁴⁸ Lange 1983: 97–102; Hahn 2013: 695.

⁴⁹ Lange 1983: 106; Hahn 2013: 695.

⁵⁰ Lange 1983: 103.

⁵¹ van Endert 1987: fig. 18,1.

⁵² E.g. Dehn 1995.



Figure 9: Manching. A: One of the caltrops found in the *oppidum*. B: Detailed distribution map of the features with weapons and caltrops in the 'Zentralfläche' area (image by T.J. Brestel after Sievers 2010: fig. 26).



Figure 10: Distribution of the *oppida* with *murus gallicus* – and Pfostenschlitzmauer – constructions. Manching is marked in red (image by St. Fichtl, modified).

Caesar describes various sieges, including Avaricum (BG VII, 22), Gergovia (BG VII, 46-48), Alesia (BG VII, 68-89), Sos (BG III, 21), and Uxellodunum (BG VIII, 32–43), giving information on the form and use of fortifications. Most famous is Caesar's description of the wall and siege at Avaricum/Bourges. Here he tells us that the Gauls '[...] had furnished [...] the whole wall on every side with turrets, and had covered them with skins.' (BG VII, 22). It is not sure if the towers were generally a part of the fortification in Iron Age Gaul, or if they were built as a reaction to the Roman tactics in siege battles. In any case, the siege of Avaricum is the only passage where Caesar mentions towers. In the same battle, the Bituriges used different countermeasures against the Romans: '[...] They attempted either to set fire to the mound, or attack our soldiers when engaged in the works; and, moreover, by splicing the upright timbers of their own towers, they equalled the height of ours [...] and countermined our mines, and impeded the working of them by stakes bent and sharpened at the ends, and boiling pitch and stones of very great weight, and prevented them from approaching the walls.' (BG VII, 22). This appears to show us that the Gauls knew about basic siege techniques, and were probably able to use them against their enemies.

The only passage which tells us about a siege in a conflict between two Gallic tribes – the Remi and the Belgae – emphasises this. '[...] When after having

drawn a large number of men around the whole of the fortifications, stones have begun to be cast against the wall on all sides, and the wall has been stripped of its defenders, [then], forming a *testudo*, they advance to the gates and undermine the wall [...].' (BG II, 6). This text passage about the Belgic attack of the Remian *oppidum Bibrax* gives some important information. First, the Belgae did not concentrate their forces to attack just one part of the fortification. Second, they were using siege techniques, i.e. undermining to destroy the walls; third, they engaged the gates first because they were the weakest point in the fortification.⁵³

These lines from Caesar give valuable insight into Gallic tactics and warfare, but are, nonetheless, only a selective Roman perspective with a clear political and ideological purpose.⁵⁴ Based on Caesar's reports, it has been suggested that the main force of a Gallic army was the cavalry supported by the infantry, fighting in a battle formation that can be compared with the Greek phalanx,⁵⁵ and that they preferred to fight in open battles rather than using the advantages of a fortified settlement.⁵⁶ This argument is mainly based on the

⁵³ A fact generally agreed to in the scientific discourse (Ralston 2006: 66; Keeley *et al.* 2007: 62).

⁵⁴ 'What we learn is surely how the Celts fought Caesarean forces.' (Kysela 2015: 72–73).

⁵⁵ Kysela 2015: 79.

descriptions by Caesar and it cannot to be determined whether this tactic was genuine or an adaption to Roman superiority in siege battles. But the fact that most *oppida* do not show direct evidence of violent confrontations – a circumstance that may also be a methodological problem of the archaeological research rather than a historical fact – supports this perspective. Doubtlessly, deterrence was the main military purpose of any Late La Tène fortification.⁵⁷

On the other hand, oppida were also used as refuges. The large size of some *oppida*, compared to the rather loose occupation on the inside, raises the question of whether or not the rural population used the oppida to take refuge in times of war. Several remarks in Caesar's Commentarii are enlightening in this regard. After he intervened in the siege of Bibrax, Caesar attacked the oppidum at Noviodunum and reports that 'in the meantime the whole body of the Suessiones, after their flight, came the next night into the town [Noviodunum].' (BG II, 12). The Suessiones surrendered and Caesar subsequently attacked the Belovaci '[...] who had conveyed themselves and all their possessions into the town Bratuspantium.' (BG II, 13). After Caesar defeated and killed most of the Nervii, and the Aduatuci heard about the battle, '[...] they conveyed together all their possessions into one town, [...] [after] deserting all their [small] towns and forts.' (BG II, 29). Later, when the Romans entered the area of the Senones 'Acco [...] orders the people to assemble in the towns [...].' (BG VI, 4). During his second expedition to Britain Caesar was told about '[...] the capital town of *Cassivellaunus* [which] was defended by woods and morasses [where] a very large number of men and of cattle had been collected [...]. (BG V, 21). In book VII Caesar talks about the Aedui and how '[...] he had found them, driven into their towns [...].' (BG VII. 54). A similar account was made about the defeat of the Helvetii, who were '[...] forced to retire within their towns and fortifications.' (BG VII, 65). In Book VIII we are told that when the 13th and 11th legions arrived in the area of the Bituriges who '[...] were surprised [...] while cultivating the fields without any apprehensions, before they had time to fly to their towns.' (BG VIII, 3).

These accounts are so numerous, that a general pattern can be deduced: in Gaul (and most likely also in central Europe) the *oppida* were (at least in the mid 1st century BCE) used as refuges. The size of the unoccupied space *intra muros* allowed the accommodation of thousands of people and 'in wartime they fulfilled their role, providing shelter for rural populations forced to temporarily abandon their fields and houses at the enemy's approach.^{'58}

These observations coincide with J. Kysela's statement that '[...] the Celts of the oppidal Europe preferred in their wars to invade and plunder the enemy's territory or clash with the invader in open battles rather than lay sieges or take recourse to their walls and undergo a siege.'59 A method of warfare he – and surely correctly - connects with the socio-economic circumstances of the La Tène culture. A siege was always the last resort leading to high losses.⁶⁰ The fortifications of the oppida were built in a time of increasing conflict to withstand plundering armies of neighbouring tribes or even the marauding armies of the Cimbri and Teutons. Even though the walls had neither bastions nor towers they were 'functional components of the Celtic way of waging war'61 but, obviously, they failed to withstand the Roman siege skills of the Gallic War.62

Conclusion

The concept that fortification in the La Tène period can be understood only by applying a 'rational' view based on modern military tactics is too narrow. The form and structure of the fortifications of each period and region are the result of the requirements of contemporary warfare, the construction methods of the architecture, the amount of labour necessary to build it, the ability of the population to maintain the walls in a usable state, as well as the dominant ideology.

As is generally the case for *oppida* it is certain that the 'fortifications protect what is most valuable to the defenders: their persons, homes, stored food and property, their livestock and other wealth, trade and administrative centres, and, very commonly, their ritual loci.'⁶³ Manching developed in the 3rd and 2nd centuries BCE into a major settlement, but it was not until the middle of the 2nd century that it was fortified. Thus, it was already a flourishing settlement when the monumental rampart was built that protected a large (mostly urbanised) settlement with several important cultic areas, a harbour, and a centre for production of a large variety of products.

The almost circular shape of the ring-wall was created by a considerable modification of the natural environment, and it is obvious that the ground plan of the settlement referred to the central temple (the lines connecting it with the eastern and southern

⁶³ Keeley *et al.* 2007, 81.

⁵⁷ Kysela 2015: 80.

⁵⁸ Moret 2018: 177.

⁵⁹ Kysela 2015: 80.

⁶⁰ Deyber 2013: 669.

⁶¹ Kysela 2015: 80.

⁶² The fortifications of the *oppida* were mostly ineffective against Roman sieges because 'ils ont été construits plusieurs générations avant, dans un contexte de méthodes et d'outils d'attaque qui n'avaient rien à voir avec la situation des années cinquante a.C.' (Deyber 2013: 666). As S. Krausz has shown, the 'rampart massif', with its large ditches, seems to be a later invention as a reaction to the Roman military (Krausz 2008).

gate form an equilateral triangle).⁶⁴ These aspects point to a symbolic dimension beyond a mere military interpretation and can be accessed – even though it cannot be fully understood – by archaeological method and theory.

On the other hand, the defensive capabilities are clearly visible in Manching, even though the evidence for violent conflict there can only be detected indirectly.65 The ubiquity of armament in the oppidum proves the roles weapons and war had in everyday life, as in sacral contexts. The weapons found suggest the presence of infantry and cavalry inside the oppidum. The number of ranged weapons is quite low. Beside the caltrops found in the centre, the best indicator for an attack on Manching is the eastern gate. The Holzkastensperre from phase 2 certainly signals a conflict, or at least an immediate danger.⁶⁶ In phase 3 the gate was destroyed by a fire.⁶⁷ Combined with the siege techniques described by Caesar (BG II, 6), this indicates the existence of a military conflict, or at least a deep social and economic crisis that did not allow the rebuilding of the gate thereafter.

The fortification architecture in Manching (as in the La Tène world) was not a simple continuation of the Early Iron Age defensive architecture, but improved with new technologies and adapted to suit the needs of much larger settlements. The size of the fortification is reminiscent of the large *Landschaftsfestungen*, as at Syracuse.⁶⁸ The *murus gallicus* architecture – a complex multi-material composite fortification – was introduced, and the ramp (or *agger*) that provided easy access to the top. It may indicate an influence from northern Italy.⁶⁹ The use of iron nails to reinforce the timber framework may be – if it is not a genuine invention – an adaption of a technique originating from Thrace.⁷⁰

The Zangentore of Manching (widely attested in LT D) made it easier to defend the fortification's weakest spots. The redirected watercourses formed a moat in front of the wall as a preliminary defence and to avoid the wall being undermined. Hundreds, at least, of wells *intra muros* provided a constant fresh water supply, and the harbour in the northern part of the oppidum may have even allowed the settlement's supply from the Danube. The biography of the ring-wall in Manching proves that it was not a static architectural feature but was rebuilt twice – each time modifying and enlarging the rampart.

On one hand Manching gives us the example of a strong fortified settlement, which was not only a refuge but a stronghold, suited to the contemporary way of waging war, and in this context able to withstand a siege. On the other hand, the *oppidum* – also due to the large-scale excavations – gives us an impression of how religious beliefs, and symbolic and aesthetic conceptions structured the landscape, forming the boundaries and the fortification. These different aspects constitute what I have called in the introduction the contradictory nature of Late La Tène fortifications – for which reason it is impossible to separate the symbolism embedded in the architecture from its physical presence and military role.

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⁶⁴ Sievers 2012: 120; Wendling 2013: 479; Brestel 2015: 47–48.

⁶⁵ Sievers 2010a: 108.

⁶⁶ van Endert 1987: 28; Sievers 2010a: 108; Sievers 2013: 648.

⁶⁷ van Endert 1987: 30–32.

⁶⁸ Sievers 2010c: 319-320 fig. 7; Sievers 2012: 121; similar: Moret 2018: 177.

⁶⁹ Dehn 1961: 390, 396; Frey 1984: 14–15.

⁷⁰ Dehn 1969: 167.

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The fortifications of Colle Le Case: a new study of Samnite enclosures in Molise (Italy)

Francesca Di Palma

Abstract

In the heart of the Apennines, in the woods of the mountain of Civitanova del Sannio, a small town of Molise in *south-central* Italy, is the site of Colle Le Case (1272 m.a.s.l.), where the remains of polygonal wall enclosures, associated with a Samnite population, have been found. These walls are between rocky outcrops and are characterised by large, irregular and unpolished blocks of local limestone. A critical study of the archaeological evidence of Colle Le Case is the focus of this present contribution, beginning with preliminary studies and integrating the current position with data from new surveys, laser scanning, and ethnoanthropological investigations.

Keywords: fortifications, polygonal wall, Samnites, survey, laser scanning, ethnoanthropology

Introduction: The Discovery

In the 1980s, during an exploration in the woods of the Civitanova del Sannio mountains, a small town of Molise in *south-central* Italy, in an area known as Colle Le Case, Gianluigi Ciamarra discovered polygonal wall sections belonging to a Samnite circuit (Figures 1-3). The walls were studied by a local historian, Antonino Di Iorio, in 1988, and by Professor Stephen P. Oakley in 1995.¹ There have been no further investigations since then. A critical study of the archaeological evidence of Colle Le Case is the focus of this present contribution, beginning with preliminary studies and integrating the current position with data from new surveys, laser scanning, and ethno-anthropological investigations.

