Foraging Assemblages is the publication of the proceedings of the Ninth International Conference on the Mesolithic in Europe, held in Belgrade in September 2015. The two volumes of these proceedings gather 121 contributions on Mesolithic research in Europe, covering almost every corner of the continent. The book presents a cross-section of recent Mesolithic research, with geographic foci ranging from the Mediterranean to Scandinavia, and from Ireland to Russia and Georgia. The papers in the volumes cover diverse topics and are grouped into 11 thematic sections, each with an introduction written by prominent Mesolithic experts. The reader will learn about changes in forager lifeways and the colonization of new territories at the end of the Ice Age and the beginning of the Holocene warming; the use of diverse landscapes and resources; climatic instabilities that influenced patterns of settlement and subsistence; the organization of settlements and dwelling spaces; the formation of regional identities expressed through various aspects of material culture and technologies of artefact production, use, and discard; aspects of social relations and mobility; symbolic, ritual, and mortuary practices; diverse ways in which Mesolithic communities of Europe were transformed into or superseded by Neolithic ways of being; and how we have researched, represented, and discussed the Mesolithic.
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Back Cover Illustration: Lepenski Vir during excavations (Photograph courtesy of of Alan McPherron)
Contents

VOLUME I

List of Contributors ix
Preface xxv

The Danube Gorges Mesolithic: The first fifty years (Dušan Borić) xxvii

Transitions – Beginnings

1 Introduction: Transitions – Beginnings (Dušan Mihailović and Robert Whallon) 3
2 Transition and tradition: Lithic variability in the cave of Vlakno, Croatia (Dario Vujević and Mario Bodružić) 5
3 Workspace organization of a Final Palaeolithic hunter-gatherer camp (Anton A. Simonenko and Olesya I. Uspenskaya Aleksandrova) 12
4 The problem of the Palaeolithic to Mesolithic transition on the Upper and Middle Don River (central Russia) (Alexander N. Bessudnov and Alexander A. Bessudnov) 20
5 Early Holocene human adaptation and palaeoenvironment of the north-western Caucasus (Elena V. Leonova, Olesya I. Uspenskaya, Natalia V. Serdyuk, Elena A. Spiridonova, Alexey S. Tesakov, Elena V. Chernysheva, Pavel D. Frolov, and Elena V. Syromyatnikova) 29
6 Early Mesolithic of northern Bohemia: 2015 excavations (Jiří Svoboda) 36
7 The last hunter-gatherers of South Arabia: A review of the Terminal Pleistocene and Early Holocene archaeological record (Yamandú Hieronymus Hilbert) 45

Colonization

8 Introduction: Colonization 53
9 First Mesolithic occupations at high altitudes in Vercors (Isère, France): The case studies of Les Coins I, Roybon, and Gerland (Alexandre Angelin and Régis Picavet) 57
10 The Mesolithic site of Borovskoye 2 in light of the Pre-Boreal habitation in Karelia (Sergey Lisitsyn, Alexey Tarasov, Nataliya Tsvetkova, and Stanislav Belsky) 64
11 The Mesolithic of Fontanella rockshelter (Vilafranca, eastern Mediterranean Iberia) and the last hunters-gatherers of northern Valencian country (Didac Román, Inés Domingo, and Jordi Nadal) 74

Landscapes

12 Introduction: Landscapes (Dušan Borić) 83
13 The missing landscapes and territories of Mesolithic Portugal (Ana Cristina Araújo and Ana Maria Costa) 88
14 A comparative perspective on Mesolithic assemblages from different landscapes in Bohemia (Katárina Kapustka, Jan Eigner, and Matthew Walls) 94
15 The Early Mesolithic of the Piave River basin: Mountain tops, riverbanks, and seashores? (Federica Fontana, Davide Visentin, and Stefano Bertola) 102
16 Integrating communities and landscape: A wetland perspective from the Lower Rhine area (Luc W. S. W. Amkreutz) 110
**Contents**

17 Tracing raw materials: Procurement strategies and movements in the Early Mesolithic, a case study from Larvik, south-eastern Norway (Guro Fossum) 118

18 Local or imported? Tracking the provenance of flint raw materials of the Mesolithic habitants of Estonia and northern Latvia with the help of geochemical methods (Kristiina Johanson, Aivar Kriiska, Jaan Aruväli, Peeter Somelar, Kaarel Sikk, and Liina Sepp) 123

