

Book reviews - Buchbesprechungen

The Ebbsfleet Elephant – Excavations at Southfleet Road, Swanscombe in advance of High speed 1, 2003-04.

Francis Wenban-Smith (ed.), Oxford Archaeology Monograph vol. 20, 2013, 595 Seiten, Hardback, 25,00 £;
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Reviewed von

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Unter der großen Zahl wissenschaftlicher Veröffentlichungen zur Urgeschichte der letzten Jahre gab es nur wenige Arbeiten, die Rezensenten so begeistert haben und man kann den Autoren zu ihrer spannenden Publikation zu „The Ebbsfleet Elephant“ nur gratulieren. Die Monographie ist der sechste und letzte Band einer Reihe, die über Ausgrabungsergebnisse im Tal von Ebbsfleet (GB) bei Bahnbauarbeiten berichten. Im Mittelpunkt der Veröffentlichung steht eine archäologische Fundschicht aus der Hoxnian Warmzeit mit Resten des ausgestorbenen eurasischen Waldbzw. Altelefanten *Palaeoloxodon antiquus*. Knochen dieses Tieres wurden im Zusammenhang mit Feuersteinwerkzeugen gefunden, welche vor Ort hergestellt wurden und wahrscheinlich beim Schlachten des Elefanten Verwendung fanden.

Die Monographie besteht aus 562 Seiten und behandelt in 22 Kapiteln alle Aspekte und Fragestellungen einer moderngegrabenen, altsteinzeitlichen Fundstelle. Detaillierte Studien zur Stratigraphie, Sedimentologie, Paläonthologie, Paläobotanik, Archäozoologie und Archäologie werden in einem gut verständlichen Englisch präsentiert. Am Beginn des Buches steht eine kurze einseitige Zusammenfassung auf Englisch, Deutsch und Französisch. Nach einem Einführungskapitel wird im Kapitel „Background“ ein guter Überblick über das Alt- und Mittelpleistozän mit den klimatischen Schwankungen und chronologische Einteilungen gegeben. Nach der ersten Hälfte dieses Kapitels, das sich wie eine interessante Einstiegsvorlesung zur Altsteinzeit Großbritanniens liest, wird man in die Geologie der Landschaft um die Fundstelle eingeführt. Auch das dritte Kapitel, wo es um das eher trockene Thema Grabungsmethoden und Fundanalyse geht, versteht es der Autor mit seinem Stil den Leser leicht verständlich zu informieren. Bei der Auswertung altsteinzeitlicher Fundstellen ist in den letzten Jahren die Frage der Fundplatzgenese

berechtigterweise verstärkt in den Blickpunkt der Forschung gerückt. Dabei müssen u.a. Sedimentbewegungen, die Sedimentabfolgen der einzelnen Schichten und deren Milieucharakter bis zur Mikroebene mit der Einbettungsgeschichte einzelner Funde diskutiert werden. Mit Hilfe regelmäßig angelegter Längs- und Querprofile gelingt es den Autoren, die Fundschichtbildung überzeugend darzulegen; der Text ist hier mitunter etwas „detailverliebt“, aber die wesentliche Ergebnisse zur Taphonomie werden abschließend zusammengefasst. Die naturräumliche Gegebenheit der zentralen Fundstelle des Altelefanten lässt sich als Marschlandschaft mit kleinen Seen und Zuflüssen mit langsamer Fließgeschwindigkeit rekonstruieren, die dem paläolithischen Menschen vielfältige Ressourcen bot. Von besonderem Interesse sind wiederkehrende Hinweise auf Feuer wie gebrannte Mineralien, verzierter Lehm und Holzkohlefritter im Sediment. Feuerstellen oder Konzentrationen von Brandspuren konnten jedoch nicht belegt werden. Somit bleibt auch an dieser mittelpleistozänen Fundstelle die Frage, ob es sich um natürliche Feuer oder artifizielle Feuerverwendung handelte, offen.

Nach einem kurzen Kapitel über die Lithologie stehen in den folgenden drei Kapiteln die Paläontologie und Archäozoologie inklusiver einer detaillierten Beschreibung des Elefanten im Vordergrund. Neben dem Elefantenfund werden hier auch die stratigraphisch gesicherten Nachweise von Kleinf fauna wie Vögeln, Amphibien, Reptilien, Fischen und Kleinsäugetern behandelt. Insgesamt wurden über 18000 Funde aus 46 Taxa nachgewiesen, die neben Aussagen zu Umwelt und Klima auch der besseren stratigraphischen Einbindung der Fundschicht dienen. Hinweise auf menschliche Aktivitäten beschränken sich weitestgehend auf den Altelefanten, so dass die übrigen Großsäugerreste auf natürlich verstorbene Tiere am Rand der ehemaligen Wasserläufe zurückgehen dürften. In diesen Kapiteln erfolgen auch aufschlussreiche Vergleiche mit anderen Fundstellen wie Swanscombe oder Clacton.