Archaeology in Molise: hill forts and tratturi

Molise is a small region situated in south-central Italy, between the Apennine ridge and the Adriatic. In the past, the Molise region was part of Samnium, where lived the Samnite tribes of the Pentri, in the hinterland around Isernia and the Frentani in the coastal Region. In the 1st century BC, under Augustus, with the division of the Italian peninsula, these peoples were deliberately put together in the 'fourth region', called Sabini et Samnium.²

We cannot generally speak of the Samnites before the end of the 5th century BC, but post this date the ethnic self-identification of the Samnites is broadly recognised, the origins of whom are probably defined by contrasting with the surrounding populations.³ The main traces of Samnites in Molise are their sanctuaries and hill forts: this contribution looks at these forts and describes their relationship with the network of roads in the region: the tratturi (singular tratturo).

Hill forts

The hill forts were built using polygonal walls, presenting defensive systems that represent the most impressive trace of the peoples of pre-Roman Italy and their warlike affiliations. They belong to the territories of the *Pentri*. In Molise about 60 hill forts have been classified, scattered throughout the region except for the coastal area.⁴ The masonry features the local polygonal limestone, dry stone extracted from nearby quarry sites. The degree of accuracy of the assembly is usually classifiable in terms of Lugli's 1st and 2nd types.⁵

The Samnite hill forts are mentioned in the Roman sources as *oppida*, *castella* or *urbes*.⁶ These structures usually enclose the top of a hill, sometimes with other concentric walls;⁷ they may also have barrier lines

¹ Di Iorio 1988; Oakley 1995.

² For a general bibliography of Samnite history, see Bourdin 2014; Gabba 1994b; 1994c; 1994d; La Regina 1980a; 1980b; 1989; 1990; Salmon 1985; Staffa 2004; Tagliamonte 2005.

³ Tagliamonte 2005: 129-135.

⁴ For the hill forts of Molise, see Barker 2001: 197-233; Capini 1991a; 1991b; 1992; 1996; 2000; 2005; Capini *et al.* 2015; Ceccarelli, Fratianni 2017: 141-171; Coarelli, LaRegina 1984; De Benedittis 1988; 1990; 1991a; 1991b; 1991c; 2004; 2013; De Benedittis, Ricci 2007; Di Iorio 1985; 1988; 2011; Di Niro 2007; Di Niro, Petrone 1993; Di Stefano 1995; La Regina 1970; 1975; 1989; 2013; Millemaci 2005; Oakley 1995; Pagano 2006; Pagano, Raddi 2004; Pagano, Raddi 2006; Pagano *et al.* 2007; Raddi 2012; 2014; Rainini 1996; 2001; Roccia 2001; Sardella 2008; 2012; 2016; Scaroina 2012; Zambardi 1999; 2006; 2007; 2011; Zappitelli *et al.* 2016. ⁵ Lugli 1957: 51-165.

⁶ Ceccarelli, Fratianni 2017: 147.

⁷ For example Cercemaggiore (Millemaci 2005).



Figure 1: *Colle Le Case* external enclosure, first section.



Figure 2: Colle Le Case external enclosure, second section.

Figure 3: *Colle Le Case* external enclosure, first section (detail).





Figure 4: The *tratturo* Castel di Sangro-Lucera that crosses the territory of Pescolanciano (view from Civitanova mountain). Note the position of *Santa Maria dei Vignali*, Samnite hill fort of Pescolanciano.

perpendicular to the level curves,⁸ or as simple fanshaped bastions.⁹ The fortified centres, with a few exceptions, are of medium size and positioned along the main axes of road networks and sheep transhumance (*transumanza*). The complexes are aligned along ridge paths, in contact with each other and placed some 4 to 10 km apart. They are organised in four topographic systems: the Volturno valley, the Alto Molise, the plain of Bojano, and the central Biferno valley.

Meaningful is the concentration of polygonal enclosures, or 'garrisons' on 'the wool way', along the route of the future *tratturo* Castel di Sangro-Lucera.¹⁰

Tratturi

In a largely unspoilt landscape such as Molise, the *tratturi* represent one of the oldest testimonies to thousands of anonymous shepherds who have travelled along them (Figure 4). For mountain peoples, stock breeding is the fundamental means of survival: for meat supply, dairy products and for the wool market. In harmony with the harsh climatic conditions of this region, livestock, predominantly sheep and cattle, need to move to temperate pastures, accessible only through seasonal migrations (migrations that, in fact, still happen today).¹¹

In the pre- and proto-historic ages, transhumance was practised throughout the regional territory and the paths can be traced to the main roads of Samnite, Roman, and then medieval times.¹² However, remaining unchanged in time, the development and exploitation of these grassy roads underwent reorganisation - in Angevine (1415) then Aragonese (1447) times - and following this the term tratturi gradually becomes adopted. The term *tratturo*, in fact, can only really be used properly from 1447, with the establishment of the Dogana della Mena delle Pecore.¹³ While the term tratturo, for the pre-Roman and then Roman periods, is entirely conventional, there is an important link between these ancient roads and the polygonal walls discussed here. The tratturi of Molise comprised a network of paths - five main routes (Pescasseroli-Candela, Castel Di Sangro-Lucera, Celano-Foggia, L'Aquila-Foggia, and Centurelle-Montesecco) that only made use of existing thoroughfares, real roads in fact, requiring territorial control by the Samnite state, not solely restricted to the needs of nomadic shepherds, but important also for regional security (Figure 5).

Along the modern *tratturo* from Castel di Sangro to Lucera there is a significant concentration of polygonal

⁸ For example Frosolone (La Regina 1975; Zappitelli et al. 2016).

[°] E.g. Venafro (Zambardi 1999; 2006; 2007; 2011).

 $^{^{\}rm 10}\,$ Capini 1999: 189-190; De Benedittis, Ricci 2007: 7, figure 1; De Benedittis 2010: 108-109.

¹¹ For transhumance in Italy, and in particular in the centralsouthern area, see: Barker 1992; Cicognani 1991; Crawford 2005; Di

Cicco 1997; Palasciano 1999; Pasquinucci 1984; 2016; Petrocelli 1999; Russo 2015.

¹² Barker 1992; Carroccia 2006; Crawford 2005; De Benedittis 1990; Gabba 1985; 1994a; Tozzi 1996; Volpe 2010.

¹³ Colapietra 1959; 1972; 1985; 1990; 1992; Como 2015; D'Arienzo 2011; Di Cicco 1965; 1966; 1971a; 1971b; 1988; 1989; Di Dato 2012; Filangeri 1950; Michele 1984; Musto 1964; Russo, Violante 2009; Vitulli 1990.



Figure 5: Network of tratturi (by Di Niro 1991:32).

enclosures.¹⁴ The *tratturo* Castel di Sangro–Lucera crosses the territory of Civitanova del Sannio, where there are two fortifications featuring polygonal work; these are in the localities of Civita and Colle Le Case, respectively *c*. 1 and 3 km as the crow flies from the inhabited centre of Civitanova.

In the locality of Civita, at 854 m.a.s.l., there are remains of walls in polygonal work, of type 1 in Lugli's typology. This is a form of enclosure that encircles the southern and western sides of a long and narrow rocky outcrop that dominates the Trigno River valley and controls the *tratturo* Castel di Sangro–Lucera (Figure 6). The Italian archaeologist Adriano La Regina studied these fortifications of Civita and identified in these walls a 'fortified shelter for people living close by'; he dates them to between the end of the 5th and beginning of the 4th century BC.¹⁵

Colle Le Case fortifications: state of the art

In the region of Colle Le Case, about 1200 m.a.s.l., there are remains of other polygonal walls, still

classifiable as type 1: these are the subject of this present contribution. After the discoveries made by Gianluigi Ciamarra, as mentioned above, Antonino Di Iorio, a professor, passionate about history and local archeology, studied and published a paper about the fortifications.¹⁶ He certainly merits having made public this archaeological site, but in his work there are many questionable interpretations which can be listed briefly:

- 1. First of all, the researcher uses rather generic and ambiguous language, without substantiating his definition the walls of Colle Le Case, speaking of a 'fortified place or lookout'.
- 2. The second criticism concerns his indications regarding the placement of these walls, speaking of 'three barriers', but which are not clearly illustrated in either the text or map. He also notes a gate in the inhabited area, but this is incorrect.¹⁷
- 3. The greatest reservation in terms of Di Iorio's contribution concerns his notes on the material finds, e.g. he reports the discovery of human

¹⁴ See note 10.

¹⁵ La Regina 1975: 277.

¹⁶ Di Iorio 1988.

¹⁷ See note 22.



Figure 6: *Civita* of Civitanova del Sannio, hill fort to check the *tratturo* Castel di Sangro-Lucera (in green) and Trigno river (in blue) (by De Marco B.).

bones and several fragments of pottery, for which he provides no description, chronology, or photographic documentation.

4. Another important criticism is the dating. It is by no means clear how he comes to date these fortifications to the 7th-6th century BC, without the support of material (ceramics, metals, or anything else).

Although Antonino Di Iorio is not an archaeologist, his article has shed light on a new and important fortification, taking into account the surrounding territorial context.

Since 1988, indeed, one has had to wait many years for a systematic analysis of fortifications. In 1995 Stephen Oakley published his study *The Hill-Forts of the Samnites*:¹⁸ an important starting point for researches into fortifications in the form of a catalogue of all the fortification works in the territory of the ancient *Samnium*. The study followed the valleys traced by the rivers Sangro, Trigno, Volturno, Biferno and Fortore and in the section dedicated to the Trigno valley, we find the data for the territory of Civitanova del Sannio, and two fortifications: Civita and Colle le Case. For Civita, Oakley provides a more precise description, text and cartography, but for Colle Le Case he only offers some photographic evidence, but gives no map or facts about the materials.

Thus, until today, we have little in the way of accurate information about the fortifications of Colle Le Case, only very general information about the placement of the walls and materials at that time identifiable at the time – i.e. no precise mapping of either the walls or materials employed. Thus this contribution is intended partly to fill these gaps, by way of systematic survey investigations.

New studies and new data

Today the walls of Colle Le Case form two enclosures of fortifications: the first of four wall sections, and inside another section, executed in the same way. The walls are between the rocks.

Survey

In 2017 a series of systematic surveys was undertaken by the present author, covering the area surrounding

¹⁸ Oakley 1995.


Figure 7: Territorial classification, in evidence the area of investigation.

the known fortifications. The western slope, the hilltop, and part of the eastern slope of Colle Le Case were investigated (Figure 7).

Typically, the tough terrain, covered in undergrowth, was not always conducive to systematic exploration, nor the identification of new masonry. However it was possible to detect anthropic traces to reconnect to quarrying activities (Figures 8, 9). These traces were located near the summit and along the western side.

Near the peak – and a location partly signalled by Di Iorio and directly suggested to me by Gianluigi Ciamarra – I found a small sherd of pottery (Figure 10), but not being a diagnostic piece (rim, foot, handle) it was not possible to trace the exact shape of the vessel. The clay seems rather clean, despite the presence of small quartz inclusions. On the outside, it seems to have retained the trace of a black glaze. It could therefore be black-glazed pottery, known in the Samnite world. Descending from the top of the hill along the eastern side it was possible to identify an abnormal placement of stones, arranged in a circular direction and oriented W-E direction, possibly suggesting burials.

Using Google Earth satellite imagery, a strange alignment was noticeable between the localities of Colle Le Case and Monte Caravello. This in turn led to the extension of the investigated area further to the north of the Colle. Field verification confirmed the presence of a relatively recent enclosure –dry stone, with skirting patches and fill made from splintered stone (Figure 11). N–W alignments can also be seen in this area, similar to others identified during exploration of the eastern slope. These could well be small and simple barriers, linked to the fortification work.

Before reaching this peak, considerable altitudes have to be tackled, thus it was not necessary to build megalithic fortifications, such as those already seen.



Figure 8: Traces of quarry activities (detail 1).



Figure 9: Traces of quarry activities (detail 2).





Figure 10: A small sherd of pottery founded near the top of hill.

Mapping GPS and laser scanning

In 1992, the surveyor Benito De Marco, commissioned by the Superintendent of the Molise, undertook a topographic survey of the remains of the fortifications, detecting more traits than those visible to date. Thus, for the present investigations, it was necessary to make a new map (Figure 12) of the walls: the wall sections were measured and mapped using GPS, recording several main points in the area (quarry traces (in green); alignments interpreted as minor fortifications (in white); sites of past and recent discoveries, also potential burials (in red). All the data were processed by Google Earth so as to better understand the general structural condition through a wide overview of the landscape.



