Book Review
Buchbesprechung

Markus Wild, Coping with Risk Through Seasonal Behavioural Strategies. Technological Analysis of Selected Late Upper Palaeolithic Antler Assemblages from Northern Germany, Southern Scandinavia and the Paris Basin.
Untersuchungen und Materialien zur Steinzeit in Schleswig-Holstein und im Ostseeraum 12. Kiel: Wachholtz Verlag, 2020. Written in English, with summaries in English, German and French. A4 size, hardcover with illustration on front. 340 pages, 126 figures, 76 tables, and 43 plates. ISBN 9-783529-018633, 50,00 €.

Eleonora Gargani

Eberhard Karls Universität Tübingen
Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters
Abteilung Ältere Urgeschichte und Quartärökologie
Schloss Hohentübingen, Burgsteige 11
72070 Tübingen
eleonora.gargani@mnf.uni-tuebingen.de

The author Dr. Markus Wild presents, in a comprehensive monograph, his study on the socio-economic behavior of the hunter-gatherer human groups inhabiting northwestern Europe within the late Upper Paleolithic. More precisely, he focuses on the two major cultural entities of this period, the Hamburgian and the Final Magdalenian, by analyzing from a technological viewpoint the rich reindeer antler assemblage from northwestern Europe.

The studied material culture comes from a period spanning the Late Pleniglacial to the Early Lateglacial, approximately covering the 13th millennium BC. During this time, northwestern Europe was a place of lively cultural diversity, marked by the Final Magdalenian culture in Spain, France, England, and Poland. Also in this time period, Hamburgian hunter-gatherers characterized the flat northern lowlands in the Netherlands, northern Germany and Poland, and Denmark. Despite the accepted origin of the Hamburgian within the Magdalenian, with similarities found in their material cultures, the precise relationship of the two cultural entities is not clear. This lack of clarity has led to the formation of different hypotheses, such as one proposing the Hamburgian as a seasonal facies of the Magdalenian, or another indicating the origin of the Hamburgian as found within the Middle Magdalenian.

Wild's monograph is the outcome of his doctoral thesis defended in 2019 in the framework of a bi-national agreement between Christian-Albrechts-Universität (Kiel) and the Université Paris 1-Panthéon-Sorbonne. The volume provides new analyses and results, complementing

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previous research on technological studies and Hamburgian culture, contributing in the end to our expanding knowledge of the cultures peopling northern Europe during the Late Upper Paleolithic.

Following a preface by Sönke Hartz and Harald Lübke and a welcoming address by the "Ethnologie Préhistorique" research team, and after the author's acknowledgments, the volume is structured in ten chapters. According to Wild, the monograph follows the predominant structure for original scientific research, the IMRAD (introduction-methods-results-and-discussion). An additional chapter (Chapter Three) describes the sampling, with radiocarbon dating, the analytic method, and the results. From Chapter One to Chapter Seven, the author presents the objectives of his research, the historical and archaeological background, the material analyzed, the method, the results, and the interpretation and discussion of the outcomes. He dedicates Chapter Eight to the summarized divulgation of the research in three languages (English, German and French). Chapters Nine and Ten include the references and the appendices. The book ends with a collection of plates, a list of abbreviations, attachments for an online repository, and a bookmark.

The volume begins by introducing the reader to the topic of the research, by contextualizing the archaeological assemblage, providing information about its chronology, and establishing the research questions addressed throughout the monograph. According to the author, past human behavior is the basis of all archaeological research. Because of this, the introductive chapter provides a complete informative premise on the Hamburgian culture and people, first discovered and recognized during the 19th century. The author then stresses the importance of the excavation campaigns carried out during the 1930s, when the Hamburgian was first associated with the Final Magdalenian because of the striking resemblance of the two material cultures. After describing the works published by A. Maier (2015) and M.-J. Weber (2012) about the evaluation of the Hamburgian and its relationship with the Magdalenian, the author highlights how research has thus far produced divergent results, according to which the Hamburgian is either interpreted as a northern facies of the Magdalenian (Weber 2012) or as an entirely stand-alone cultural entity (Maier 2015). By following these studies, the author attempts to compare his results on the osseous technology to previous work and to use them as a further proxy to infer the actual relationship between the Hamburgian and Final Magdalenian. The chapter then focuses on the description of the second main objective of the research, related to the assessment of the economic behavior characterizing the Magdalenian and Hamburgian hunter-gatherers, with an insightful focus on the acquisition and processing strategies developed during the autumnal hunting of migrating reindeer.