Dem Fund des Altelefanten ist noch einmal ein eigenes Kapitel gewidmet, in dem Taxonomie, Alters- und Geschlechtsbestimmung sowie Taphonomie detailliert beschrieben werden. Ostracoden- und Pollenanalysen bestätigen den interglazialen Charakter der Fundstelle. Insbesondere die Pollen aus der Schicht des Altelefanten weisen allerdings auch auf offene Landschaftsanteile in einer eher bewaldeten Umwelt hin.

Für alt- und mittelpleistozäne Fundstellen ist eine möglichst genaue zeitliche Ansprache von großer

Bedeutung. Im vorliegenden Fall wurden Aminosäureracemisierung an Mollusken und OSL-Datierungen an den Sedimenten vorgenommen. Auf dieser Grundlage wird eine Datierung in OIS 11 vorgeschlagen. Dies ist insofern bemerkenswert, als die OSL-Daten recht weit streuen. Hier drängt sich erneut die Frage der Gleichzeitigkeit des Hoxnian und des Holstein, welches nach aktueller Diskussion ins OIS 9 datiert, auf.

Die Steinartefakte werden in den Kapiteln 19 bis 21 getrennt nach ihren stratigraphischen Einheiten vorgestellt. Wie für das späte Mittelpleistozän in Europa verschiedentlich nachgewiesen, handelt es sich hierbei um relativ kleine Fundensembles, die im Falle der Phase 6, der Elefantenfundsicht, ein wahrscheinliches In-situ-Schlachtereignis an einem See darstellt. Mit insgesamt 2238 Artefaktfunden lieferte diese Fundsicht auch das umfangreichste Inventar, wobei 81 Stücke im direkten Zusammenhang mit den Elefantenknochen zusammen gefunden wurden. Hier wird auch die Bearbeitungstechnik näher erläutert, da bei mittelpleistozänen Inventaren der Artefaktcharakter, insbesondere bei clactoiden Inventaren, nicht immer eindeutig ist. Beispielhaft ist hierfür die Verwendung von Frostscherben bzw. frostüberprägten Feuersteinen als Werkzeuge zu nennen; ein Viertel der Artefakte scheint in diese unklare Kategorie zu fallen. Gleichzeitig belegen aber Zusammensetzungen einer kompletten Knolle aus mindestens 23 Abschlagen eindeutige Artefaktproduktion mit hartem Schlag. Wie für solche Schlachtplätze typisch, reichten einfache Abschlagen zum Zerlegen des Elefanten und eine Überarbeitung der Grundformen war nicht erforderlich. Hinweise auf Faustkeile oder andere bifaziale Geräte fehlen im Inventar.

Nachweise eines Acheuléen mit Faustkeilen treten erst in der späteren Phase 8 auf: In einer die Grabungsfläche überdeckenden Kiesschicht wurde ein Inventar mit 30 fein gearbeiteten Faustkeilen gefunden. Nach ersten Einschätzungen datiert Phase 8 in das späte OIS 11. Diese außergewöhnliche Abfolge von einer Abschlagindustrie hin zu einem bifaziellen Inventar wird von den Autoren in einem abschließenden Kapitel diskutiert. Hier hätte sich Rezensent eine ausführlichere Diskussion u.a. zu den Tätigkeitsschwerpunkten oder den (unterschiedlichen) Trägern der Industrie gewünscht. Im Appendix (10 Abschnitte) sind noch eine komplette Probenliste und kurze Berichte zu naturwissenschaftlichen Untersuchungen untergeordneter Bedeutung enthalten.

Insgesamt ist der Fundplatz ein exzellentes Beispiel für den möglichen Erkenntnisgewinn groß angelegter, gut geplanter Grabungen im Zusammenhang mit Infrastrukturvorhaben. Der außergewöhnlichen Fundplatz und die vorgelegte Monographie haben Referenzcharakter für die weitere Forschung zum Mittelpleistozän in Europa. Der Schwerpunkt liegt auf der umfassenden Präsentation der Grabungsergebnisse, aber die Diskussion wird immer wieder kontextualisiert. Dass dabei ein britischer Blickpunkt

eingenommen wird und nur vereinzelt kontinental-europäische Fundstellen einbezogen werden, muss nicht überraschen. Angesichts der Problematik der zeitlichen Korrelation von Hoxnian und Holstein (OIS 11 vs. 9) überrascht dies den Leser nicht. Der hohen Qualität des Inhaltes wird diese Publikation auch optisch gerecht. Das Buch ist reich bebildert und zeichnet sich durch klare Übersichtspläne, Profilzeichnungen und Tabellen aus, was das Verständnis erleichtert. „The Ebbsfleet elephant“ ist ein umfassendes Werk, das Rezensenten in jeder Hinsicht überzeugt hat. Dank einer klaren Sprache und der anschaulichen Darstellung ist dieser Band auch für den interessierten Laien geeignet und so sollte diese Publikation in keiner Bibliothek zum Paläolithikum fehlen.

Le Paradoxe Acheuléen

Elisa Nicoud, Documents préhistoriques 32. Bibliothèque des écoles françaises d'Athènes et de Rome, fascicule trois cent cinquante-sixième, 2013, 309 Seiten, 132 Abbildungen, 45,00 € ISBN 978 2 7355 0803 7

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Gabriel de Mortillet hat im Stil seiner Zeit das Acheuléen durch den Faustkeil und das Moustérien durch Abschlagwerkzeuge definiert. Elisa Nicoud versucht nun, dem Acheuléen aus heutiger Sicht einen Sinn zu geben.