19 The Upper Dee Tributaries Project: Finding the Mesolithic in the mountains of Scotland (Shannon M. Fraser, Gordon Noble, Graeme Warren, Richard Tipping, Danny Paterson, Wishart Mitchell, Ann Clarke, and Caroline R. Wickham-Jones) 129

20 Surviving Doggerland (Caroline R. Wickham-Jones) 135

21 A Mesolithic moment in time: The Drumnaglea Cache (Peter Woodman† and Sarah Close) 142

22 Transient campsites, logistic campsites, and the cumulative taphonomy of Malham Tarn site A: A persistent place in the northern Pennines (William A. Lovis and Randolph E. Donahue) 148

**Settlement**

23 Introduction: Settlements, dwellings, pits, and middens – still very far from a theory of everything! (Ole Grøn and Nuno Bicho) 157

24 Of space and time: The non-midden components of the Cabeço da Amoreira Mesolithic shell mound (Muge, central Portugal) (João Casalheiro, Nuno Bicho, Célia Gonçalves, Daniel García-Rivero, and Pedro Horta) 159


26 Habitation areas in Asturian shell middens and site formation processes: Mazaculos II cave (La Franca, Asturias, northern Iberia) and the new sites of El Total III and El Mazo (Manuel R. González Morales) 177

27 Mesolithic settlement patterns and occupation of central and eastern Cantabria (Spain) (Mercedes Pérez-Bartolomé) 184

28 Domestic life by the ocean: Beg-er-Vil, c. 6200–6000 cal BC (Grégor Marchand and Catherine Dupont) 191

29 Mesolithic pit-sites in Champagne (France): First data, key issues (Nathalie Acherd-Corompt, Emmanuel Ghesquiere, Christophe Laureult, Charlotte Leduc, Arnaud Remy, Isabelle Richard, Vincent Riquier, Luc Sanson, and Julia Wattez) 198

30 Some observations on the archaeological record of the (Late) Mesolithic in the northern Netherlands (Marcel J. L. Th. Niekus) 202

31 Life on the lake edge: Mesolithic habitation at Star Carr (Nicky Milner, Chantal Conneller, Barry Taylor, Mike Bamforth, Julian C. Carty, Shannon Croft, Ben Elliott, Becky Knight, Aimée Little, Harry K. Robson, Charlotte C. A. Rowley, and Maisie Taylor) 210

32 Late Mesolithic shallow pithouse from Sąsieczno 4 (central Poland) (Grzegorz Osipowicz) 216

33 Mesolithic complexes on the right bank of the Vyatka River (the middle Volga Basin) (Tatyana Gusentsova) 223

34 Mesolithic hearth-pits and cooking-pits in western Sweden and south-eastern Norway: When, where, how, and a bit about why (Robert Hernek) 227

35 Mesolithic ‘ghost’ sites and related Stone Age problems with lithics (Ole Grøn and Hans Peeters) 233

36 Sommevågen. A Late Mesolithic–Early Neolithic settlement complex in south-western Norway: Preliminary results (Trond Meling, Hilde Fyllingen, and Sean D. Denham) 240

37 Mesolithic settlement on Utsira, western Norway: Mesolithic hunter-gatherers in transition as reflected by dwellings and site patterns (Arne Johan Nærøy) 246