Figure 11: Dry stone enclosure, between localities *Colle Le Case* and *Monte Caravello*, maybe a corral.



Figure 12: Survey map. In green: the quarry traces (6-7); in white: the alignments interpreted as minor fortifications (4-5); in red: the places of past (1-2: the wall sections; 8-10: place where bones and ceramics were found) and recent discoveries (3: dry stone enclosure, maybe a corral; 9: where I founded pottery), also potential burials (near 10 and 11).



Figure 13a: HDS7000 the laser scanner used to examine the walls of *Colle Le Case*.



Figure 13b: HDS7000 the laser scanner used to examine the walls of *Colle Le Case* (detail).

Laser Scanning

Surface laser scanning is the most effective method of obtaining detailed and reliable information. With the help of laser scanning it is possible quickly to create accurate and detailed 3D models of objects and the environment. This method consists in defining the object of the evaluation by means of a 'point cloud'. For this the instrument uses a laser beam to define the distance and two encoders for reading the azimuth and zenith angles.

Laser scanning allows one to perform a quantitative evaluation (like the total station) but also a qualitative one. In fact, the laser scanner reads distances and also detects the reflectance value of the materials affected. This makes it possible to identify if there are nonhomogeneities in the material, and also to check the state of conservation of monuments, statues, frescoes and walls (as in our case).¹⁹

The reflectance is read, for each point, in analytical form, numerical parameter, or graphic, through colouration, according to a scale of pseudocolours and/ or grey. Each individual point of the cloud can then be coloured according to the RGB parameter of the real point, in this way the points assume the real colours of the objects detected. The result is an apparent photograph that can be geometrically and qualitatively assessed.

The advantages of laser scanner acquisition are considerable: we can archive the archaeological site,

¹⁹ Ardissone 2015; Campana, Francovich 2005; Cardaci *et al.* 2013; Colombo 2011; Colombo Zefinetti 2009; D'Andrea 2011; Liberotti 2017; Peripimeno 2003; 2005; Pesci 2011.



restitution of reflectance value (colors): external walls, second

fully expressed in form and surface, investigated as a whole and in the situation in which it is located at the time of the evaluation; we can reconstruct the elements that characterise it in the smallest detail (under 1 mm). In addition we can virtually take back the whole archaeological site to the office and can continue working on it there, carrying out investigations and further processing (sections, profiles, etc.).20 The laser-scanner data also allows makes the site available to other researchers unable to be present on site; it can also be used to 'duplicate' the site, with reproductions of materials (and, if required, different ones).

The instrument used for relief of the Colle Le Case fortifications was an HDS 7000 (Figures 13 a, b), developed by Leica.²¹ This tool is a phase-based laser scanner that uses carrier frequency offset (CFO) technology, rather than calculating the time it takes the radius to measure distances from points to the instrument (time of flight = TOF). The accuracy between time of flight and phasebased laser scanners is different and substantial: the time of flight over 10/20 mm; the phase under 1 mm.

To carry out laser scanning on the wall sections of Colle Le Case it was necessary to obtain eight point clouds (seven for the external stretch and one for the internal) for a total of about 250 million points. The eight point clouds were elaborated to unite in a single cloud, with a union accuracy of a maximum error of 3 mm. Having acquired these point clouds, the data was processed via professional software: JRC 3D Reconstructor, and Cyclone 8.0.9; the former edited by Geccell of Brescia, the second commercialised by Leica.

The graphic restitution of reflectance values was conveyed through colouration, according to a scale of false colours, from red (maximum reflectance) to sky blue (lower reflectance) (Figures 14-16), and to a grey scale (Figure 18). The reflectance was graphed using a series of colour tables (9), using Multi-Hue/Rainbow and Grayscale table (Figure 17).

In terms of the conservation status of the large limestone blocks and remains of the fortified walls, the laser scanner revealed no issues relating to the static nature of the structure. (The preserved wall sections are in good condition, except for an opening made relatively recently and erroneously interpreted as a gate by Di Iorio in 1988).²²

 $^{^{\}scriptscriptstyle 20}\,$ For this, see: Adenstedt 2016; Balzani 2013; Blersch 2011; Cerato 2012; Doneus, Neubauer 2005; Esquivel et al. 2007; Garzia-Gòmez 2011; Garzìa-Pulido 2010; Monti 2010; Messina 2015; Piscitelli 2012.

https://hds.leica-geosystems.com/downloads123/hds/hds/ HDS7000/brochures-datasheet/HDS7000_DAT_en.pdf, https://hds.leica-geosystems.com/downloads123/hds/general/ HDS7000/manuals/HDS7000_UserManual_en.pdf.

²² On the ground, in fact, even if covered with moss, the collapsed blocks are visible.

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Figure 18: The graphic restitution of reflectance value (scale of gray).

Ethno-anthropological investigations: Interviews

Before embarking on the present new study of the Colle Le Case fortifications, it was considered of value to ask the local shepherds who lived (and live) there for information about the area. These interviews revealed much of interest in terms of the legends relating to the Civita and Colle Le Case fortifications and what finds they had themselves made, i.e. sherds of pottery and bricks. It was clear from their comments that the two locations were settlements. For several generations the shepherds have referred to the settlement in the locality Colle Le Case as having been abandoned due to strong winds. Furthermore, there is a story that an inhabited area in the locality of Civita was also abandoned – but this time due to an infestation of red ants. These stories,



Figure 19: Michele Battista the shepherd who accompanied me in the most impervious areas. Here showed me all the more or less large shelters near the walls zone, some almost completely covered by moss and ivy.

although indicative, need, of course, to be assessed in the light of the material finds.

With the aim in mind of collecting materials, the present author talked to shepherds working and living in the mountains, and was shown those areas where they remembered seeing material. Eight shepherds with considerable knowledge of the area were interviewed; men who in winter drive their herds down to the valleys, and in summer herd them up again to the mountains, to graze on the green pastures. The youngest of them is 40, the oldest 96, shepherds who have grown up in the mountains, and some of them have lived there since birth, such as Michele Battista, 61 (Figure 19).

Michele knows the mountains like the back of his hand and was the present author's guide in the most inaccessible of areas, pointing out to me all the shelters, large and small, near the walls. Some features are almost completely covered by moss and ivy, but nevertheless well known to those who live in the mountains.

Michele Battista, and the other shepherds, reported the presence of material (mainly bricks) near the top and along the eastern slope of the hill; however today, this material is not traceable, not even the sporadic pottery recorded by Gianluigi Ciamarra (as mentioned above, only one ceramic fragment was found in the area). Again with Michele, and wanting to check the exact point where the material was found, we were taken to a quarry site from the 1970s, the object of a previous investigation, whose data, however, does not seem to have been published. Near the small quarry, Michele remembered bricks that, from the description, would seem old, or plausibly medieval. If this is true, it is possible to hypothesise that Colle le Case was reoccupied in the medieval era, as happened for the other hill forts.²³

Comparative Study

Unfortunately, we cannot know exactly the area of the Colle Le Case fortifications, but we can hypothesise. For traces present in the territory, for land conformation and observing the sites that have been studied, some more than others, in Molise, it is possible to reconstruct and therefore try to understand the functionality of the structures being investigated.

With this in mind, all the known literature relating to the fortifications in the region has been looked at, from the closest context to Civitanova, the Alto Molise, especially the Trigno valley, and the *tratturo* Castel di Sangro–Lucera, to the most distant.²⁴ Thus, considering the fortification schemes illustrated above²⁵ and based on the known stretch of investigated walls, Colle Le Case can be assumed to have had either irregular and discontinuous walls,²⁶ or, more likely, a doublewall circuit, featuring on the top a natural acropolis, distinct from the surrounding area on account of the impenetrable nature of the landscape that made it difficult to access.

 $^{^{\}rm 23}\,$ E.g. Santa Maria dei Vignali for Pescolanciano or Terravecchia for Sepino.

 $^{^{\}rm 24}$ The Oakley catalogue (Oakley 1995) clearly represents the most important point of reference.

²⁵ See the section on 'hill forts'.

 ²⁶ Like the hill fort of Monteferrante, Carovilli (Capini 1991a: 23-38; 1999: 190; La Regina 1975: 278; Oakley 1995: 88-89).



Figure 20: Colle Le Case: a recostruction hypothesis. In yellow the remains of recorded fortification.

Overall, the Colle Le Case hill fort can be compared to that of nearby Castellone-Civitelle (Frosolone),²⁷ Santa Maria dei Vignali (Pescolanciano),²⁸ as well as Oratino,²⁹ Castropignano,³⁰ Colle di Pietra of Ferrazzano,³¹ and Monte Saraceno of Cercemaggiore.³² In terms of these comparisons, the remains of the Colle Le Case fortifications, and the proximity to the fortified enclosures of Civita, make it possible to imagine the existence of a distinct, inhabited area: a residential area of about 30 ha characterised by a double-wall circuit and a natural acropolis on the summit (Figure 20) that communicated visually with the nearby fortified enclosure of Civita, a sort of outpost for Colle Le Case, and with the other surrounding fortifications.³³

If a comparative study can be attempted of the virtual reconstruction of the circuit or dimensions, the same cannot be done with regard to dating. The chronology of the fortifications is much debated. There are three hypotheses that place the fortifications between: the 7th-6th century BC (Maiuri, supported by Salmon);³⁴ the 5th-4th century BC (La Regina);³⁵ and the end of the 4th-3rd century BC (Haller).³⁶

³⁶ Haller 1978.

These chronologies all have their criticisms; archaeologists have extended them to all the fortifications, sometimes without much to support due to lack of material evidence.

In Molise so far, only a few sites have been investigated with sufficient care to detect material from the foundation layers: e.g. Monte Vairano (Campobasso, Busso and Baranello), Monte Saraceno (Cercemaggiore), Rocca (Oratino), and Terravecchia (Sepino). Thus, in the case of Colle Le Case, it cannot be excluded a priori that the walls in polygonal work could date back to earlier periods. The fact that a fragment of black-glazed pottery was found by the present author suggests that the area around the walls was inhabited from the 5th-4th centuries BC; however, this does not imply that the same area was inhabited earlier and that the fortification belonged to an earlier stage of occupation.

Conclusions and Future Perspectives

From its discovery until today, the fortifications of Colle Le Case, like so many other fortified centres of Molise, have not been properly taken into consideration. However, from studies conducted to date, we can understand that fortified centres were sited in strategic positions to keep watch on the proto-Samnite and Samnite roads, then the Roman calles, and finally our modern tratturi.

From what we can detect, Colle Le Case monitored activity along the Trigno valley, the tratturo Castel di Sangro-Lucera, and was in visual contact with the other fortified centres: e.g. Civita (Civitanova),

²⁷ La Regina 1975: 278-279; Oakley 1995: 109-110; Zappitelli et al. 2016.

Oakley 1995: 90; Raddi 2014; Rainini 2001. De Benedittis 1991a; Pagano 2006; Oakley 1995: 116-117.

³⁰

Oakley 1995: 117-118; Sardella 2008. 31

Di Stefano 1995; Oakley 1995: 121-122; Roccia 2001; 2004.

³² Di Niro 2007; Millemaci 2005; Oakley 1995:125-126.

³³ I.e. Civita (Duronia), Castellone-Civitelle (Frosolone), Sant' Onofrio (Chiauci), Santa Maria dei Vignali (Pescolanciano), Monte Saraceno (Pietrabbondante), Monte Cavallerizzo (Capracotta), and Monte Rocca Abate (Belmonte).

³⁴ Salmon 1985.

³⁵ La Regina 1975.



Figure 21: *Colle Le Case* in visual contact with the other fortified centres.

Civita (Duronia), Castellone-Civitelle (Frosolone), Sant'Onofrio (Chiauci), Santa Maria dei Vignali (Pescolanciano), Monte Saraceno (Pietrabbondante), Monte Cavallerizzo (Capracotta), and Monte Rocca Abate (Belmonte) (Figure 21). Thus the hill forts to an extent controlled the wool routes, access to Samnite territory, settlements and shelters. Molise has only a few centres that we may consider 'large' inhabited areas (e.g. Monte Vairano, Castellone-Civitelle, Terravecchia, Monte Ferrante), interpreted as the settlements of other, stable settlements, are medium-sized, that had more to do with controlling the territory, providing shelter in case of need and fortified enclosures.