Der *Biface*, oder, wie die Autorin bevorzugt, *la pièce bifaciale*, kommt schon in Olduvai vor und lebt bis zu den Halbfabrikaten neolithischer Beile, ganz abgesehen von den zahlreichen völkerkundlichen Beispielen. Es ist also ganz unwahrscheinlich, daß es zwischen diesen Formen einen Zusammenhang gibt. Man könnte es mit der Sticheltechnik vergleichen, die zur Herstellung von Lamellen, zur Anlage eines Stiels oder als Werkzeug mit stabiler Schneide diente und zu verschiedensten Zeiten im Alt-, Mittel- und Jungpaläolithikum auftritt. Doch G. de Mortillet hat nicht die Sticheltechnik, sondern den eindrucksvolleren Faustkeil als Leitform des Acheuléen erklärt...

Die Autorin stellt die *pièces bifaciales* aus Feuerstein aus Nordfrankreich und Südengland in den Mittelpunkt ihrer Arbeit. Dabei sind die *pièces bifaciales* überregional meist aus Quarzit und nicht aus dem spröden, bei der Arbeit leicht splitterndem Feuerstein. Für die Cleaver gilt dies fast ausschließlich; ein Cleaver aus Feuerstein wirkt irgendwie eigenartig und konnte kaum zur Arbeit verwendet werden.

In Mitteleuropa soll es nach E. Nicoud kein Acheuléen, d.h. keine *pièces bifaciales* geben. Obwohl

bereits Hugo Obermaier meinte, östlich des Rheins gäbe es keine Faustkeile, spricht E. Nicoud dauernd von einer *Movius Line*, von der ich bisher im Unterschied zu der ebenfalls nicht zutreffenden *Movius Line* im Fernen Osten kaum etwas gehört habe. Wenn man an die vielen Faustkeile von der Reutersruh und von Lenderscheid in Nordhessen denkt, kann man eigentlich nur folgern, daß die Autorin sich nicht auskennt. Dies gilt möglicherweise auch für die Bearbeitungstechnik der *pièces bifaciales*. Kein Wort über den entscheidenden Unterschied zwischen alternierender und gleichgerichteter Kantenbearbeitung der beidflächig retuschierten Formen, die zu zick-zackförmigen Kanten bzw. zu geraden Messerschneiden führten.

Während das Moustérien de tradition acheuléenne auch behandelt wird, obwohl es weder zeitlich noch geographisch geschweige denn kulturell mit dem Acheuléen zu tun hat, ist von den Keilmessergruppen Mitteleuropas überhaupt nicht die Rede. Selbst die Gleichsetzung *pièces bifaciales* = Acheuléen stimmt nicht, wie die nur einflächig bearbeiteten Faustkeile des 400 000 Jahre alten Waldelefantenplatzes Kärlich-Seeufer zeigen. Unklar bleibt, warum die für dieses Thema wichtigen Funde von Tautavel und Terra Amata nur kurz erwähnt und nicht analysiert werden.

So fragt man sich, warum dieses Buch geschrieben wurde. Vielleicht ein Mißverständnis, denn das Acheuléen im Sinne von Gabriel de Mortillet spielt in unseren Arbeiten heute kaum eine Rolle. Andere Fragestellungen zur Lebensweise der Menschen oder zur Chronologie sind weit wichtiger.

Bleibt zu hoffen, daß niemand auf die Idee kommt, nun auch das Moustérien im Sinne Mortillet's zu hinterfragen und Le Paradoxe Moustérien zu schreiben. Das würde ich dann sicher nicht lesen. Das dicke Buch ist nicht einfach zu lesen. Ich empfehle daher, den Aufsatz von Elisa Nicoud *What Does the Acheulean Consist of? The Example of Western Europe (MIS 16-9)* in den Mitteilungen der Gesellschaft für Urgeschichte 22, 2013, 41-60, mit den gleichen Informationen.

Functional Variability in the Late Upper Palaeolithic of North-Western Europe. A Traceological Approach.

Katsuhiko Sano, *Universitätsforschungen zur prähistorischen Archäologie* Vol. 219, Verlag Rudolf Habelt GMBH, Bonn, 2012, 243 pages, Softcover, 67.00 €;

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This is an impressive compendium of work culminating in an assessment of the functional role of three Magdalenian sites (Eyserheide, Bois Laiterie Cave, and Gönnersdorf) located in Belgium and Germany. This is a PhD dissertation as made explicit in the first line of the Introduction. As a result, it comes with all the strengths and weaknesses of a dissertation presented as an academic monograph. Following the brief introduction is, thankfully short, the obligatory history of traceology. The author prefers this term because he uses both high magnification (microwear analysis) and low magnification (use-wear analysis) for interpreting his archaeological assemblages. Microwear analysis tends to emphasize surface wear features, the incorrectly referred to "polishes" as well as striations and pitting, while use-wear analysis tends to target features of the fracture scarring assumed to have been caused by use. Today, magnifications differ little in the two techniques with microwear analysis often operating about 200-250x magnification and use-wear analysis operating up to about 120x magnification. Personally, I don't know any traceologist, whether they call themselves a use-wear analyst or a microwear analyst who doesn't use all wear traces visible to them.