The author subsequently presents the archaeological corpus under study and the archaeological sites where the assemblages originate. His analysis focuses on the reindeer antlers uncovered from the early Classic Hamburgian sites of Meiendorf, Stellmoor, Poggenwisch in the Ahrensburg Valley (northern Germany), and from the younger Havelte Group—a late Hamburgian phase—found at the site of Slotseng in southern Jutland (Denmark). For the sake of comparison, the research also included the study of the Final Magdalenian site of Verberie from the Paris

Basin (France). Throughout the second chapter, the author highlights the main bias between the Hamburgian (and Havelte) sites and the Magdalenian, resulting in the different composition of the assemblages. The Hamburgian sites share an organic preservation that is restricted to areas once characterized by open water bodies adjacent to habitations on mineral soil, therefore hinting at ancient waterside discard zones. The French site, on the other hand, consists of a habitation with eight occupation layers and nearby dump zones. These aspects affected the assemblages in a way that the Hamburgian and the Havelte artifacts are biased towards waste pieces from the butchering of reindeer and waste pieces from antler working activity. Conversely, the site of Verberie yields a higher number of finished objects. All in all, the sites are all located in valley bottoms or lowlands with access to nearby water bodies, and especially the Hamburgian sites are interpreted as lying close to former reindeer migration routes. Additionally, the sites show a further common aspect provided by the zooarchaeological analyses, indicating an occupation during the fall migration.

The author also addresses the role that excavation methods play in the correct recovery of archaeological finds, and how they should adapt and acknowledge the features characterizing each deposit. As an example, he underlines the importance of sieving depending on the typology of the archaeological site, and how such activity has less impact on the antler assemblage when dealing with waterside discard zones than on deposits from dry land. Furthermore, he stresses the challenges occurring when analyzing the stratigraphy of deposits from former water bodies due to the soft sediment and small sedimentation rates. The chapter ends with considerations from the author about the heterogeneity and fragmentation of the assemblages under study, strongly influenced by past research carried out up to the time when present research began. Therefore, he infers how the sites and assemblages need further evaluation, despite the fact that they all point to a comparable autumn occupation, regardless of the differences in site features, excavation methods, and condition of published analyses.

The discussion about radiocarbon dating that allowed a chronological reconstruction of the analyzed assemblages is the focus of the following chapter. After an introduction about the development and spread of new techniques that allow using smaller samples, as well as pre-treatments and pre-screening activities, the third chapter focuses on the importance of the collagen and how its preservation strongly depends on burying condition, temperature, water, Ph, and microbial and chemical activity. Although the sites under consideration have already been sampled for radiocarbon dating, the author stresses the importance of re-dating on new samples, since only a little from the older dating is unambiguous. For this reason, the author develops a protocol with pre-screening to estimate collagen. The site of Meiendorf and the uppermost layers of Verberie are selected for re-dating in order to obtain information on the possible contemporaneity of the Classic Hamburgian and the Magdalenian from the Paris Basin. After selecting artifacts whose micro-sample presents the most promising estimations for collagen content and quality, the author subsequently pre-cleans and dates the sample, adapting the protocols developed by Bruhn et al. (2001) and Longin (1971). The further modelling of results using Bayesian statistics suggests the occupation of Meiendorf during the beginning of the GI-1e, whereas the

site of Poggenwisch seems to have been inhabited during the second half of GI-1e, while Verberie contains occupations dated at the end of GS-2a, therefore preceding the Classic Hamburgian of the Ahrensburg Valley.