As for Colle Le Case, considering the few material finds and the layout of the walls, it is perhaps premature to identify the site as a simple fortified enclosure and to exclude the possibility that it might have actually been a settlement. What we do know is that there is sporadic, but affirmed, evidence of ceramics, bone, and brick, that could suggest a stable settlement, possibly reused in medieval times (if we decide to rely on our interviews with the local shepherds). Another indication, in favour, could be the toponomy, which could indicate the presence of homes (*case*).

Certainly, Colle Le Case was inhabited in the past, as supported by the fortifications in polygonal walls, albeit debated in terms of dating, and quarry traces found in the surrounding area.

Surely this area was inhabited in the 5th century BC, as testified to by the sherd of black-glazed pottery, but it

cannot be ruled out that there was another settlement before, there being no excavated finds. Nothing, however, excludes that *Colle Le Case* was not more than simply a fortified enclosure: there may well have been a settlement there, characterised by a double-wall circuit and a natural acropolis. Evidence of burials is so far absent but the eastern flank needs to be re-assessed in this regard, as does the possibility that the site might have been reused.

Granted, actual evidence is so far sparse – a few wall sections, one pottery sherd, traces of quarry extraction – and hypotheses abound. However, it is equally true that the study of fortifications requires as much data as possible, and only future research will produce, or not, more objective data on these wall circuits, their function, and their chronology.

Future studies at Colle Le Case will hopefully investigate, as much as possible, the areas adjacent to the visible fortification stretches, with the objective of identifying the buried parts of the walls (to try and reconstruct most of the entire circuit), discovering burial areas, and finding as much material as possible that might shed light on the site's phases of development and decline. Systematic excavations should follow, obviously supported by preliminary geophysical surveys and further surface investigation to guide them.

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Walls and Castros. Delimitation structures in the proto-historic settlements of Entre Douro and Vouga region (central-north Portugal)

António Manuel S.P. Silva and Gabriel R. Pereira

Abstract

Based upon a review of the available archaeological evidence, this contribution analyses the walls and other structures of delimitation of the proto-historic settlements located in the coastal region between the Douro and Vouga rivers, and with occupation between the end of the Bronze Age and the first periods of the Roman conquest. Focusing on this defining element of the *'castros* culture' of NW Iberia, the text highlights, amongst others, the sites of São Julião (Albergaria-a-Velha), Cividade (Arouca) and *Castro* de Salreu (Estarreja), discussing the material evidence of their delimitation structures, apparently lacking of defensive effectiveness. Reinforced embankments, retaining walls or ditches are some of the aspects of the strategies of architectural limitation of the settlements, in a significant variety of local options and adaptations over the course of about a millennium.

Keywords: Portugal, proto-history, Castros Culture, walls, ditches, ramparts

Walls and Castros

This short contribution focuses on particular archaeological evidence from pre-Roman settlements in the north-western Iberian Peninsula – specifically walls or other defensive or delimitation features of its hillforts, irrespective of their size or presumed regional status.

During the first millennium BC, broadly corresponding to the late Bronze and Iron Ages, until the regular establishment of Roman domination, which occurred in this region in the second half of the 1st century BC, hillforts, or the *Castros Culture* – as it is commonly known since Bosch-Gimpera (1921: 264, 287) first coined the term – spread through NW Iberia in a region that is currently distributed between the Spanish communities of Galicia, a part of Asturias, Castilla-León, and north and central-north Portugal.

Despite some debate, the concept of a *castros* culture has been a focus since the last decades of the 20th century on account of its conventional and historicalcultural framework (Höck 1980: 67-70; Martins 1988: 13-21; 1990 [1987]: 20-53). Attempts have been made to assemble in a material (and assumed cultural) package a set of settlement types, art styles, and assemblages of ceramics or other artefacts which clearly share some similar traits. However differences in these evidences become more noticeable when observed on a larger geographical scale, as well as in smaller regional studies, yet the concept is still commonly used as a general and easily understandable label for proto-historical communities. In this perspective, the geographical area considered in this study, the Atlantic fringe located between the rivers Douro and Vouga, is generally said to correspond to a peripherical territory of some kind, where the core traces of archaeological culture are presumed to be progressively different from those of northern Portugal.

In the way how archaeological cultures were understood from the beginning of *castros* historiography – largely following Kossina's proposals about the general coincidence of some types of artefacts and other material evidence with particular communities or people (Kossina 1911; Fernández Götz 2009: 25-32) – the defensive structures of sites were seen as one of the main features of that settlement type. The fortification systems, composed of stone walls, ditches and ramparts, in a more or less sophisticated organisation, were considered as general indicators of any castro and the military purposes of these structures were not disputed, being commonly related to the conflicts of the indigenous peoples, following the ethnological topos of Strabo's *Geography* concerning the 'brigandage and (...) continuous warfare both with each other and with their neighbours' of the 'about thirty different tribes [who] occupy the country between the Tagus and the Artabrians' (III, 3, 5, according to Jones 1923).

Despite many studies of *Castros* Culture (Silva [1986] 2007a; Martins 1990; Queiroga [1992] 2003; Alarcão 1992; Peña Santos 1992; Calo 1993; Carballo 1996; Peña Santos; Vazquez Varela 1996), comprehensive surveys of fortifications, or other types of enclosures and defences associated with these proto-historic villages are rare. The studies we have are within a very limited time-

frame, and in general favour more the shared aspects than the variability of the defensive devices (Cardozo 1947; 1952; López-Cuevillas 1988 [1953]: 95-104]. By the end of the 20th century, however, profiting from the theoretical and technical advances of Portuguese and Galician archaeology, namely the spread of stratigraphic-based excavations, new approaches were attempted.

Thus a first systematic essay on the architectural features of Castros Culture was proposed by Ana Romero (1976), focusing on the spatial organisation of castros, housing and other aspects, as well as defensive structures. Most of the data collected concerns Galician sites, but the best-known Portuguese castros are also referred to by the author. The first chapter deals with ditches, and for the first time a significant survey was presented covering their variable plans, in relation to walls, as well as their dimensions (Romero 1976: 21-3). Other earthworks, such as ramparts or the levelling of interiors or surroundings, using different platforms, were also considered. Additional attention was also paid to the particular system known as chevaux de frise, very common in the northeast region of Portugal was also (Romero 1976: 23-28). In an extensive chapter, Romero discusses the different shapes and plans of the walls of several sites, their foundations, constructive appearance and gates (Romero 1976: 29-48). Regardless of the importance of this study for our knowledge of Iron Age defences in north-western Iberia, no chronological seriation was attempted by Romero, due to the lack of stratigraphic data and radiocarbon dated samples.

A few years later, Alain Tranoy (1981: 83-9) provided a well-documented overview of Galician and Portuguese hillforts, focusing mainly on plans and number of walls as their defensive elements, paying less attention to ditches or other features, just describing them as 'complementary defences' (Tranoy 1981: 86-8). Nevertheless, some chronological issues were also discussed. A rather similar perspective on the subject leads us to the work of A.C. Silva (1983-1984; 2007a [1986]; 2007b), who was the first to propose a chronotypological seriation for the stone walls of the Castros Culture in Portugal. Thus, according to this author, the most ancient walls (Late Bronze Age) are predominantly made of simple and very rudimentary alignments of stones. During the Iron Age, the apparently dominant features were structures with two parallel stone walls, the spaces between them being filled with soil, smaller stones or rubble. Another very characteristic feature in some castros occupied in the Late Iron Age is the erection of massive and solid stone-built walls with elaborate masonry, resulting from the use of iron tools, the sides showing a particular polygonal or 'helical' surface (Silva 1983-1984: 123; 2007a [1986]: 32-3; 2007b:106).

Focusing on the hillforts of a particular area of the Entre-Douro-e-Minho region, the Cávado River's central basin, Manuela Martins (1990) presented a very noticeable diversity of fortifications, such as a rampart of soil and stone associated with a ditch of the Late Bronze Age phase at the *castro* of São Julião (Vila Verde, Braga), as well as other different solutions, commonly linking earthworks, such as ramparts or ditches, to stone-built walls or simple alignments in the more recent chronological phases, ending with the great defences complexes – with increasingly impressive, stronger stone walls, increasing in numbers at the time of the Roman conquest and pacification (Martins 1990: 121-55) – as is also generally referenced by other scholars.

Around the same time, the Galician archaeologist Francisco Calo (1993) also emphasised the role of 'negative' and 'positive' earthworks, besides the stone walls themselves, as hillfort defences, pointing to a broader interpretive understanding of its functions and meanings. Similarly, Francisco Queiroga ([1992] 2003: 44-7) refused to propose a typology for the Iron Age walls, considering the lack of proper excavations, and also stressing the importance of ditches and ramparts, adding further interesting suggestions regarding the purpose and use of the fortifications. Meanwhile, other authors have presented interesting spatial and evolutionary studies on the subject, e.g. Carballo (1996), Parcero (2005) or, in an accurate peninsular overview, Luis Berrocal-Rangel (2004).

The region and the coast

The core region reviewed in this essay corresponds to the coastal area between the Douro and Vouga rivers, in northern Portugal (Figure 1). On an orographic level, this area can generally be described as a coastal platform punctuated by soft elevations that gradually increase from the coast to the east, reaching zones with altitudes over 600 m, sometimes 1000 m. From a lithological point of view, the area is marked by large patches of schist rocks with significant intrusions of granites. The coastal fringe has mainly sedimentary and metamorphic rocks, slope deposits, alluvial areas, etc.

Another aspect important to note is that the shoreline has suffered abrasive impacts, perpetuated by sealevel variations and resulting in a series of oceanic and continental phenomena (Araújo 2002) which led to a very important distinction between the actual seashore formation and the coastline of the 1st millennium BC and Roman occupation (Figure 1). Thus, some of the settlements or other archaeological sites in the coastal area, which today are not far from the sea, would originally have been just in front of the Atlantic, or on



Figure 1: Proto-historic hillforts in the Entre-Douro-e-Vouga region, highlighting the main sites mentioned in the text: 1) Senhor dos Aflitos, Arouca; 2) São Julião, Albergaria-a-Velha; 3) Chão do Carvalho, Vale de Cambra; 4) Cividade, Arouca; 5) Salreu, Estarreja; 6) Ovil, Espinho; 7) Valinhas, Arouca; 8) Romariz, Santa Maria da Feira; 9) Castelo de Gaia, V.N. Gaia; 10) Monte Murado, V.N. Gaia; 11) Cesar, Oliveira de Azeméis; 12) Ul, Oliveira de Azeméis. The dashed line gives a hypothetical reconstitution of the coast during the 1st millennium BC (PROBA and the authors).

much wider river mouths, and might have benefitted from better conditions in terms of maritime trade or the exploitation of marine resources (Silva; Pereira 2010; Pereira 2011).

Methodology and available data on protohistoric settlements

This contribution is based upon the results of some archaeological excavations, partly led by the authors, in some fortified settlements of the region, as well as on field surveys, and of course on a specific review of the literature. As we will see, the data available is not as abundant as we would like, and the lack of digs, absolute dating, and the publication of finds, are difficulties everyone must face when studying local Iron Age features. So, our theoretical approach to the defensive systems of this kind of settlements is to employ a type of 'analytical-componential' method (Rodríguez-Monterrubio 2016), but the information currently available makes a sustainable regional overview very difficult, aside from a simple description or interpretation of most of the data.

The oldest literature on the proto-historic settlements of this region can be practically narrowed down to a list of sites (most of them are just modern or historical place names assumed to correspond to archaeological sites), with almost no comparative or chronological analysis. Moreover, the first digs at some of the hillforts, during the first half of the 20th century, lacked scientific methodology and have never been properly published. Most of the modern excavations from 1980 onwards also remain unpublished (Silva 1994; Pinto, Silva 2010).

The first attempts to organise hillforts and focus on contemporary critical inventories of the evidence (Silva 1993; 1994) have been reviewed (Pereira Da Silva 1995; Silva 1997; 2004; 2005; 2007; Centeno, Oliveira 2009; Silva, Pereira 2010), and still represent a unique database for further regional research, i.e. the PROBA project (Silva *et al.* 2016), in the framework of which this paper was produced.