The problem with a dissertation presented as a monograph is that it is usually dominated by much background and experimental work to demonstrate the abilities of the author rather than focussing on the study and interpretation of the archaeological assemblages. This dissertation does not disappoint. Half of the dissertation is given over to background, issues in traceology, and an extensive experimental regime. Don't get me wrong, the experimental section is exquisitely presented and contains some of the best photomicrographs of wear that I have ever seen. "Experimentation" deserves some explanation. These are not true experimental studies, where all but the experimental variable are controlled; like most archaeological "experiments" these are best referred to as replicative studies where the archaeologist "uses" a tool in a way as it may have been used in the past and then examines the resulting wear. As in most such studies, the author provides general descriptions of wear produced by working different kinds of material, but there is little attempt to present the variability within one category or the overlap that may exist across different uses. Within the experimental section are experiments where the author sawed very hard materials (bone and ivory in particular, but also antler and hardwoods). Sawing works if one is trying just to notch an item, but a flake cannot cut deeply. The reason is as simple as it is logical. A saw succeeds in cutting hard material because the teeth angle outward from the blade, thus the cut is wider than the saw blade. The cross-section of the lateral edge of a flake (blade) is triangular. Once it starts to penetrate the object the lateral edges rub against the sides of the cut and make further penetration very difficult. The edge can only cut if the tool can push the sides of the

cut outward, thus the more resistant is the material to flexing the more difficult it is to cut. The extensive wear presented in the photomicrographs is likely the result of the sides of the edge rubbing against the sides of the cut and not wear on the cutting edge itself. The burin solves this problem by ensuring that the cut or groove is wider than the penetrating portion of the tool.

The author also makes the same fallacy that so many others have made. Projectile points may show wear traces that indicate impact against an object. It is a major logical step to infer that a tool with impact damage is the result of a tool used as a projectile point for hunting. For example, wedges also show impact damage. While I am not suggesting that a tool that conforms morphologically to an arrow or spear head and has impact damage should be interpreted as a wedge, I do suggest that the inference on how the impact damage was produced must be supported by other evidence.

The monograph provides the reader with about 80 pages describing the wear and its interpretation at the three sites at the heart of this study. Confronted with poor preservation at one of the sites (Bois Laiterie Cave), the author creatively uses both low and high magnification approaches at all sites so that comparisons can be made. Of course, if there is poor preservation of surface wear features, should one still assume that the fracture damage is unaffected at the site?

The author provides a comparative assessment and his conclusions of the three sites in four pages. Given that this is what archaeologists really want to know, have we been cheated or misled into thinking that we would know much more about the functional variability in the Late Upper Palaeolithic rather than be given such a detailed presentation of the author's ability to do traceology? A monograph should be more than a published dissertation. The author should think carefully of his audience and ensure that contents are appropriately presented to ensure confidence in the method, but also that there is adequate interpretation of the archaeology.

This is an extremely high quality production of a dissertation. The layout, the paper, and the printing indicate the quality of the production—only the card cover somewhat undersells the contents of the volume. I was most impressed with the photomicrographs, although a lack of a scale within the figure may leave readers wondering if the publisher avoided resizing figures making the caption scales useless. I was particularly frustrated by the lack of an index, and for that matter, lack of a glossary. The author uses a few terms in ways that are not consistent with other researchers. Of note is "edge angle", which the author is probably referring to "edge spine angle", but this can only be confirmed with a definition. There are a few minor spelling errors, but these do not detract from the overall quality of the writing.

Lateglacial and Postglacial Pioneers in Northern Europe

Felix Riede and Miikka Tallaavaara (eds.), BAR S2599, Oxford, Archaeopress, 2014, 206 pages, paperback, £ 35.00, ISBN 978 1 4073 1231 6

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Exploration of unknown areas and an attempt to settle these hardly known patches, i.e. pioneering, is a driving force in the expansion of modern humans. Besides our own planet, this pioneer spirit brought humans to the moon and already motivated thousands to apply for a mission to colonise our neighbouring planet, Mars. Thus, this driver is a fascinating and still important subject to study. Many questions are related to this research such as: How did this driving force develop? What created this pioneer spirit initially? Who is a pioneer? What characteristics are necessary in order to be a pioneer? What triggers pioneering movements? How do these movements develop? What stops pioneers? In particular, this latter question can be studied by past human attempts to colonise inhospitable environments. As in Sergio Leone's 1968 classic western film (Once upon a time in the west), various obstinate human characters were presumably required for the settlement of desolate landscapes such as those present in Northern Europe after the retreat of the massive Weichselian ice sheets. In fact, an analysis concerning the human expansion into post-glacier environments in Northern Europe appears as a perfect archaeological case study to gain insights in this possibly adventure-seeking part of human nature that drives our species to repeatedly enter into the great unknown.