38 Mesolithic dwellings from Motala, Sweden (Ann Westermark) 252
Regional Identities

39 Introduction: Regional identities (Rick Schulting) 259
40 Holocene foraging in the Dinaric Alps: Current research on the Mesolithic of Montenegro (Dušan Borić, Emanuela Cristiani, Ljiljana Đuričić, Dragana Filipović, Ethel Allué, Zvezdana Vušović-Lučić, and Nikola Borovinić) 261
41 New perspectives on the Mesolithic of the Sado Valley (southern Portugal): Preliminary results of the SADO MESO project (Pablo Arias, Mariana T. Diniz, Ana Cristina Araújo, Ángel Armendariz, and Luis C. Teira) 264
42 The 'Asturian' and its neighbours in the twenty-first century: Recent perspectives on the Mesolithic of northern Spain (Pablo Arias, Esteban Álvarez-Fernández, Miriam Cubas, Miguel Ángel Fano, Maria J. Iriarte-Chiapusso, Mercedes Pérez Bartolomé, and Jesús Tapia) 274
43 The Mesolithic in the northwest of the Iberian Peninsula (Galicia, Spain): The state of art (Eduardo Ramil Rego, Natividad Fuertes Prieto, Carlos Fernández Rodríguez, Eduardo González Gómez de Agüero and Ana Neira Campos) 278
44 The last foragers in the north-east of the Iberian Peninsula: New evidence of human occupation during the seventh/sixth millennia cal BC (Antoni Palomo, Igor Bodganovic, Raquel Piqué, Rafael Rosillo, Xavier Terradas, Marta Alcolea, Marian Berihuete, and Maria Saña) 281
45 The Late Mesolithic of the south-western coast of Portugal: The lithic industry of Vale Marim I in focus (Joaquina Soares, Niccolò Mazzucco, and Carlos Tavares da Silva) 289
46 The temporality of the Mesolithic in southern France (Thomas Perrin) 295
47 Re-evaluating the old excavation from Pinnberg, Germany (Daniel Groß, Steffen Berckhan, Nadine Hauschild, Anna-Lena Räder, and Anne Sohst) 298
48 Exploring early Ertebølle: Results of preliminary assessments at a submerged site in the Kiel Bay (Baltic Sea, Germany) and its potential (Julia Goldhammer, Annika B. Müller, Laura Brandt, Steffen Wolters, and Sönke Hartz) 308
49 Identifying regional practices in cave use during the Mesolithic in south-western Britain (Caroline Rosen) 308
50 About time for the Mesolithic near Stonehenge: New perspectives from Trench 24 at Blick Mead, Vespasian’s Camp, Amesbury (David Jacques, Tom Lyons, Barry Bishop, and Tom Phillips) 312
51 Secrets of Blue Maiden: The archaeology of a virgin island in the Baltic Sea (Kenneth Alexandersson, Anna-Karin Andersson, and Ludvig Pampmehl-Dufay) 318
52 Mesolithic site locations in the river valleys of Karelia, west of Ladoga Lake, Russia (Hanna Takala, Mark. M. Shakhnovich, Aleksey Yu. Tarasov, and Anssi Malinen) 324

VOLUME II

People in Their Environment

53 Introduction: People in their environment (Clive Bonsall and Vesna Dimitrijević) 355
54 Late Glacial to Early Holocene environs and wood use at Lepenski Vir (Ethel Allué, Dragana Filipović, Emanuela Cristiani, and Dušan Borić) 357
55 Plant use at the Mesolithic site of Parque Darwin (Madrid, Spain) (Marian Berihuete Azorin, Marta Alcolea Gracia, Raquel Piqué i Huerta, and Javier Baena Preysler) 359
56 A tale of foxes and deer, or how people changed their eating habits during the Mesolithic at Vlakno cave (Croatia) (Siniša Radović, Victoria Pia Spry-Marqués, and Dario Vujević) 367
Contents

58 How 'marine' were coastal Mesolithic diets? (Rick J. Schulting)
59 The seasonality of hunting during the Mesolithic in southern Scandinavia (Ola Magnell)
60 Incremental growth line analysis of the European oyster (Ostrea edulis, Linnaeus, 1758) from the kitchen midden at Eskilsø, Denmark (Harry K. Robson, Søren A. Sørensen, Eva M. Laurie, and Nicky Milner)
61 Skellerup Enge: Evidence for a distinctive subsistence economy in western Denmark during the early Ertebølle (Kenneth Ritchie, Søren H. Andersen, and Esben Kannegaard)
62 Hunting beyond red deer: Exploring species patterning in Early Mesolithic faunal assemblages in Britain and north-western Europe (Nick J. Overton)
63 Size estimations of sturgeons (Acipenseridae) from the Mesolithic-Neolithic Danube Gorges (Ivana Živaljević, Igor V. Askeyev, Dilyara N. Shaymuratova (Galimova), Oleg V. Askeyev, Sergey P. Monakhov, Dušan Borić, and Sofija Stefanović)