As occurs throughout all the region of the Castros Culture, fortified sites largely remain as the main, almost unique, type of settlement evidence in the area during the Iron and Late Bronze Ages. Burial remains are very rare from the Iron Age period, and apart from the castros we may just consider, mainly related to Bronze Age contexts, the funerary tradition of 'post-megalithic' tumuli, or small burial mounds, rock art sites, metallic hoards and single finds, in addition to a growing number of discoveries of sites with pits - a particular kind of land use that has been at the centre of a great debate on their functional and symbolic meanings and chronology (see Silva et al. 2018 for a regional balance).

Most recent surveys record more than 40 protohistoric settlements in the area we are considering (Figure 1), and although digs were made at ten or so of them, just a few have significant published data (Silva [1986] 2007a; 1993; 1994; 2005; Silva, Pereira 2010). Useful information on defensive systems is available for most of these sites, but few excavations have focused on its walls, ditches or similar features (Silva 2005).

The boundary structures of the protohistoric

settlements of this region reveal, from a first appraisal, a quite clear variability, offering a good opportunity for chronological and cultural debate. Some quite old attempts at an architectural typology (Silva 1994; 2005) still remain valid, but more recent archaeological digs seem to show a somewhat more complex framework of data, as we will argue.

A quite simple boundary system seems to occur at Senhor dos Aflitos (Arouca), a small hilltop settlement at 350 m altitude and with a large surrounding visual dominance over the landscape. It comprises just two lines of large stones (Figure 2), roughly disposed without regular faces or any binder or mortar, and seemingly incorporating some large natural rocks in its plan. The complete plan is unknown and may not be continuous on all the slopes of the hill (Silva 2004: 248-9). Similar elementary structures are said to correspond to first phase of fortified settlements, from the Late Bronze Age onwards, in the north and central areas of Portugal (Silva 2007a [1986]: 32; Vilaça 1995: 256), which matches with Senhor dos Aflitos' times of proposed occupation; a small dig made at the site did not include that wall, nor were any other structures found (Silva, Lemos 2018).



Figure 2: Senhor dos Aflitos, Arouca. Wall made from a single alignment of stones (PROBA and the authors).

São Julião (Albergaria-a-Velha) is another hilltop site, at a height of 330 m, with good natural conditions for defence; it is based on the first mountain line next to the coastal platform. The site has been defined as having had a single Late Bronze Age occupation, supported by a ¹⁴C dating of a sample of *arbutus unedo* charcoal that provided a result of 976-826 cal BC. The size of the archaeological site has not yet been properly defined, but from the first excavations (Silva, Pereira, Da Silva 1995) to the more recent ones, the boundary architectural structures have been the focus of the research at the site (Silva et al. 2015; 2017). At São Julião we have been uncovering a 2 m wide stone wall, built with large and medium-sized stones linked by the natural sable soil, with only its external face regular. Against the inside face of the wall there is a form of rampart, 3 m wide, made of smaller stones and soil, which is perhaps the most unexpected feature of the wall (Figure 3). The structure of this wall is somehow similar to the Type 2 of Iron Age walls proposed by Carballo (1990: 171; 1996: 319), but with the stone wall placed at the external limit, not the internal one, as on the Galician hilltops studied by that author, and with a different chronological attribution. Analysis of our wall led to a proposal that the soil and stone rampart



Figure 3: São Julião, Albergaria-a-Velha. Top view and drawing of the wall (PROBA and the authors).



might be an inner reinforcement of the stone defence, furthermore it could have included the installation of any type of perishable structure, e.g. a wooden palisade (Figure 4).

Evidence of large and massive stone walls may be seen at other sites, assumed to correspond to the Late Bronze Age, such as Chão do Carvalho (Vale de Cambra) and Monte Calvo/Cesar (Oliveira de Azeméis). The former is an impressive, but not so extended, fortified settlement, at 804 m, comprising two rocky peaks bounded by a massive stone wall of about 5 m in width (including its ruins, as the site was never excavated), and still more than 3 m in height. A large platform, probably also limited by a wall, lies at a lower topographic level, showing no evidence of structures and corresponding perhaps to what Galician archaeologists call antecastro. Surface artefacts or occasional finds that might be able to support the proposed chronology are unknown, except for a saddle quern stone (Silva 1994: 58; 1997). Monte Calvo, in its turn, has experienced some recent archaeological works that proved its Late Bronze Age occupation (Tavares, De Man 2018: 85-6), but the chronology of an apparently massive stone wall is so far unknown.

Another excavated site, also in Arouca council, is Cividade, which has had several digs in its boundary structures. Cividade is a very small settlement, at 357 m altitude. It marks the western natural entrance of the Arouca valley (Silva 2004: 250-1), but itis not so dominant in the landscape as, e.g., Senhor dos Aflitos. The excavations occurred from 2003 to 2006 and yielded sparse evidence of dwelling features, but a 'peripheral walled structure' was recognised in four different trenches, partly destroyed by modern surface planting but still providing interesting and challenging data (Silva, Leite 2010). In fact, the trenches, dug at four places on the higher part of the slope, yielded clear evidence of a peripheral walled structure, presumably the same, but with certain distinctive features in each trench, that may suggest some chronological differentiation in itsbuilding, as it was confirmed in one of the trenches.

On the north slope of the site, trench C showed a double alignment of thin, rough stone walls, surely intended to be filled with soil, rubble and smaller stones: the total thickness of the structure would thus be between 2 and 2.4 m at that point of the 'wall'. In the west rampart, the excavation of trenches A/E provided only a single alignment of small and medium-size schist and granite stones, severely damaged, about 1 m thick or less. Another single wall, but this time sturdy and 2 m thick, was found in trench M, also on the north slope of Cividade (Figure 5). Finally, at the south rampart of the site (trench L), evidence of two walling phases was discovered. The lower and more ancient one was a very badly preserved stone wall, made of small and mediumsize blocks, perhaps less than 1 m thick. At some time later (not necessarily too much) the structure collapsed or was abandoned, and was capped with clayish soil and then levelled up to build the second wall, made of a single irregular and rough stone wall, with a maximum thickness of 2 m (Silva, Leite 2010: 156-7). Based upon ceramic and other finds, a chronological span of the site was first proposed between the 7th and 4th centuries BC (Silva, Leite 2010: 157). Later, absolute dating by AMS of a charcoal fragment of corylus avellana from trench L, the most recent wall, provided a date of 490-388 cal BC, which may be extended at the most to the 6th century, considering the average life span of hazel, in any case corresponding to the first Iron Age in the region.

The coastal Atlantic area is dotted with several small, fortified hilltops that sprang up from the 4th century BC onwards. At Castro de Salreu (Estarreja) excavations started in 2011 (Silva, Pereira, Lemos 2012; Silva, Pereira, Lemos, Almeida E Silva 2016; Silva, Pereira, Almeida E Silva, Lemos 2017; Silva, Pereira, Lemos, Almeida E Silva 2017; Almeida E Silva, Silva, Pereira, Lemos 2018). It is a small settlement (no more than 2 ha) located on a hill of 54 m at a meander of the river Antuã, not far from its mouth; however originally it would have been closer to the coast in the 1st millennium BC.

The settlement has been severely damaged by modern pine and eucalyptus plantations, but it was probably spread over three platforms, the two lower ramparts being pointed by petrified structures. The river Antuã constitutes the northern limit of the castro and there are ditches on the eastern and western slopes. However we do not know at this stage what type of defence bordered the settlement in its more open and natural access. By the ceramic finds and a ¹⁴C date, Salreu's occupation seems to be fixed between the 4th and 3rd centuries BC and the beginning of the Christian era. The first excavations in 2011 revealed, in the second northern rampart, very badly preserved traces of what could be a kind of wall, about 2 m thick and made of two schist-stone, rough alignments filled with soil and small stones. At that stage it was considered that such an apparently fragile structure must be assumed to be more of a rampart support than an effective defensive device. Evidence of a larger schist and soil wall was found on the western slope of the hill and has been excavated during the most recent campaigns. Despite its state of decay, the structure seems to be composed of a 4 m wide, single-faced wall (Figure 6), which may have been used as a platform support as well as a boundary and defensive device (Figure 7). Within this context, rather than these walls, the western and eastern ditches, perhaps linked to small streams and presenting a significant depth (*c.* 20 m for the western one), might be the main boundaries of the settlement, however the chronological relationship between that walls and ditches is still not asserted.

Not far from Castro de Salreu, and in the coastal area, another small hilltop site stands: the Castro of Ovil (Espinho). It was excavated between 1981-1983 (Ferreira, Silva 1981; 1983), and 1992-2005 (Salvador, Silva 2000; 2004; 2010; Silva, Salvador 2008), and 1800 m², with about 15% of the settlement area, being uncovered. It is a 'traditional' round house castro with no evidence of Romanization, and its lifespan is fixed from the 4th to the 3rd centuries BC up to the beginning of the 1st century AD. In terms of boundary systems, there is no type of wall or rampart but only a deep ditch on the north and east slopes of the hill (Figure 8), with *c*. 15 m of (height) difference and about 8 m wide, being doubled through part of its extension. On the southern and western slopes this defensive structure is continued by a small stream, the 'ribeira' of Rio Maior.

Turning again to inner, as well as more modern settlement walls, some other *castros* may be cited. At Valinhas (Arouca) the general boundary system has not yet been studied, although it seems to integrate a massive stone wall as well as an inner rampart on the western slope of the site – a large hill, 450 m high, that overviews the fertile Arda valley. In the excavated area the only evidence of a boundary structure is a single, thin wall 85 cm high made of two well-faced stone alignments, presenting an almost 'helical' stone work, filled with smaller stones and soil (Figure 9). This wall, assumed to be dated, perhaps, to the 1st century BC, seems to follow another, rougher, stone parallel alignment (Silva 2004: 238-9; 2005).

Nevertheless, the most common boundary and defensive devices during the local Late Iron Age (2nd century BC onwards) are the larger walls, 2-2.5 m thick, that are usually arranged in two or three circuits, sometimes with reinforcement walls and helical or polygonal stone-work. A good example is Castro Romariz, Santa Maria da Feira (Figure 10), a double-sided stone wall, filled with imbricated smaller blocks with no mortar and dated to the 2nd century BC, contemporary with the first effective Roman military expedition into north-western Iberia, led by consul



Figure 5: Cividade, Arouca. Drawing of an archaeological trench in the boundary structure (PROBA and the authors).



Figure 6: Salreu, Estarreja. Top view and drawing of the wall (sector K) (PROBA and the authors).



Figure 7: Salreu, Estarreja. Hypothetical reconstitution of 'platform wall' (Gustavo Santos).



Figure 8: Ovil, Espinho. A perspective of the ditch (Jorge Salvador).



Figure 9: Valinhas, Arouca. A view of a simple stone wall (PROBA and the authors).



Figure 10: Romariz, Santa Maria da Feira. Inside face of the upper wall (left) (PROBA and the authors).

Decimus Iunius Brutus in 138-137 BC (Silva 2007a [1986]: 32; Centeno 2011; Silva, Pinto 2012).

In the Castelo de Gaia (Vila Nova de Gaia) an impressive stretch of a wall, with an extension of approximately 45 m of was uncovered on the central northern slope of the hill, next to the Douro river. The wall is *c*. 2 thick and *c*. 1.80 m high at some points, and, similar to Castro Romariz, it features two faces of irregular stone filled with smaller stones. It has been dated in the 1st century AD, according to the archaeological materials retrieved from the foundation trench of the wall, (Carvalho, Fortuna 2000; Carvalho 2003). In this same hillfort, two parallel ditches, *c*. 23 m apart, were discovered on the western slope, both more than 6 m wide but not very deep (less than 4 m in the excavated section). According to the leader of the excavations, F. Queiroga, the external ditch may have been made during the Iron Age, while the inner one, with a more uncertain chronology, may be linked to a wall the traces of which may have been preserved under a modern terrace nearby (Queiroga 2006: 13-15, Fig. 2; Silva 2017; 2018i).

Other large and important Late Iron Age *castros* have common complex boundary and defensive systems, such as *Castro de Ul* (Oliveira de Azeméis), walled by two or three stone alignments, one of them formed of medium- and large-sized stones linked by a mortar of thin sand and sable (Margues 1989: 70) and an impressive internal organisation on very uneven terraces, which by itself may represent an effective defensive device (Silva 1994: 57; Almeida, Silva 2013). There are, however, some major chronological issues to determine, and, as a result of recent excavations, the Roman dating for the upper wall was found to be more accurate (De Man, Tavares, Carvalho 2017; Tavares, De Man 2018). Other cases justify a brief mention, such as Castro de Baiza (Vila Nova de Gaia), where three walls and eventually a ditch were identified. One of them, a massive 3-m thick stone structure dated from the 2nd century BC (Silva 1994: 60-1; Sá, Paiva 1994: 44-6), and the huge hillfort of Monte Murado, also in Vila Nova de Gaia, where unique epigraphic evidence of the pre-Roman Turduli Veteres people was found, and which preserves the traces of two large walls and an external ditch (Lima 1989; Silva 1994: 61-2). However the excavations were focused only in a residential area of the settlement (Silva 1984) and, as in most other cases, the chronology of the defensive system remains an open subject.