In a recently published B.A.R. volume, 14 contributions about these *Lateglacial and Postglacial Pioneers in Northern Europe* try to shed light on these characters, their origins, their motivations, and their tracks to the far north of Europe. 13 of these papers were originally presented in a session devoted to the same topic held at the EAA meeting 2011 in Oslo (Norway). They are supplemented by an introductory chapter written by the session organisers.

As with most proceedings, these contributions can usually represent only a foretaste of more in-depth research publications due to the limited space. However, the various authors made a good job presenting single stories of pioneers or more often early settlers who arranged themselves within their social and natural environments. The focus on Northern Europe has a slight imbalance towards eastern Fennoscandia but articles about western,

northern, and southern parts of this region as well as a few contributions from areas south of Fennoscandia make this volume a good overview of the human expansion into this north-eastern part of Europe. Unfortunately, there are no contributions from the Baltic States and northern Germany to complete the geographic extension around the modern Baltic Sea and to connect different tracks and possible origins of the various northward movements. Moreover, DNA analyses which have delivered interesting results about population histories in the last years (cf. Der Sarkissian et al. 2013; Skoglund et al. 2014) were also not acquired. Despite the scarce human record from Fennoscandia, DNA studies certainly would have formed an interesting supplement to a debate about the early human colonisation of this region.

Focused on the (archaeologically visible) pioneer settlement of Northern Europe, all articles considered chronological aspects more or less prominently. The chronological considerations were mainly based on calibrated radiocarbon dates. In three cases, these radiometric results formed a fundamental basis of the analysis (Mortensen et al., Riede, Tallavaara et al.), although another contribution (Pedersen) rightfully advised a more critical use of radiometric results as sole instrument of following the expansion process. Nevertheless, in this volume, the radiometric measurements were regularly contextualised in local environmental developments such as vegetation and sea level changes making evaluations of their reliability in general plausible. Another point in Pedersen's article is the differing results of calibration curves. In this regard, a positive observation reading these proceedings is that most contributors reported, besides the laboratory and calibrated dates, also the calibration program, the calibration curve, and the precision with which their calibrated dates are given. This information enables the readers to evaluate the argumentation and replicate the results. However, a typical problem in this context reveals a lack of previous agreement of the contributors on how the calibrated dates should be reported. Although the laboratory dates were usually given in ^{14}C -BP, the calibrated ages varied between cal. BP, cal. BC, b2k, and forgotten precisions making a quick comparison difficult (in addition to the use of different calibration curves and programmes, of course). Occasionally, the comparison becomes even more confusing when the same dates for the same sites were mentioned in different articles and in different calibrated forms. In this respect, a stricter guideline of reporting calibrated results within the entire volume would have been desirable for the readers. Formal weaknesses in proof-reading and editing are unfortunately numerous in this volume. Usually, misspelled words, mistaken translations of non-native speakers, divergent nominations, forgotten or additional spaces, and forgotten citations should be eliminated by a last revision performed by editors and / or publishers who should also ensure a

uniform quality of illustrations and photos. An obvious proof that this revision failed for the present volume is the misspelled name of one of the editors on the front cover; a fact that certainly is not only annoying for the attentive reader.

Nonetheless, the content of this volume delivers a wide collection of archaeological analyses which due to preservation conditions were mainly based on lithic remains. These lithic studies already display a range of approaches from experimental flintknapping and micro-wear analysis (Pyzewicz et al.) over typotechnological traditions (Kleppe, Kankaanpää & Rankama) to raw material procurement and mobility strategies (Gustafsson) giving diverse insights in human colonisation processes.

In addition, these archaeological traditions found across Northern Europe indicate transmission chains and suggest movements of different human groups into this area. In particular, western and eastern routes can be distinguished. A map in one of the last contributions (Pesonen et al.) which locates some of the frequently used cultural terms at least geographically in Northern Europe is very helpful for those readers who are not yet familiar with this region and / or this time period, but clearly this type of map would have been even more appreciable at an earlier place in the volume.

The general incompleteness of the archaeological record in Northern Europe due to the lack of organic preservation is contrasted by the exceptional preservation at the early settlement site at Motala in Sweden (Molin et al.). The large variety, in particular of organic materials, gives an impression of information that was lost at and around most sites. However, Sobkowiak-Tabaka shows how large-scale investigations can fill blank spots and can also contribute to a more complete picture of past landscape use with almost exclusive lithic preservation. That these large projects are only possible within well-financed (road construction) projects is an often lamented fact but the contribution of Takala shows that systematic surveys even with less financial means are a productive and important enterprise.