Technology

64 Introduction: Technology (Federica Fontana, Emanuela Cristiani, and Dušan Mihailović)
65 Couteaux de Rouffignac: A new insight into an old tool (Davide Visentin, Sylvie Philibert, and Nicolas Valdeyron)
66 The lithic assemblage of the Mesolithic station of Alp2 (pre-alpine mountain range of Chartreuse, northern French Alps): Preliminary data (Jocelyn Robbe)
67 The First and Second Mesolithic of La Grande Rivoire (Vercors range, Isère, France): A diachronic perspective on lithic technology (Alexandre Angelin, Thomas Perrin, and Pierre-Yves Nicod)
68 Techno-functional approach to a technological breakthrough: The Second Mesolithic of Montclus rockshelter (Gard, France) (Elsa Defranould, Sylvie Philibert, and Thomas Perrin)
69 The late microblade complexes and the emergence of geometric microliths in north-eastern Iberia (Didac Román, Pilar García-Argüelles, Jordi Nadal, and Josep Maria Fullola)
70 Mesolithic raw material management south of the Picos de Europa (northern Spain) (Diego Herrero-Alonso, Natividad Fuertes-Prieto, and Ana Neira-Campos)
71 New perspectives on Mesolithic technology in northern Iberia: Data from El Mazo shell midden site (Asturias, Spain) (Natividad Fuertes-Prieto, John Rissetto, Igor Gutiérrez-Zagasti, David Cuencía-Solana, and Manuel R. González Morales)
72 The conical core pressure blade concept: A Mesolithic chaîne opératoire (Tuija Rankama and Jarmo Kankaanpää)
73 Middle and Late Mesolithic microblade technology in eastern Norway: Gradual development or abrupt change? (Svein Vatsvåg Nielsen and Torgeir Winther)
74 Shaori II: An obsidian workshop in Javakheti, Georgia (Dimitri Narimanishvili, Petranka Nedelcheva, and Ivan Gatsov)
75 Finding, shaping, hiding: Caching behaviour in the Middle Mesolithic of south-eastern Norway (Lucia Uchermann Koxvold)
76 Hafting flake axes: Technological and functional aspects of an assemblage from north-western Norway (John Asbjørn Havstein)
77 Quantifying Irish shale Mesolithic axes/adzes (Bernard Gilhooly)
78 Technology of osseous artefacts in the Mesolithic Danube Gorges: The evidence from Vlasac (Serbia) (Emanuela Cristiani and Dušan Borić)
79 Antler in material culture of the Iron Gates Mesolithic (Selena Vitezović)
80 Tools made from wild boar canines during the French Mesolithic: A technological and functional study of the collection from Le Cuzoul de Gramat (France) (Benjamin Marquebielle and Emmanuelle Fabre)
Contents

Lost at the bottom of the lake. Leister prongs from the Early and Middle Mesolithic (Lars Larsson, Björn Nilsson, and Arne Sjöström)
81

Late Glacial and Early Holocene osseous projectile weaponry from the Polish Lowlands: The case of a point from Witów (Justyna Orlowska)
82

Social Relations, Communication, Mobility
547

Introduction: Social relations, communication, mobility (Chantal Conneller)
83

Role of personal ornaments: Vlakno cave (Croatia) (Barbara Cvitkušić and Dario Vujević)
84

Marine shells as grave goods at S’Omu e S’Orku (Sardinia, Italy) (Emanuela Cristiani, Rita T. Melis, and Margherita Mussi)
85

Visual information in Cabeço da Amoreira, Muge (Portugal): Shell adornment technology (Lino André and Nuno Bicho)
86

Neighbours on the other side of the sea: Late Mesolithic relations in eastern Middle Sweden (Jenny Holm)
87

Sedentary hunters, mobile farmers: The spread of agriculture into prehistoric Europe (T. Douglas Price, Lars Larsson, Ola Magnell, and Dušan Borić)
88

Rites and Symbols
585

Introduction: Rites and Symbols (Judith M. Grünberg and Lars Larsson)
89

A portable object in motion – Complex layers of meaning embedded in an ornamented sandstone-object from the Late Mesolithic site of Brunstad (Norway) (Almut Schülke)
90

Net patterns in Mesolithic art of north-western Europe (Tomasz Płonka)
91

Protective patterns in Mesolithic art (Peter Vang Petersen)
92

Mesolithic engraved bone pins: The art of fashion at Téviec (Morbihan, France) (Éva David)
93

Final destruction and ultimate humiliation of an enemy during the Mesolithic of southern Scandinavia (Erik Brinch Petersen)
94

Archaeological remains of Mesolithic funerary rites and symbols (Judith M. Grünberg)
95

Buried side by side: The last hunter-gatherers of the south-western Iberian Peninsula through the lens of their mortuary practices (Rita Peyroteo-Stjerna)
96