Summary and discussion

The lack of chronological data for most of the hillforts of this region in terms of their boundary and defensive systems poses a serious difficulty for a more comprehensive survey. Nevertheless, as evidenced from a significant set of *castros*, amongst the diversity of architectural solutions or local adaptations, some general trend lines may be attempted. Table I summarises the main boundary devices in the settlements presented above. For practical reasons, only two major cultural phases were considered, despite the need for a finer chronology when discussing each site.

Several authors have proposed that a general tendency for the building of walls or other defensive devices in the hilltop settlements of the *Castros* Culture area emerged in the 10th-9th centuries BC (Silva 2007 [1986]; Martins 1990; Alarcão 1992). Nevertheless, some exceptions did occur, namely at hilltop sites with natural defences that may have had no constructed devices, such as Canedotes, at Vila Nova de Paiva, in the central Portuguese area of Beira Alta (Canha 2002; 2005), or others in the Beira Interior (Vilaça 1995).

The architectural translation of this trend seems to show at least four different solutions in our region, from the most elementary alignment of rough stone blocks at Senhor dos Aflitos (Arouca), to what seems a thick and massive wall at Chão do Carvalho (Vale de Cambra). Referring to the former, the most cited parallel is the elementary thin stone alignment of the Castro of Senhora da Guia, Baiões (São Pedro de Sul) (Silva 1979; 1980; 2007a [1986]: 32; 2007b: 102), or eventually – already outside the *Castros* Culture area – the innermost and southern example of Castro de São Romão (Seia) (Fabião, Guerra 1988-1989; Guerra, Fabião, Senna-Martinez 1989), but Senhora da Guia seems to be insufficiently documented in terms of its walls (Vilaça 1995: 256) and thus the issue requires deeper analysis.

Regarding ancient, larger and massive walls, the most well-known site is Coto da Pena, at Caminha, northern Portugal (Silva 2007a: 27-8; 2007b: 102), but others sites have been described, such as Vila Cova-à-Coelheira (Vila Nova de Paiva), where a 3m wall was built in the 9th century BC (Mendes 2009: 84-96). Perhaps less impressive, but similar in its effects, may be the wall and rampart at São Julião (Albergaria-a-Velha), but further research is required for a better understanding of the original construction.

As previously mentioned, we have scant information on settlements and walls for the transition period from the Bronze to the Iron Age, and in general to the middle centuries of the 1st millennium BC, due to the lack of excavations and dating. Moreover, as is also known, a significant set of Late Bronze Age settlements was abandoned at that time, and the beginnings of some other sites are still unclear.

In the 4th or 3rd century BC some hilltop sites were founded, or evidenced certain developments in terms of boundary devices. A.C.F. Silva (2007b: 105) points out 'a reinforcement, sometimes spectacular, of the defensive systems with the erection of strong walls' in the *Castros* Culture phase IIA (500-200 BC), giving as examples the Cividade de Terroso (Póvoa de Varzim)

Late Bronze/Early Iron Age	Middle/Late Iron Age
Rough alignment of large stones	Ditch, single or double (Ovil, Salreu, Castelo de Gaia,
Double-sided irregular wall filled	Double-sided irregular wall filled by stones and soil;
by stones and soil (Cividade)	single-faced wall of stone and soil (Salreu)
Thick wall of stone and soil + inner rampart	Thin stone wall (Valinhas, Castelo de Gaia)
(São Julião)	Wide walls of stone, in several circuits
Thick stone wall (?)	(Monte Murado; Romariz?, Ul)
(Chão do Carvalho)	Ramparts and very uneven platforms (Ul)

Table 1: Boundary/defensive systems in the *castros* of the region between the Douro and Vouga rivers.

and, in the southern Douro basin, the walls of Castro de Baiza (V.N. Gaia) and Romariz, Feira (Silva 2007b: 105-6). The hillforts of Salreu and Ovil both feature ditches, which were also built at other settlements of the region, but the chronology of this kind of feature is hard to determine. As can be seen at Salreu, doublesided irregular walls filled with stones and soil, or single-faced walls of stone and soil also used for support of dwelling platforms, were probably a very common solution in this period, but the dating evidence is insufficient to provide general information.

The interpretation of these kinds of boundary systems, simple or complex walls, ramparts, ditches or other main defensive or military apparatus, depends, in addition to the theoretical framework which steers the analysis (Parcero 1997; Berrocal-Rangel 2004; Gonzalez García 2007; Rodriguez 2009), on two major considerations or perspectives: its own effectiveness as a passive or active defence device; and, naturally, if in the social, political or economic framework of these communities, the war or conflict were a common event or a real threat.

We will not discuss here the possible warfare status of indigenous peoples prior to the Roman conquest, nor Greco-Roman authors' remarks on the characteristics of the western Iberian indigenous peoples (e.g. Strabo's ethnographical descriptions). Recent papers have focused adroitly on these topics (Queiroga 2011; F. González García 2006; 2007; 2009; Rodríguez Corral 2009), and refer to the warlike nature of the northwestern peoples of the Late Bronze to Late Iron Ages, as documented by literary sources, and finds of weapons and the remarkable granite stone steles and statues of 'Galaeci' warriors. These statues identify the *Castros* landscape from the Bronze Age, but particularly from the 1st century BC onwards, surely evidencing a dominant aristocratic class of 'champions' (González García 2009) leading each populus or castellum and acting as a political link or guarantee before the Roman authorities.

Thus, despite the fragile nature of the ruins of most of these 'walls', the collective investment needed for their construction (clearly greater than that needed for domestic buildings) went side by side with – and in certain cases even preceded – the process of sedentarisation and village establishment (Parcero, Cobas 2004: 7; Parcero 2005). In this sense, the defensive purpose of these devices was profoundly interwoven with their symbolic meaning, as well as with a large set of uses and values one can imagine today (Calo 1993: 102; Queiroga 2003: 45-6; Parcero 2005; Torres-Martínez *et al.* 2015: 77). After the conquest and the establishment of the *Pax Romana*, what might justify such huge levels of teamwork to construct the monumental defences of the great *oppida*, or the redesigning of ancient *castros*, could perhaps represent the self-identifying legitimacy of a communal *tradition*, as Parcero (2005: 24) suggests. In the light of this, it surely makes sense to discuss, as D. Hourcade (2003: 298) has done, whether certain walls could signify at least real 'urban fences', perennial monuments of the city, celebrating the way of life in the *polis*.

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Reviewing a pre-Roman *oppidum* in northern Portugal. Summary of the archaeological works carried out at *Citânia de Briteiros* (Guimarães)

Gonçalo Cruz and José Antunes

Abstract

Trying to summarise the results of different fieldwork campaigns made at *Citânia de Briteiros* (Guimarães), in a cooperation between the Martins Sarmento Society and the University of Minho, this paper highlights the major data from the excavations of recent years. The latest researches at the site have been analysing the impact of the early large excavation campaigns and obtain chronostratigraphic data from one of the best-known proto-historic sites on the Iberian Peninsula.

Besides the general study of the two known bathhouses in the settlement, the field works included two specific areas: the 'House of the Spiral' and the 'House of *Auscus*', studied in different yearly campaigns. Though inhabited in a common period, these two domestic spaces correspond to different chronological and cultural contexts that help us to explain the phenomena of cultural change in the transition to the Common Era, as well the dynamics that led to the decay and abandonment of the *oppidum*.

Keywords: Oppida Citânia de Briteiros Iron Age Romanisation northern Portugal

Excavations at the oppidum of Briteiros in the 19th and 20th centuries

The remains of the large hillfort known for centuries as Citânia de Briteiros, in northern Portugal, has been briefly described in different texts between the 16th and the 19th centuries (Figure 1). However, the first systematic study of the archaeological site began after its purchase by Francisco Martins Sarmento (1833-1899), a portuguese pioneering archaeologist who made several excavation campaigns between 1874 and at least until 1883, promoting a general topographic plan in 1892. After Sarmento's death, the site started to be managed by the Martins Sarmento Society up until today, being classified as a National Monument in 1910. Roughly between 1930 and 1968, there were 32 excavation and restoration campaigns, led by the Portuguese archaeologist Mário Cardozo, that defined the general appearance of the hillfort as we can see it now (Cardozo 1996). These 20th-century works defined



Figure 1: Drawing of Citânia de Briteiros in 1791, with a representation of the different lines of walls and the orthogonal roads (after Aires 1896: 429).

what we can call the explored area of the site, around 7 ha from a total area of about 24 ha. There was a first archaeological trench in 1977-1978 with a registration of the stratigraphy. This work was led by a team from the University of Porto (Centeno and Silva 1978), but only since 2005 there has been the possibility of a more permanent and systematic plan of archaeological works (Lemos and Cruz 2006). These more recent campaigns have been made through a direct cooperation between the Martins Sarmento Society and the University of Minho, representing the fieldworks in *Citânia* an important part of the practical training of the Minho students.

Having had a large area been explored in the late 19th and middle 20th centuries, there are no stratigraphic data, graphic records or documentation regarding most of the structures visible at the site. There was also no clear cultural and chronological definition of this late prehistoric settlement, which was commonly interpreted, by the literature of 1980s and 1990s by comparison with other contemporary sites (Martins 1990; Silva 2007). The official interpretation of the monument, however, continued to be the general ideas of Mário Cardozo virtually until 2005.

The campaigns carried out in the late 19th century were generally documented in a series of field diaries written by Martins Sarmento, and partially published in the *Revista de Guimarães*¹ the official scientific

¹ See the set of articles, published between 1903 and 1909, available from the website of the Martins Sarmento Society: https://www.csarmento.uminho.pt/revista-de-guimaraes/ (19/02/2020)



Figure 2: A view of the acropolis of the Briteiros *oppidum* during excavations by Martins Sarmento (photograph by Francisco Martins Sarmento, *c.* 1880. Collection of the Martins Sarmento Society).



Figure 3: A detail from the 1892 topographic survey of Citânia de Briteiros made by Álvaro de Castelões (the original is held in the Portuguese National Library).

journal of the Martins Sarmento Society. These diaries allow identification of a large part of the uncovered structures, and the location of some pieces kept in the collection of the Society's museum, in Guimarães. There are, as well, some dozens of pictures taken by the famous Portuguese archaeologist that give a glimpse of the general panorama of the site during its first years of research (Figure 2). Finally, the topographic plan referred to above made in 1892 is a quite complete source of information about the areas that were effectively explored by Sarmento, with detailed registration of the defensive system and definition of the landfills that resulted from the deposition of earth during these excavation works (Figure 3). The works led by Mário Cardozo in the 20th century have not the same level of recording, although most of the campaigns had a brief written report published in the corresponding year – also in the *Revista de Guimarães*². These works focused, however, much more on cleaning and restoration than excavation.

The absence of stratigraphic records limits considerably our interpretation of the site. This situation was particularly unfortunate, in the light of the general status of this archaeological site as a monument, which still represents largely the northern Portuguese Iron Age, and the transition to the Roman period. It was

² See the set of articles, published between 1931 and 1968, available from the website of the Martins Sarmento Society: https://www.csarmento.uminho.pt/revista-de-guimaraes/ (19/02/2020)

regarded as a large 'romanised' *oppidum*, that 'should have something' from the previous period (Cardozo 1996: 12-14), but was generally viewed as a direct result of the Romanisation process, regarding its size and evident orthogonal planning of its urbanism. One specific occasion, Sarmento suggested that the site could have been founded shortly after the military expedition of *Decimus Iunius Brutus*, in 138-136 BC (Sarmento 1933), but there was no clear chronological theory regarding the evolution of the site, neither by Sarmento nor by Cardozo.