Perhaps representing the core of his research, Markus Wild exhaustively describes the method of his research in the fourth chapter, addressing the challenges faced when analyzing antler artifacts and the manufacturing stigmata. The chapter opens with a clear overview of the features characterizing antlers, and especially how to distinguish reindeer antler from other species by considering several criteria, from macroscopic to microscopic (micro-CT scan) observation. The author then introduces the importance of evaluating the degree of preservation of artifacts, and the ability to differentiate taphonomic and anthropogenic modifications. He highlights how blind tests (Domínguez-Rodrigo et al. 2017) revealed the subjectivity of observations and the lack of a scientific objective method due to the equifinality between anthropogenic and taphonomic marks. Nevertheless, the author also uses the chapter to stress the importance of precise descriptions of natural and anthropogenic stigmata, as well as the potential of experimental work. The chapter then focuses on the description of the four major taphonomic issues detected during the analysis whose features might lead to misinterpretations in favor of anthropogenic modification. The central part of the chapter is dedicated to the description of tools used in reconstructing schemes of operation. By following a hierarchical ordering, the author starts with the description of single manufacturing traces, moving through the delineation of primary and secondary stigmata that allow researchers to reconstruct techniques, procedures, and methods. He also highlights how the hierarchical ordering allows researchers to attribute artifacts into technological classes that belong to different steps of operational schemes and that underwent a different degree of manufacturing modification. The chapter also focuses on quantitative analysis and measurements that the author developed parallel to the qualitative description of the assemblages. The final part of the methods chapter includes the visualization of the preservation of antler fragments, the primary stigmata, and the key to colors and technical symbols. The author encourages the use of such symbols and visualization, since "[…] these represents another form of lingua franca for people working with this material and method," helping in the process of a more unified investigation protocol.

The volume then focuses on the results of the technological analysis. The fifth chapter illustrates the distribution of the assemblage among the sites under study, with the highest number of specimens belonging to the site of Meiendorf, followed by Stellmoor, Poggenwisch, Slotseng, and lastly Verberie. All the antler pieces included in the research come from reindeer, and the author further distinguishes the assemblages depending on the presence of anthropogenic modification or its absence. Slightly less than half of the artifacts are unmodified antler fragments (45.47%), of which almost half consist of unmodified raw material blocks. During the analysis, Markus Wild further subdivided the antler with modification into matrices, raw material blocks, and blanks. The assemblages also include an intermediate product (roughout), a few finished objects, and undetermined fragments with modifications. The analysis on this rich corpus allowed the author to infer two main procedures for extracting blanks: the groove and splinter

procedure and the transversal segmentation procedure. The author points out how the two procedures work independently on the assemblage, but he also records many cases when the transversal segmentation procedure is applied to produce secondary raw material blocks that were further processed through the splinter and groove procedure. In addition to the sites already mentioned in the second chapter, the author includes stray finds from the site of Køge Bugt (Denmark), analyzing two modified antlers that present no contextual information, as they come from a sandy and peaty environment in the open sea.

Before the final discussion, the author uses the sixth chapter to interpret the techniques, procedures, and methods he inferred through the identification of manufacturing stigmata and the technological classes. He acknowledges the challenges when dealing with the reconstruction of the operational schemes, as not all the modified pieces were diagnostic or relatable to the identified operational schemes. Although extensively discussed in the last chapter, the author already hints at a possible explanation, namely that the role of these ambiguous modified pieces seems the tangible outcome of a learning process, implemented by people who reproduced techniques and gestures seen elsewhere. However, the chapter mainly focuses on the accurate description of the two main basic procedures of blank production, namely the groove and splinter and the transversal segmentation. The author further highlights the presence of three variants for the first procedure, where the first finds application on primary raw material blocks between the bez tine and the palmation. The remaining two variants include a former preparation of a secondary raw material block by segmentation procedure, which leads to the detachment of the brow and bez tines, as well as the palmation, in the second variant. The third variant sees a detachment of the beam above the bez tine and below the palmation by bilaterally-worked predetermined breaking points. The chapter also provides insightful information about the manufacturing processes involved in the shaping of the blank to turn it into a finished tool, which mainly happens by scraping and/or grinding the surface of the blank.