Depositions of human skulls and cremated bones along the River Motäl Ström at Strandvägen, Motala (Fredrik Molin, Sara Gummesson, Linus Hagberg, and Jan Storå)
97

Human–animal symbolism within a ritual space in the Mesolithic wetland deposit at Kanaljorden, Motala (Fredrik Hallgren, Sara Gummesson, Karin Berggren, and Jan Storå)
98

What are grave goods? Some thoughts about finds and features in Mesolithic mortuary practice (Lars Larsson)
99

Mesolithic companions: The significance of animal remains within Mesolithic burials in Zvejnieki and Skatetholm (Aija Macâne)
100

Pit or grave? ‘Emptied’ graves from the cemetery at Dudka, Masuria, north-eastern Poland (Karolina Bugajska)
101

Beware of dogs! Burials and loose dog bones at Dudka and Szczepanki, Masuria, north-eastern Poland (Witold Gumiński)
102

Shamans in the Mesolithic? Re-analysis of antler headdresses from the North European Plain (Markus Wild)
103

Birds in ritual practice of eastern European forest hunter-gatherers (Ekaterina Kashina and Elena Kaverzneva)
104
### Contents

**Transitions – Endings**

106 Modelling the empty spaces: Mesolithic in the micro-region of central Serbia  
*(Vera Bogosavljević Petrović and Andrej Starović)*  
107 How North Iberia was lost? The Early Neolithic in Cantabrian Spain *(Miguel Ángel Fano and Miriam Cubas)*  
108 Debating Neolithization from a Mesolithic point of view: The Sado Valley (Portugal) experience  
*(Mariana Diniz, Pablo Arias Cabal, Ana Cristina Araújo, and Rita Peyroteo-Stjerna)*  
109 The Caucasian route of Neolithization in the Pontic-Caspian region  
*(Alexander Gorelik, Andrej Tsybriy, and Viktor Tsybriy)*  
110 The Late Mesolithic and Early Neolithic of the Kama region, Russia: Aspects of the Neolithization process  
*(Evgeniia Lychagina)*  
111 The Late Mesolithic in western Lesser Poland: Spectators or participants in the Neolithization?  
*(Marek Nowak, Mirosław Zając, and Justyna Zakrańska)*  
112 Wetland sites in a dry land area. A survey for Late Mesolithic and Early Neolithic sites in and around the Zwischenahner Meer Lake, Germany *(Svea Mahlstedt)*  
113 Forager-farmer contacts in the Scheldt Basin (Flanders, Belgium) in the late sixth-early fifth millennia BC: Evidence from the site of Bazel-Sluis *(Erwin Meylemans, Yves Perdaen, Joris Sergant, Jan Bastiaens, Koen Deforce, Anton Ervynck, and Philippe Crombé)*  
114 Ritual continuity between the Late Mesolithic Ertebølle and Early Neolithic Funnel Beaker cultures *(Søren Anker Sørensen)*  
115 Continuity and change: hunters and farmers in the Mesolithic-Neolithic transition, Östergötland, eastern middle Sweden *(Tom Carlsson)*  
116 The Mesolithic-Neolithic transition in South Norway: Cylindrical blade technology as an indicator of change *(Dag Erik Færø Olsen)*

**Representing and Narrating the Mesolithic**

117 Introduction: Representing and Narrating the Mesolithic *(Nicky Milner)*  
118 Mesolithic movie stars: Analyzing rare film archives of the Muge excavations from the early twentieth century *(Ana Abrunhosa and António H. B. Gonçalves)*  
119 Elusive, perplexing, and peculiar? Presenting the Mesolithic to twenty-first century audiences *(Don Henson)*  
120 Public perceptions and engagement with the Jomon and the Mesolithic *(Don Henson)*  
121 Building Mesolithic: An experimental archaeological approach to Mesolithic buildings in Ireland *(Graeme Warren)*

**Index**
108. Debating Neolithization from a Mesolithic point of view: The Sado Valley (Portugal) experience

Mariana Diniz, Pablo Arias Cabal, Ana Cristina Araújo, and Rita Peyroteo-Stjerna

In this paper we discuss how the Late Mesolithic Sado Valley hunter-gatherers interacted with the first agropastoralist societies settled in southern Portugal in the course of the second half of the sixth millennium cal BC. The archaeological record available during this period in southern Portugal reflects the presence of two distinct cultural groups. Differences can be detected not only on an economic level but also in settlement patterns, material culture, and symbolic behaviour. By the end of the first quarter of the fifth millennium cal BC, the Sado shell middens seem to have been abandoned, raising the question of how and why these last hunter-gatherers left their traditional territory, since no environmental change is recorded in the area that could explain it. Using chronological information and some Neolithic elements found in the area of the shell middens, we will debate the Neolithization process from a Mesolithic point of view.