Meanwhile, the first archaeological trench made at the first wall of Citânia, in 1977 and 1978, had its results clearly influenced by the campaigns led shortly before at the Monte Mozinho hillfort, and the general conception, in the 1970s, that identified northern Portuguese *oppida* as Roman colonies (Almeida 1983). The first wall of the *oppidum* of Briteiros was then dated from the 1st century AD (Centeno and Silva 1978: 429). Researches were then limited to this small trench in one of the defensive alignments, with no fieldworks above over the dwellings, which form the major part of the visible structures, or the roads, that represent one of the most impressive aspects.

Studying a fortified city. Strategies of excavation works

The starting point of the research developed by the joint team of the Martins Sarmento Society and the University of Minho was an attempt to have a clear vision about the conception of the space as we see it presently, i.e. in its largest extent phase, which corresponds to the apogee of the urban settlement. This largest phase shows a city encompassing a total area of around 24 ha, characterised by a heavy defensive system: three approximately concentric lines of granite walls; a forth on its northern side; and two ditch complexes. This system protected a densely constructed area organised in different quarters, surrounded by access roads, from which two main roads stood out. The living quarters were then divided into family compounds that encompassed different structures - round or angular. Some exceptional buildings stand out from the set: two bathhouses and a large building known as the 'council house' (Lemos and Cruz 2011). A general plan can be seen in Figure 4.

All the spaces inside the area explored in the early campaigns of Sarmento and Cardozo were identified and numbered, according to potential use and organisation, resulting in a total number of 110 family compounds (Lemos and Cruz 2006: 13-19). These



Figure 4: General plan of the Briteiros *oppidum* showing the known archaeological structures, but excluding all the recent constructions, e.g. the National Road of the 1930s that crosses the site. The circles mark the 'House of the Spiral' (left) and the 'House of *Auscus*' (right). Martins Sarmento Society.

separated households show different features, although relatively regular in size. Some compounds are formed solely by round structures, 4 to 5 meters in diameter; some others show round constructions alternating with square structures; some others seem to be a single building, i.e. a large construction divided into square compartments, which are sometimes referred to as 'domus-type' houses (González-Ruibal 2006-07: 378). The area of each compound seems, however, to be more or less the same, independently of the characteristics of the architecture which seems to obey to the criteria established by the urban planning of the oppidum. In fact, each quarter has a maximum number of eight family compounds, fewer in number in the quarters adapted to the topography and to the apparently preexistent first wall of the acropolis (Figure 4). All the structures were registered in photography, as well as records made of all the details like paved atriums: vestibules, door thresholds, and rock-art panels.

In terms of the excavation works planned since then, various aspects have been considered. As most of the

visible remains are inside the area explored in the early excavation campaigns, the first decision was to carry out excavation works inside this area, rather than beginning excavations in the unexplored zones. This choice was based on three main reasons. First, the explored area is considerable large. Attending to the general principles of conservation of the site, and given the limited resources of the team, the excavation of non-explored terrains would enlarge the area of preservation and would limit future non-intrusive techniques of research. Second, there were suspicions that the campaigns of Sarmento and Cardozo did not remove all the archaeological layers, and the excavation was rarely made down to the bedrock, limiting the works to the uncovering of the ruins. Thus, the foundation and occupation layers of each space could still be preserved, despite the early campaigns that removed most of the abandonment layers. Finally, the explored area corresponds to what was clearly the centre of the oppidum, and includes structures for which chronological information is much in need, i.e. the orthogonal roads, bathhouses, 'council house', and the different, already mentioned, family compounds, which require specific study.

The excavation works carried out were limited to restricted trenches, bearing in mind the shortage of time and resources for each campaign. There were therefore no extensive excavations in the open area, which seems to be the best method in some zones. The results are thus limited, and many questions can only be solved by larger, extensive works. The method regarding the conservation of the excavated zones has been landfill of the previously opened trenches, maintaining the space with its present circulation level, and reusing the extracted soils in the landfill.

Following the above-mentioned general principles, the first excavation work was projected for July 2005.³ The area studied since then included zones that are part of seven different family compounds, and the two known bathhouses. However, in terms of the domestic spaces, only two compounds were extensively studied, considering the specific architecture of each. As mentioned, the family compounds are mostly differentiated by the shape of the structures forming them. Thus the first chosen space was a family compound consisting of three round structures surrounding a central atrium, that became known as the 'House of the Spiral', based a rock-art motif engraved on an architectonic element found inside the compound. The second one is a 'domus-type' family compound formed only of rectangular structures, looking much more like a single building divided into different compartments around a central rectangular atrium. This family house, excavated between 2008 and 2014, became known as the 'House of *Auscus*', following the recovery, in the course of fieldwork, of an element from one of the walls seemingly inscribed *Ausci*,⁴ possibly the name of one of the owners of the house.

These two family houses, which have received more detailed study, are both located within the acropolis of the *oppidum* (Figure 4). Besides different excavation and cleaning works of different residential spaces, which will be discussed below in more detail, there was also archaeological fieldwork undertaken at the two known bathhouses in the *oppidum*: one in the south-western area and the other to the north-east, closer to the acropolis.

Excavation work in the south-western bathhouse (Figure 5), was carried out in the context of a conservation project of the structure, promoted by the Martins Sarmento Society in 2007. Besides the interventions related to conservation and improvement of visiting conditions, some archaeological trenches were dug in an attempt to have some chronological information about the bath building, discovered in September 1930 (Cardozo 1996: 39). The only trench with significant results was one dug in the atrium of the bathhouse, showing some original levelling layers, prior to the construction of the building, where some Iron Age pottery fragments were collected (Lemos *et al.* 2008).

The works at the north-eastern bathhouse were made in a first phase in October 2006, and later in July 2016. The prior objectives were to conclude if these remains, identified in 1932 after its partial destruction, were really those of a bathhouse, and if it could be the original location of the pedra formosa (ornate stone, collected in Citânia in the 17th century), as proposed earlier by Mário Cardozo (Cardozo 1935). Such ornate stones are architectonic elements that had a key function in Late Iron Age bathhouses in northern Portugal (Lemos and Cruz 2011: 70), being simultaneously a single stone wall used for keeping the steam and heat inside the sauna chamber, and a decorated element that was probably part of the artistic language associated with the ritual meaning of bathing practices in these buildings. The works carried out in this second bath building concluded its original bathing function, being a much larger construction than the south-western bathhouse; the work also maintained the possibility of the location here of the well-known pedra formosa from Briteiros (Lemos et al. 2008). Additionally, the excavations of July 2016 recorded two different destruction episodes for the building: one in the 17th century, with the removal of the pedra formosa (and all other decorated elements),⁵

⁴ '*Aus[ci]*'(?), an epigraphic interpretation by A. Redentor, who identified the word as an indigenous personal name (Redentor 2011: 132-133).

³ Ten excavation campaigns were made since then at *Citânia de Briteiros*, with the last one in July 2019.

⁵ A complete description of this destruction was made by Francisco Craesbeek in a text from 1726.



Figure 5: A view of the south-western bathhouse at Citânia de Briteiros (a photograph taken in 2016). Martins Sarmento Society.

and the other in 1932 – with the destruction of half of the structure for the construction of the National Road that crosses the archaeological site (Cardozo 1935).

The excavations in the 'House of the Spiral' and the 'House of *Auscus*'

'House of the Spiral'

As mentioned above, the 'House of the Spiral' is a family compound apparently formed solely of three round structures, as suggested by the general plan registered in the topographic survey of 1999 (see a plan of the compound and of the archaeological trenches in Figure 6). However, as early as 2005, a fourth structure was detected and numbered; this seems to be an angular building, between one of the round constructions (E3) and the wall that forms the limit of the compound to the east, numbered as E4. This domestic space was probably one of the first to be explored by Francisco Martins Sarmento in the 19th century, as registered in his photographs, but it is quite difficult to find in the poorly detailed diaries of this pioneer archaeologist. However, the results of his fieldwork are quite visible in the stratigraphy registered in the trenches excavated between 2005 and 2008 (Lemos and Cruz 2005-2006; Cruz and Antunes 2010-2011).

It seems the compound was not accessible by the road network of the *oppidum*, although it is possible that the apparent main entrance of the compound, in the northern corner, was served by an alley connected to one of the main roads. This alley is not easily visible

now as it was hidden, or destroyed, by the construction of the plateau that forms the 19th-century chapel yard. A stair used to connect the main door of the compound to the central courtyard, covered by a perfect stone pavement (Figure 7). Surrounding this courtyard, three round constructions dominate the space. What seems to be the most notable space, the round construction E1, was made using an elaborate construction technique known in Roman architecture as opus reticulatum, and has a vestibule and door typical of a 'crab house', characteristic of the architecture in northern Portugal's Iron Age. This vestibule would have been roofed, matching the covering of the rest of the building. The round structure E2, not excavated in the recent works, seems to have had a door opening to the east; it is not clear, however, if this was the original door, as the restoration works of the 20th century were not very respectful of the original location of some doors. The round structure E3 does not conserve the original door, which should be higher than the circulation level of the courtyard. The structure E4 seems to be reusing an empty space between structure E3 and the limit of the compound, by the construction of a stone wall connecting E3 to the limiting wall of the family house. In fact, part of the area surrounding the three round dwellings would originally have been covered, enlarging the roofed space of the family compound by expanding the roof of the round constructions to the limiting wall, as has been suggested for other hillforts of the region (Silva 2007; Gomes and Carneiro 2005: 119-131). An alternative entrance seems to have existed to the south, opening to a neighbouring family compound, as happens as well at other contemporary hillforts.



Figure 6: A schematic plan of the 'House of the Spiral' (left), with references of the structures, the access to the compound, and areas with stone pavements and lined spaces. On the right, a plan of the archaeological trenches carried out in the compound. Martins Sarmento Society.



Figure 7: The central courtyard of the 'House of the Spiral', with the stone pavement, during excavation works. Martins Sarmento Society.

Close to the central courtyard there is a large displaced architectonic element, possibly a door jamb or a lintel, featuring an engraved spiral. This is the only example of rock art or decorated element visible today.

Seven slightly alternate trenches were made inside the house, including the inner spaces of two round

structures (E1 and E3), inside the vestibule of structure E1, outside E1 and E3, with the objective of searching for the foundations of the buildings, and in a large part of structure E4.

The results of these excavations were interesting. There was not much information to be had regarding the use

of each structure, which we think corresponded to the different functional spaces of a dwelling: cooking, eating and sleeping spaces; granary/barn; and workshop.⁶ The structures E1 and E3 both preserved the stone base of the central wooden pillar that used to support the thatched conical roof. The family compound has a total area of 311 m², being possibly the living space of an extended family, with different generations sharing the same space. However, the area excavated in what was numbered as structure E4 revealed a surprise, with the recording of what seems to be a funerary deposition area - with one untouched deposit and another spoiled, which might have been used as cists for the deposition of human remains. Although similar structures have been found at other hillforts in the region (Martins 1988: 78; Gomes and Carneiro 2005: 187-192), no human remains have been found inside these structures, only charcoal and some pottery fragments.

The materials collected from the excavation were useful for having a relative chronology of the space. Most consist of Iron Age wheel-made pottery, with some examples of handmade pottery. There is a considerable amount of Roman common ware, and a limited range of imported materials, mostly amphorae and, rarer, *sigillata* ware. Additionally there were a few metal fragments, bronze and iron, mostly impossible to identify, some small fragments of glass and bones, and some stone objects. Among the glass objects stands out an imported glass bead dated to the 4th century BC (Gomes 2012: 104). Many samples of organic materials were collected, with interesting, and already published, results in terms of the vegetable species used in the Late Iron Age (Tereso and Cruz 2014).

The general results allowed us to conclude that this area was used as a domestic space, prior to the construction of the family compound visible nowadays. In fact, in the trench excavated in the vestibule area of structure E1 there was a fireplace underneath the stone construction associated to pottery fragments dated from the 4th-2nd centuries BC (Ribeiro and Sampaio 2008). We know almost nothing about this phase, which was only detected at this point, but it can be related to the existence of dwellings made with perishable materials that preceded the general use of stone houses. Similar contexts were detected at other hillforts, i.e. in the Cávado and Ave river basins (Martins 1990; Dinis 1993). The construction of the three main round structures seems to have occurred in late 2nd or early 1st century BC, being in full occupancy the entire century, and at the beginning of the 1st century AD. This is confirmed by the finds of Iron Age wheel-made pottery in the foundations of E1 and E3, compared with the collection of Roman common ware and sigillata from the upper layers, detected in the stratigraphy. In fact, the pottery characteristic of the 1st century AD, corresponding to the Roman period, is present in the archaeological layers linked to the use and abandonment of the round houses, and the 19th-century disturbed layers left by the first archaeological campaigns. This means that the family household was constructed in the Late Iron Age and was still inhabited in Roman times.