Despite the general scarcity of organic preservation in Northern Europe, the exceptions are regularly used in these proceedings to contextualise the pioneer movements and early settlements with their environment. For example, when the search for organic material led to the identification of blubber concrete which develops from firing animal blubber oil and that was probably used as a substitute for wood (Pettersson & Wikell), this results delivers in a bare archipelago context much more information than a simple radiometric measurement. This purpose to localise past hunter-gatherers in their environment explains the array of scientific analyses used not only in these proceedings, but more generally in archaeology. By these scientific efforts, the different routes into northern Fennoscandia were shown to be

generally related to different environments (marine in the west and terrestrial in the east). These relations were probably based on the previous adaptations of the subsistence economies and, consequently, the northward moving was mainly along landscapes which seemed familiar to the hunter-gatherers. Nevertheless, "While the logic of the landscapes, and resources encountered seemed familiar, their topology and exact nature had to be discovered or rediscovered." (Kleppe, p. 122). Several contributions display how the latter remained a continuous effort in some parts of the studied region during the Lateglacial and early Postglacial because of the on-going retreat of the large inland ice-sheet causing glacial meltwaters and land uplift which also resulted in changes of the extent, sea-levels, and salinity of the Baltic Sea and its predecessors. A specific problem of pioneers and early settlers in this continuous landscape learning process is the lack of additional social information (see Rockman in Rockman & Steele 2003). Thus, the gathering of information and the risk of this gathering remained with the pioneer group. Consequently, the pioneers had to make a decision as to which degree of detail in the knowledge of the landscape was necessary for their survival. Kankaanpää and Rankama show impressively how this decision in combination with patchy distributions of resources can lead to fast and slow colonisation processes depending on the degree of adaptation to the local resources. Consequently, fast processes introduced behavioural standards developed elsewhere with only minor alterations into previously uninhabited areas with similar economic conditions as the areas of origin. In contrast, profound changes in economical behaviour appeared as a necessary adaptation to important resources during slow colonisation processes.

If this model is used on the example from the article of Mortensen et al. in which the authors nicely show that the organic material resulted from a very brief period of human presence, an episode in a fast colonisation process can be suggested. Since important economic resources (reindeer and flint) seemed present at this site, established behavioural standards were maintained. However, according to this model, the triggers leading to the appearance of these behavioural standards must in this case be sought elsewhere.

Thus, a lot can be learned about pioneer movements into inhospitable landscapes by a synopsis of this volume. Although the editors (Riede & Tallavaara) hope to succeed in the emergence of new data and flourishing of a new debate about colonisation issues, they do not make a good start for the latter by neglecting to supplement a concluding chapter. The regular contributions presented new data but, with very few exceptions, discussions of colonisation issues remain on the level of well-trodden local to regional concepts. Also the concept-based article of one of the editors (Riede) cannot revise this

impression because the presented theoretical concepts were only insufficiently tested against the mentioned archaeology. In contrast, Gustafsson demonstrates how an evaluation of our concepts could be made on a small scale. Furthermore, the editors' outline of a general geographical (and temporal) order in the volume does not counteract the occasional impression that the contributions appear unconnected and, therefore, seem like a conglomerate which could have needed more than the introduced umbrella of early human settlements to connect them. Perhaps, Kleppe's contribution about the Finnmark where the two main routes into northern Europe met comes closest to a connection of the various lines of evidence. Hence, a concluding chapter synthesising or at least summarising the various answers given to the initially introduced questions of the session and the adjustments that have to be made to the possible colonisation scenarios formulated in the introduction would have made this volume the anticipated flourishing of a new debate about colonisation processes and the study of pioneer movements. Without this conclusion, the focus remains on the archaeological case studies rather than on the major subject of the pioneering spirit. The essence of this drive gets lost in the very different reasons, processes, and occasional failures during the northward expansion presented in this volume. Perhaps, this impression of an rather loosely connected conglomerate of research very appropriately reflects the diversity of pioneer and early settler dynamics during the Lateglacial and early Postglacial in Northern Europe.

In summary, only a few papers in this volume are recommendable (e.g. Gustafsson, Kankaanpää & Rankama) for anyone interested in good, archaeological examples of human pioneering and a debate about colonisation processes. In general, other books could be of much greater interest for those readers (e.g. Rockman and Steele 2003). Nevertheless, the editors' belief that this volume is useful can be agreed upon by all those who want to be introduced to the earliest human settlement of Fennoscandia. In other words, who wants to know how Europe's far north was won should certainly begin with reading this volume that offers a geographically wide-ranged potpourri of views on this topic.

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Tybrind Vig. Submerged Mesolithic settlements in Denmark.

Søren H. Andersen with contributions by Bodil Bratlund, Kjeld Christensen, Hans Dal, Kasper Johansen, Lise Bender Jørgensen, Claus Malmros, Ole Nielsen, Kaj Strand Petersen, Kirsten Prangsgaard, Kaare Lund Rasmussen and Tine Trolle, Jutland Archaeological Society Publications Vol. 77, Jysk Arkæologisk Selskabs Skrifter, 2013, Aarhus, 527 pages, Hardback, 68.00 Euro, ISBN 978 87 88415 78 0

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Tybrind Vig, off the island of Fyn, is the largest Danish underwater excavation of a Mesolithic settlement site carried out to date with regard to the extent of the excavated area, the exclusiveness of archaeological artefacts and the diversity of preserved materials. Therefore the site, and not least the author, have fundamentally contributed to our knowledge about environmental circumstances and economic conditions during the Ertebølle period and have provided unique insight into cultural and social life of a coastal hunter-fisher-gatherer community.