Keywords: Mesolithic, Neolithization process, cultural resilience, material culture, Sado Valley

Preamble
In September 2015, we were gathered at the MESO 2015 in Belgrade in a session called Transitions – Endings to discuss the end of a world – that of the hunter-gatherers – and the beginning of a new one, the one of the agro-pastoralists. This meeting happened at the moment when Europe’s future seemed unpredictable and when we were surrounded by transitions.

We were discussing the migrations of peoples in the past, while the ‘migration’ phenomenon into Europe – from both the east and south – was becoming a large-scale humanitarian crisis. Debating past migration processes and their consequences may be seen as not such an urgent exercise. However, we argue, that a reflection on social phenomena in the past may give us some clues and a more informed perspective on how to act in the present. Like today, transitions in the past were probably perceived as an intersection of the fear of the other and the challenge from the different.

While broadcasted news resemble a nightmare version of the San Valero’s map (1946), showing routes and entry points into Europe, we do know why people today are moving, and why new genes, new artefacts, and new cultural attitudes are entering into Europe, even if we cannot predict the historical consequences of these processes. Because it is difficult to reflect upon the Neolithization process in Europe without having in mind this modern context of migrations, this paper was conceived as a tribute – which we as social scientists can do – to all of those who are now fleeing their homelands. Regardless of the complexity of the motives that impel these people to move, they are participants in transitions, not as endings but as beginnings.

The ‘big picture’
When reflecting on the Neolithization process in Europe, the central issue in this session, we do not consider it a humanitarian catastrophe. On the contrary, for most of us as inheritors of an underlying evolutionary way of thinking, the Neolithic period is still considered a step forward in human progress. While we can describe the consequences of the Neolithization process in Europe, we are not able to clearly understand why it started and why it went on for more than two millennia; we consider the starting point to be the absolute chronology available for the Early Neolithic in the Aegean/Balkan Peninsula (e.g. Reingruber 2011) and the chronology of the Neolithization of the British Isles to be an estimate of its end (e.g. Whittle et al. 2011).

The onset of the Neolithic does not seem to have been associated with physical violence or destruction. The 8.2 ka BP climatic event is frequently assumed as the cause of the PPNB collapse in the Near East, triggering population movements towards the west (e.g. Özdoğan 2014, 173). However, extensive scholarship reveals that this is a controversial issue with a multitude of possible prime
factors (for an opposite perspective see Flohr et al. 2016; van der Plicht et al. 2011, 237). The seminal questions are still open: why did these migrants start moving, and why did they continue moving? Following an indigenous perspective in Neolithic literature (Dennel 1983), it is recognized today that hunter-gatherers were not alone, and new genes entered Europe during the Neolithization process (e.g. Hofmanová et al. 2016; Semino et al. 2000; Szécsényi-Nagy et al. 2017; Olalde et al. 2015, 2019; Villalba-Mouco et al. 2019). Although this genetic input is not completely understood (e.g. Fernandez et al. 2014), it cannot be described as an ‘invasion’, at least from a quantitative point of view, since the predicted genetic income would involve less than 25 percent of the extant population (Richards 2003a, 152–3, 2003b, 164).

Even if the nature of interactions between hunter-gatherers and Neolithic groups is still under debate, those interactions do not present a pattern of violence in the archaeological record. Recently, several research projects have focused on signs of physical conflict during the Neolithization process. Evidence of violent interactions is sparse, suggesting that violence was not a crucial part of the process. The head burials from Ofnet cave, the battle scenes in the Spanish Levantine rock art, and the Talheim communal grave remain the exceptional cases (Guiilaine and Zammit 2005, 76–122; Parker Pearson and Thorpe 2006, 67–86). In western Iberia, various analyses of Late Mesolithic and Early Neolithic human remains have not revealed signs of physical confrontation, and the injuries detected can be related to daily activities (Cunha et al. 2004; Jackes 2004; Peyroteo-Stjerna 2016, 469).