The 'House of the Spiral' is thus a typical family house, characteristic of northern Portuguese hillforts that did not experienced much in the way of architectural change in the Romanisation process, despite its occupants being a part of the process of cultural change ongoing at the time after the integration of the region into the Roman Empire at the time of Augustus (Cruz 2015). If we focus on the general plan of the site (Figure 4), we see that the 'House of the Spiral' is located in a densely constructed zone that does not seem to obey to the prior urban scheme. On the contrary, the constructions over a large part of the acropolis, surrounded by the first wall, and most of the living quarters of the slope, outside this wall, seem partially limited, or changed, by the existence of orthogonal roads. Therefore, the quarter where this family compound is located seems to be untouched by the organisational plan represented by the road network, and seems prior to the construction of these roads. These aspects are coincident with the results of the excavation from the 'House of Auscus', the description of which follows.

'House of Auscus'

Located also in the area of the acropolis of the oppidum, the 'House of Auscus' was discovered in the 19th-century campaigns too. Its particular shape, as a homogeneous building (Figure 8), stands out from the general model of a family household, organically formed by round and angular constructions. It seems that the building was built previously, respecting a pre-existing road layout. In fact, one of the orthogonal roads of this zone marks one of the limits of the house, to the west, where the door of the house was located (see a general plan of the house, and a plan of the archaeological trenches in Figure 9). The location in the acropolis area was one of the reasons why this space was selected for carrying out archaeological works, starting in 2008, as mentioned, due to its proximity to the 'House of the Spiral' and one of the roads.

The main, and apparently single, entrance to the compound was located in the west wall, from the public road, giving access to an entrance hall, which could well have had a covered area. This hall communicated with the central, angular atrium, with a stone pavement, discovered during the excavation, being largely occupied by the 19th-century landfill. Surrounding this atrium are five compartments, numbered in 2005

⁶ From observations of the recent works carried out, and the early campaigns also, it seems that the workshops of different artisans were normally located inside the domestic spaces.

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Figure 8: A general view of the 'House of *Auscus*' during the 2008 excavation works. Martins Sarmento Society.



Figure 9: A schematic plan of the 'House of *Auscus*' (left), with references of the structures, the access to the compound, and the areas with stone pavements and lined spaces. On the right, a plan of the archaeological trenches dug in the compound. Martins Sarmento Society.
as structures E1 to E5. From these compartments, structures E1 and E5 have no visible door, which might be explained either by the restoration works of the mid 20th century, or because the doors of these compartments were at a relatively higher level than the doors of the other three chambers. This aspect can also be revealing about its possible use as granary.

There were three trenches excavated in this compound, including part of the public road area, part of the inner space of compartment E1, the central atrium and the inner space of compartment E3. As we noted in the 'House of the Spiral', the works of Martins Sarmento are quite visible here, not only in the above-mentioned landfill, that consists of the soils removed from the excavations of the different compartments, but in the stratigraphy as well, e.g. a clear ditch that destroyed part of the atrium's stone pavement. In this domestic building the occupation layers had been almost completely removed by the 19th-century works, thus limiting the interpretation of the functional spaces of the house. On the other hand, the foundations were quite well preserved, particularly those layers that were sealed by the stone pavements of the atrium and the public road. These contexts gave important information regarding the chronology of the visible structures. The archaeological materials recovered are more or less identical to the set collected from the 'House of the Spiral'. However, in this house, the occurrence of different typologies has a different stratigraphic relation with the entirety of the structures.

Thus, the oldest contexts here are already linked to the existence of Iron Age wheel-made pottery, associated with a fireplace located underneath the stone pavement of the house. This small structure, partially destroyed by the compressed levels underneath the atrium, should be associated to a family compound that preceded the visible house, possibly a typical family house formed by round and rectangular constructions. To the west of the house, the public road seems to have been constructed initially in the first half of the 1st century BC. Indeed, two different pavement levels have been detected with the public road, both as the actual stone pavement, and with the same alignment, i.e. with the two limiting walls of the road as the oldest construction. This relative chronology has been defined by the finding of wheel-made Iron Age pottery underneath the first pavement, and the occurrence of the same materials, together with some examples of Haltern 70 amphorae, underneath the later pavement of the road: imports of Haltern 70 amphorae started from 50 BC onwards (Morais 2007: 141-143). The existence of this kind of production from Baetica being quite common in Roman contexts of the mid 1st century AD in hillforts with previous occupation (Martins 1990: 172), the absence of other kinds of Roman common ware in the foundation layers of the second pavement of the road, leads us to

think that this context of the later road's pavement can be dated to the second half of the 1st century BC. The road was, therefore, constructed before the family house, and the alignment of the road guided the main axes of the house's construction.

In terms of the 'House of Auscus', the foundation layers had mixed ceramic materials from the Late Iron Age, and a considerable amount of Roman common-ware pottery, amphorae and sigillata. The construction of the house can thus be dated to the late 1st century BC, or early 1st century AD. These productions are also present in the disturbed levels from the older excavations, the remains of the original occupation levels. Besides some metal elements, e.g. bronze hair-spins, a Roman bronze as dated to the time of Claudius stands out.7 The find of this coin, as well of later productions of sigillata hispanica, lead us to conclude that the house was inhabited for much of the 1st century AD and the beginning of the 2nd. Some interesting stone elements were also found, mostly in the 19th-century landfill, but a rotary quern stone was found in the preparation layer of the inner pavement of compartment E3. One of the most remarkable finds, however, was collected from the more recent landfill of the atrium; this was a stone with a Latin epigraph, already mentioned, possibly bearing the native name Auscus (Redentor 2011: 132-133), which gave the building its name. This element (Figure 10) seems to have been part of a stone wall, with a faceted side, where the inscription was carved.

Briefly, the space occupied by the 'House of Auscus' had a previous structure of domestic nature that was limited by the laying of the public road to the west at the beginning of the 1st century BC. After a lifting of the circulation level of the road, a 281 m² house was constructed, around the transition to the Common Era, partially reusing the limit of the road, which became the west wall of the building. The owners of the house followed the general principles of Roman private architecture already in use at the nearby expanding city of Bracara Augusta (Magalhães 2010: 21-23). These owners were, however, a native family, as the name of a certain Auscus suggests.⁸ They were probably a flourishing family by the transition to the Common Era, and followed the new concepts and ideas concerning not only architecture, but other features, e.g. the adoption of alphabetic writing and the Roman currency. The house had a stone-paved atrium that was the centre of the space, through which people could enter the building, after passing an entrance hall. This atrium would have been be partially covered, since part

⁷ Information shared by Rui Centeno, to whom we are grateful

⁸ In a different geographical context, and considering the different chronology and economic scale, this phenomenon seems to resemble what happened in the Celtiberian *oppidum* of La Caridad (Teruel, Spain), where a native named *Likine* marked his name on the pavement of the main hall of his Italic-style house in the late 2nd century BC (Uribe Agudo 2009: 73-75).



Figure 10: The stone element with the epigraph 'Aus[ci]'(?) (Redentor 2011, vol. 2: 132-133), collected in the 2009 excavation campaign. Martins Sarmento Society.

of the space, close to the entrance to compartments E2 and E3, did not have a slab surface but a kneaded clay pavement, as was common for covered spaces. This atrium seems to have been used for keeping animals, as suggested by the recovery of a small granite element used for tethering livestock.⁹ Compartment E3 had a perfectly finished clay pavement, the surface of which was also detected. The finding here of some common ware, e.g. a simple plain dish, raises the possibility of this space being a *triclinium*. The other covered spaces are not associated with any clear function, apart from the already referred fair possibility that spaces E1 and E5 were storage units.

The 'House of *Auscus*', therefore, mirrors the changes that occurred with the process normally known as Romanisation, which started in this region after the Cantabrian Wars and the foundation of the Roman *conventus* capital, i.e. the nearby city of *Bracara Augusta* (Martins 2011).

Conclusion

Together with the excavations made in the bathhouses, the archaeological fieldworks carried out at the 'House

of the Spiral' and the 'House of Auscus', including one of the orthogonal roads characteristic of this and other contemporary oppida in northern Portugal, are the only recent samples of the stratigraphy of the settlement. Careful analyses of the different layers, and of the ceramic materials collected in each one, is a precious source of chronological information. We are aware that the dating method used, based only on pottery classification, is quite relative. However, the classification of the materials has been compared with studies made at many other sites and was interpreted according to typological tables established over many years and still respected (Martins 1990; Silva 2007). On the other hand, methods such as radiocarbon dating, which we were unable to guarantee in recent years, but now consider using in the future, are not very accurate when we try to focus on a more specific time scale.

More than the dating methods, one of our major questions is the limited sample of the *oppidum* that it has been possible to study so far. Although the chronology established for the construction of the roads, for instance, is consistent with the results of similar fieldwork carried out at the nearby hillfort of Santo Ovídeo (Fafe), where a public road was dated to the beginning of the 1st century BC (Martins 1991: 38), there is a comparable need to excavate different sections of the *oppidum*'s roads, which will allow us to have a more in-depth interpretation.

The same principle must to be applied to the domestic contexts. More than a hundred family compounds visible in the area uncovered in the early excavation campaigns show different structures that are comparable to types such as the 'House of the Spiral' and 'House of *Auscus*'. Most of the compounds follow more the structure of the former, and less the latter, which might suggest a much larger and more dynamic community in the Late Iron Age than in the Roman period; further fieldwork should make all this clearer.

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⁹ Many examples of these elements were collected from Briteiros in the early 19th-century campaigns, some *in situ*, some others displaced. They were normally located close to the doors.

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Late Prehistoric Fortifications in Europe: Defensive, Symbolic and Territorial Aspects from the Chalcolithic to the Iron Age presents the contributions to the International Colloquium 'FortMetalAges' (10th–12th November 2017, Guimarães, Portugal), The Colloquium was organised by the Scientific Commission 'Metal Ages in Europe' of the International Union of Prehistoric and Protohistoric Sciences (UISPP/ IUSPP) and by the Martin Sarmento Society of Guimarães. Nineteen papers discuss different interpretive ideas for defensive structures whose construction had necessitated large investment, present new case studies, and conduct comparative analysis between different regions and chronological periods from the Chalcolithic to the Iron Age.

Davide Delfino obtained his PhD from the University of Trás-os-Montes e Alto Douro. He is a Bronze Age specialist at the Italian Ministry of Cultural Heritage and Activities, Visiting Professor at the Polytechnic Institute of Tomar (UNESCO Chair in Humanity and Cultural Integrated Landscape Management), and an internal researcher of the Geosciences Centre (University of Coimbra). In 2015 Davide was appointed secretary of the UISPP/IUPPS Scientific Commission 'Metal Ages in Europe'. His scholarly interests focus on warfare and landscape occupation in the Bronze Age and Iron Age, archaeometallurgy, excavation and study techniques of hilltop settlements, archaeological forgeries, and problems of disclosure of scientific data in museums.

Fernando A. Coimbra holds a PhD in Prehistory and Archaeology (University of Salamanca 'Extraordinary Prize'). Fernando is Visiting Professor at the Polytechnic Institute of Tomar, and internal researcher of the Geosciences Centre (University of Coimbra), Portugal, where he completed post-doctoral research on the Bronze and Iron Age rock art of the Tagus Valley. He is a member of several research projects in Portugal, Italy, Malta and Greece.

Gonçalo P. C. Cruz graduated in History and Archaeology at the University of Minho (Braga, Portugal) and is a staff archaeologist at the Martins Sarmento Society, Guimarães. His work is involves the research and management of the archaeological sites under the administration of the Society, namely the Citânia de Briteiros and Castro de Sabroso, as well as the functioning and activity in different nuclei of the Martins Sarmento Museum. His research has been mostly focused on Iron Age settlement and the Romanization of Northern Portugal.

Daniela Cardoso graduated in Landscape Archaeology at the Polytechnic Institute of Tomar, held an Erasmus award in Italy at the University of Ferrara in 2000, and completed in 2002 her Master of Advanced Studies degree at the Institute of Human Palaeontology, Paris. In 2015 she obtained her PhD in 'Quaternário, Materiais e Culturas' at the University of Trás-os-Montes and Alto Douro, Portugal. She is currently Senior Museum Technician at the Martins Sarmento Society and works in the education service as well as conducting guided tours and promoting cultural and scientific events.