The Ertebølle Culture is concentrated in the south-western Baltic region and is spread over Southern Sweden, Denmark, Northern Germany and Northwest Poland. This cultural manifestation is absolutely dated between 5400 and 4000 calBC. Actually, the Ertebølle Culture is the transitional period between Mesolithic and Neolithic lifestyles in Northern Central Europe, where hunter-fisher-gatherer societies lasted longer than in more central regions. Therefore, the investigations in this field were received with great interest and discussed intensively by different scholars following different research trends. Due to this wide reception, Tybrind Vig is justifiably one of the most famous archaeological sites in Europe. Consequently, the publication of Tybrind Vig as a monograph in English is a great chapter of research history.

The completion of this publication is due to Søren H. Andersen, who had the patience and elaborateness to present this comprehensive compilation, although the evocative highlights about the site were already well known. In the course of almost his entire scientific career, Søren H. Andersen spent time investigating Mesolithic Stone Age cultures, such as Maglemose,

Kongemose and the Ertebølle Culture at Moesgård Museum and Aarhus University. Among other things, he has already even published numerous articles in Danish and international journals about the results and findings of the site Tybrind Vig (e.g. Andersen 1985; 1987). But now, at the culmination point of his scientific life, it is his great achievement to summarize with other specialists all information available about Tybrind Vig from published and unpublished reports. Together with his previous book about Ronæs Skov, another underwater site in the Little Belt (Andersen 2009), Andersen provides all his knowledge for following generations of researchers.

The book is divided into two broad parts. In part 1, Andersen primarily presents facts about the site, results about the main find categories and a discussion about social and economic questions. This discussion is completed by information about other Ertebølle settlements in the region and by comparisons with neighboring regions. Part 1 ends with a conclusion and an outlook concerning further investigations in the future (pp. 317–324). In part 2, various reports are included, mainly by natural scientists about special investigations. Some of these manuscripts were originally submitted up to 15 years ago. But this does not diminish the value of the scientific work. Most important is that all information is now collected in one book. In the following, I will lead through the chapters of part 1 and will refer to the reports in part 2 as I proceed.

Chapter 1 is the most important chapter in this book and nearly every question one could have about the site is discussed in separate sections. At the beginning of the chapter, the particular story on the discovery of the site is told from the personnel point of view of the author so that the reader can really dive into the research history (pp. 11–14). Then details about geology, ancient coastlines, sea level changes, natural conditions revealed by faunal and pollen remains as well as local topography and deposition of artefacts at the site are explained (pp. 15–29). Further detailed information about geological conditions, as revealed by the marine molluscan fauna, is described by Kaj Strand Petersen in part 2 of the book (355–361). The excavation methods, environmental investigations, stratigraphy and absolute chronology are also discussed in chapter 1 (pp. 33–53). Additionally, particulars of radiocarbon dating and dendrochronological analysis are presented in part 2 of the book by Kaare Lund Rasmussen (pp. 363–364) and Kjeld Christensen (pp. 365–376).

Throughout the long duration of investigations in Tybrind Vig, remains of different settlement areas were excavated, denoted as settlements A-D (pp. 29–33), but settlement B provides the principal and most important portion of the available information. Here, different layers could be identified which demonstrate that a population group either lived there all year round or within a series of separated

visits of particular intensity during a period of 1300 years. While the uppermost layer is dated to 4300–4000 calBC, the underlying detritus gyttja (horizon 2) contains the majority of Ertebølle artefacts, in particular worked wood, and can be dated from 4700–4300 calBC. Beneath this horizon, a series of shell-rich layers (horizon 1) containing only artefacts of flint, bone and antler, is dated to 5400–4700 calBC (p. 56). The settlement layers constitute an area of waste deposition, a zone for fishing as well as a probable space for other activities during the times of low water. Thus, special archaeological features are described in several sections of chapter 1, such as the fish weir, the leister fishing area, hearths, a woodworking site for the assumed manufacture of dug-out boats, probably remains of a platform or a jetty and several bone heaps, especially of pine marten skeletons and fish bones (pp. 59–74). But not only settlement traces exist: burial remains of at least two different graves could be documented and scattered human bones were found. The investigation of the human bones is described by Tine Trolle in part 2 of the book (415–426).

Chapter 2 in part 1 is dedicated to artefacts of stone. The quantity of flint finds at Tybrind Vig is relatively small, probably because they originate from a near-coastal refuse area and not from the settlement itself. First, the vertical and horizontal distribution of flint is discussed and compared to other submerged Ertebølle settlement sites. Then types of raw flint and occurrences of fire-affected flint debris and flint-working techniques are examined (pp. 77–80). Results of the investigation of different flint artefacts from both horizons are described in detail, including cores and blades as artefacts from the primary reduction (pp. 80–88) as well as artefacts from the secondary reduction, such as scrapers, borers, burins, knives, retouched pieces, transverse arrowheads, axes, chisels and flint hammerstones (pp. 88–108). The majority of tools were made of blades, but flake and core tools also occur. According to the transverse arrowheads, types with concave side edges are most prominent. In addition, flake axes were observed three times more than core axes, while symmetrical, flat flake axes dominate. By a systematic comparison of the evidence of flint tool types at Tybrind Vig in horizons 1 and 2 with other Ertebølle sites, the author is able to emphasize development in time and regional differences.