However, research in the social sciences and ethical debates on human rights have clearly demonstrated that violence against the other is not only a matter of body harm. Cultural dissolution may be perceived as real drama by its participants, who lose their modes of behaviour through an acculturation process (e.g. Levin 2001; Ojala 2009; https://www.culturalsurvival.org/about). The multiple ways in which cultural transitions can occur should be addressed when studying the onset of the Neolithic in Europe. The process had started in a hunter-gatherer territory, but over a short period of time, the temperate areas of Europe were
fully occupied by agro-pastoralist groups. How this major transition happened, not only as a global change but also by following regional trajectories, is the topic of discussion in this paper.

**The Sado Valley experience**

Southern Portugal, particularly the Tagus and Sado palaeoestuaries and the south-western coastal areas, were largely occupied by Late Mesolithic hunter-gatherers, and their study can contribute to this debate. The shell midden sites formed by these groups can be investigated to answer questions regarding the scope of the social interactions detected in the archaeological record.

How did the Late Mesolithic hunter-gatherers of the Sado Valley (Arnaud 1989; Arias et al. 2015; Arias, Diniz et al. this volume; Diniz and Arias 2012) react to the new cultural stimulus defined as the Neolithization process? This is a central question because, at least during the second half of the sixth millennium cal BC, Mesolithic hunter-gatherers and Neolithic groups coexisted in southern Portugal (Fig. 108.1). However, it should be pointed out that, like in other transitional contexts in southern Portugal, it is extremely difficult to assign cultural borders. One of the problems is the lack of common denominator to define the minimum criteria for attributing an occupation either to the Mesolithic or Neolithic. Commonly, the absolute chronology of a site, before or after c. 5500 cal BC, along with the presence of pottery, are used as the cultural criteria to define a group as Neolithic. The focus on pottery as the main criterion in this transitional moment reflects the role that this cultural element seems to have played in interactions between these groups. Within the ‘Neolithic package’, pottery was possibly the only Neolithic item that was adopted by the hunter-gatherer communities in southern Portugal (Fig. 108.2). If material culture is an active participant in moments of cultural interaction, and there is no doubt that objects were among the first items to be exchanged between different cultural groups upon contact, it is hard to imagine that only pottery was transferred to Mesolithic groups, as the archaeological record suggests. Even so, these pottery transfers, which could reflect continuous interactions between hunters-gatherers and agro-pastoralist groups, should carefully be examined because the significance of pottery among these hunter-gatherers is still under debate (e.g. Hayden 2010), and, because its presence is in fact scarce, and, in several contexts, it is

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**Fig. 108.2.** Shell midden sites in south-western Portugal, the first half of the sixth millennium cal BC (left map) and the second half of the sixth millennium cal BC (right map).
not possible to associate a few retrieved shreds to the Mesolithic occupation.

In the Sado Valley, pottery does not seem to have been a hunter-gatherer item, but rather one of agro-pastoralists. Recent studies (Diniz 2010; Diniz and Cubas 2015) suggest that pottery was used at sites after their abandonment by Mesolithic groups. Similar observations were made by previous researchers in the Sado shell midden of Poças de S. Bento (Larsson 2010) and at the Muge shell midden of Cabeço da Amoreira (Bicho et al. 2015, 637). An exception may be Cabeço das Amoreiras (Arnaud 1989), where Cordial pottery was retrieved from the basal layers of the shell midden, suggesting a possible relationship between hunter-gatherers and agro-pastoralist groups.

Looking for other key elements that can be considered milestones of this social change, such as the introduction of domesticates (animals and plants), we found conclusive data in the faunal analysis of the Sado middens: no domesticates have yet been recovered in the shell middens along the valley (Arnaud 1989; Dean 2010; Detry 2003), and only wild species from different environments were consumed. This pattern was also observed in the south-western coastal shell middens, such as Fiais (Lubell et al. 2007), which was occupied during the second half of the sixth millennium cal BC, when domesticates were already present in southern Portugal. The same pattern is indicated by a recent macro-botanical analysis. At the moment, a comprehensive programme of sediment flotation developed at Poças de S. Bento (Arias et al. 2015) has retrieved exclusively wild species (López-Dóriga et al. 2015).