Finally, Markus Wild organically concludes his research by providing the reader with insightful discussion. The author organizes the seventh and last chapter into six sections, dealing with the tools used in antler working, the technical know-how and the economic and social implications. The last two sections focus on the discussion, where the author eventually attempts a reconstruction of the possible hunting and reindeer processing strategies to infer how hunter-gatherers during the late Upper Paleolithic coped with the arrival of winter through fall reindeer hunting.

Despite the equifinality given by tools with similar working ends, the author could correctly identify most of the worked lithic tools involved in antler working thanks to the comparison of archaeological marks with those found in his self-made reference collection as well as with those used by other scholars (Averbouh 2000; Malgarini 2014). The discussion then highlights how both cultural entities made comparable choices in terms of raw material selection and management for different tool classes. Nevertheless, of all the variants observed in the Hamburgian sites, only the third variant is represented in the site of Verberie, although the other variants were also well known during the Magdalenian. The results in hand as well as the comparison

between the finished objects, however, do not explicitly support a clear connectedness of the Hamburgian and Final Magdalenian, except for the presence of double-bevelled and barbed points from Hamburgian Meiendorf that recall a Final Magdalenian tradition. The author advances the hypothesis of the Hamburgian as a facies of the Final Magdalenian, and he tries to explain it through multiple factors, such as the movement of reindeer into northern refugia, or an expansion of the Magdalenian culture, the Hamburgian being a melding of eastern and western Magdalenian traditions met in the lowlands of northern Germany and southern Scandinavia. The value of the chapter, and the entire book, lies in the ability of the author to infer not only techno-typological information of operational schemes but also to obtain spatio-temporal information. The combination of the three variants of the operational schemes, as well as their distribution at the different sites under study, allowed Markus Wild to identify how hunter-gatherers produced a continuous reduction of antler in size and weight during its transport from one campsite to another. For this procedure, the author coined a new term, namely, the lightening of the load. A further value of the work lies in the final consideration of social implications for the understanding of human behavioral strategies in autumn. Given the quality of the modifications, the author considers the many smaller antlers with grooves but no final extraction of blanks as a work of learners. By addressing the concept of LOPI (Learning by Observing and Pitching: Rogoff 2014), Markus Wild approaches the topic with a holistic view of learning in non-industrial societies by perceiving depth in the human and social behavior of prehistoric hunter-gatherers. Altogether, the results allow the author to infer how the different sites under study are part of the same seasonal behavioral strategy in autumn and early winter. By following the lightening of the load concept, the author hypothesizes a first big episode of hunting, where a large number of antlers were accumulated. This episode is then followed by the splitting of the group with hunters moving to different strategic sites. Here, multiple episodes of reindeer hunting take place, associated with the processing of the animal and logistic reduction of antler to improve transport. In this way, the most important antler parts, as well as the richest meat parts, were carried from one site to another until the hunters returned to the starting site with additional provisions for an advancing winter. Once the group had gathered, they left for their winter camp, ready to cope with the colder season. According to the author, the postulated strategy reduces the risk of starvation and a higher chance of success in hunting activity.

The success of the present research lies in the possibility of it shedding light on the complex anticipatory strategies of Hamburgian hunter-gatherers, integrating it into the existing research by yielding a deep and lively reconstruction of human behavior during the late Upper Paleolithic.

The volume ends with 48 pages including the appendices and plates. It is a doctoral dissertation, and as such the topics covered by the author require an academic knowledge of the archaeology. Despite this and the presence of technical terminology in the text, the structural flow and the linguistic style make the reading engaging and accessible for a curious, yet thoughtful, audience. The book is a source of insightful and valuable information, in its writing and illustrations, mirroring the care and lucidity adopted during the analysis and research. The author's

idea of sharing an online repository and the elaboration of key symbols and colors is of additional value that expresses the importance of developing a common method of investigation when dealing with osseous tool technology. Additionally, the 43 final plates as well as every figure in the volume are presented in high quality. On a more critical note, one might have expected the volume to have a wider section dedicated to the development of the experimental reference collection. Altogether, the monograph will undoubtedly play a relevant role in archaeological research of the future and in understanding human behavior during the Hamburgian, particularly when dealing with consistent contexts yielding worked reindeer antler during the late Upper Paleolithic.

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