From the Sado Valley perspective, hunter-gatherers do not seem to have been able to readily nor rapidly adopt novel Neolithic elements, even when these were available in southern Portugal. This situation stands in contrast to the classic three-phase model that predicts Neolithic practices to increase after the adoption of a small Neolithic input by hunter-gatherers until the development of a fully productive agro-pastoralist economy (Zvelebil 1996; Zvelebil and Lilie 2000). This may also have been the case with other southern Portuguese hunter-gatherers who do not seem to have been interested in adopting novel elements other than pottery. This cultural indifference also suggests that there were no significant environmental constraints to explain the Neolithization of hunter-gatherers in western Iberia. Had there been such constraints and a ‘food crisis’, following the Cohen’s (1977) model, why did hunter-gatherer groups not bring those new Neolithic resources to their shell middens?

Explanations of the Neolithization process as a Red Cross model, i.e., as an external solution for western Iberian hunter-gatherer endemic problems, do not fit the archaeological record. It could be argued that cultural restrictions and taboos could have limited the influx of domesticated elements into the Sado and Tagus and the large south-western coastal shell middens, as an inverted agríos/domus model (Hodder 1990) would have predicted. On the other hand, if a real nutritional problem existed, as some proxies seem to indicate at least for some areas of southern Portugal (Valente 2014), it is difficult to understand why domesticated species, animals in particular, were so obviously not accepted.

As is clear from Figure 108.2, relations between hunter-gatherers and Neolithic groups in western Iberia were not about eco-economic issues, but they developed around ‘material culture’, attending to pottery transfers as the sole element of the Neolithic package that migrated to Mesolithic environments.

The rarity of Neolithic items in the Sado shell middens suggests active forms of cultural resistance for over 500 years. The question of why these hunter-gatherers stopped resisting at a certain moment in time and why traditional Mesolithic sites were abandoned without any signs of the Neolithization by the end of the sixth/first quarter of the fifth millennium cal BC should be addressed.

For the moment, it is not clear why large shell middens were abandoned. There were no significant environmental changes that could explain this turnover in the cultural landscape. Climatic reconstructions rather point to a regional sea level transgression underway after the Mesolithic occupation of the Sado Valley (e.g. Dias et al. 2000), meaning that the estuarine environment that had been exploited for more than one millennium by hunter-gatherers remained stable.

In sum, Zvelebil’s (1996) three-phase model, built for another area in Europe where a hunter-gatherer presence was strongly documented and where cultural contacts between different lifestyles occurred, may need some adjustments to fit the archaeological record of western Iberia. If the availability phase is not well documented, the substitution and consolidation phases envisaged by the model are difficult to recognize in the archaeological record. Interestingly, from a genetic perspective, Neolithic populations in western Iberia seem to have carried local hunter-gatherer haplogroups (Fernández and Arroyo-Pardo 2014; Olalde et al. 2015). And even if the Mesolithic cultural legacy among Neolithic groups is not well defined, some cultural traits are shared by both populations, such as the presence of lithic segments and the use of microburin technique (Diniz 2007), suggesting that cultural and demic transmission occurred between these two worlds despite the apparent scarcity of archaeological evidence.

**Concluding remarks**

The Sado Valley presents a historical case of cultural resistance towards Neolithization. For the moment, only pottery and a few polished stone axes have been recorded in the Sado shell middens. However, it has clearly been demonstrated by new absolute dates on human remains


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Foraging Assemblages is the publication of the proceedings of the Ninth International Conference on the Mesolithic in Europe, held in Belgrade in September 2015. The two volumes of these proceedings gather 121 contributions on Mesolithic research in Europe, covering almost every corner of the continent. The book presents a cross-section of recent Mesolithic research, with geographic foci ranging from the Mediterranean to Scandinavia, and from Ireland to Russia and Georgia. The papers in the volumes cover diverse topics and are grouped into 11 thematic sections, each with an introduction written by prominent Mesolithic experts. The reader will learn about changes in forager lifeways and the colonization of new territories at the end of the Ice Age and the beginning of the Holocene warming; the use of diverse landscapes and resources; climatic instabilities that influenced patterns of settlement and subsistence; the organization of settlements and dwelling spaces; the formation of regional identities expressed through various aspects of material culture and technologies of artefact production, use, and discard; aspects of social relations and mobility; symbolic, ritual, and mortuary practices; diverse ways in which Mesolithic communities of Europe were transformed into or superseded by Neolithic ways of being; and how we have researched, represented, and discussed the Mesolithic.