In chapter 3, the most exciting artefacts of Tybrind Vig, at least for the reviewer, are presented: artefacts of wood, withies, fungi and plant fibres, which are extremely rare at the majority of archaeological sites due to the lack of advantageous preservation conditions for organic materials. After a short explanation of wood working techniques by means of working traces and rough outs (pp. 117–118), wooden artefact types of Tybrind Vig are presented in a collection of drawings and photos and interpreted in a discussion

of parallels from Northern Central Europe. Wood identification was mainly conducted by Claus Malmros and his report in part 2 of the book completes chapter 3 and goes further into the discussion on technical properties and the selection of wood types for specific tools (pp. 377–392). The most common wooden finds at Tybrind Vig are sharpened or pointed poles. According to their shape and size and by comparison with better preserved features from other sites, they were interpreted as remains of woven panels of fishing weirs (pp. 119–122). The report by Kasper Lambert Johansen about wooden stakes and rods in part 2 of the book (pp. 343–348) refers to the investigation of a total of 163 fragments of mainly worked hazel stakes, resulting in the reconstruction of the cutting technique, further tested by experimental work. Both Malmros and Johansen constitute that the hazel rods should be considered as evidence for the systematic management of hazel coppices during the Mesolithic time period (see also Kloob 2014). In the following, more wooden artefacts from the site are described and discussed by comparisons and ethnographic parallels, among them shafts of ash wood (pp. 123–131), angled adze handles (pp. 131–138), the outstanding number of 20 bows (pp. 139–149), club-shaped wooden arrowheads (pp. 149–150), wooden leister prongs of fishing spears (pp. 150–161), wooden staves with holes (pp. 161–166), fish trap baskets (pp. 166–169), paddles, including the exciting ornamented paddle blades of Tybrind Vig (pp. 169–185), and dug-out canoes with the documentation of boat III that was not published until now (pp. 185–203). The great opportunity was taken by the author to also display parallel finds from other sites, which is very helpful. But readers must be aware that cursory reading may lead to misunderstandings about the origin of the illustrated objects, therefore careful attention to the captions is recommended.

Even more exciting and rare are the finds of Mesolithic textile remains from Tybrind Vig, which are presented by Lise Bender Jørgensen in a report in part 2 of the book (pp. 393–400). The textile remains are comprised of a bundle of fibres, fragments of strings and fragments of fabrics made in a variation of slightly different techniques. The identification of the used plant fibres was a difficult task and three appendices with identification studies are attached and documented by a series of photographs. According to this, bast of willow was frequently used. By listing other evidence of prehistoric textiles, the introduction of different materials and the development of spinning and other textile techniques are discussed.

In chapter 4, artefacts of bone and antler are explained which also only occur on well-preserved sites. In addition to finished tools, an outstanding amount of waste from tool production was found at Tybrind Vig. On their surfaces, different working traces like saw or cut marks could be observed. Thus, the method of manufacture is discussed with the help

of tool marks and rough outs for each artefact type. The description of antler and bone artefacts is enriched with illustrations and information about parallel findings from other Ertebølle sites. Fabricators are the most common finds made of red deer antler (pp. 243–248). Further finds include red deer antler axes of type T-axe and of type rosenøkse, partially ornamented (pp. 228–239), one roe deer antler harpoon (pp. 227), three antler handles, one of them ornamented with a net-like ornament (pp. 249–252), and antler chisels (pp. 240–242). Bone tools are represented by knives (pp. 256–258), two ulnar daggers (pp. 258), scrapers of wild boar tusk (pp. 259–262), awls (pp. 262–263), bone points (pp. 263–267) and 16 examples of fish hooks made from ribs (pp. 268–272) as well as four tooth pendants and ornamental plates of enamel from the outer surface of wild boar tusks (pp. 258–261). In part 2 of the book, Ole Nielsen contributed an experimental study about simple bone points with their break patterns (pp. 349–354). As a result, Nielsen concludes that the bone points probably had a number of different purposes, for instance, they might have been used for sewing leather or for basket production while they were held directly in the hand. But they could also have been implemented as hafted bone arrow-heads or as central prongs in the characteristic Ertebølle fishing leisters.

Kirsten Prangsgaard described and discussed the pottery remains in chapter 5 of part 1. The two vessel types, a pointed-based vessel and a lamp, which are associated with the Ertebølle Culture, are both represented in the assemblage of well-preserved sherds of Tybrind Vig which lay in the uppermost part of the gyttja deposit. Most exciting are the intact finds and nearly complete examples of both vessel types. But seen in relation to the lifetime of the settlement, the amount of ceramic finds is modest, specifically for lamps, and their appearance is surprisingly late (p. 289). Thickness, surface and temper of sherds as well as the construction method, shape and size of the vessels were investigated (pp. 277–285). Moreover the function of the vessels, the distribution of the pottery and its dating is discussed (pp. 285–289). Andersen added some remarks about previous and recent investigations of charred food crusts which occur unusually thick and well-preserved and in relatively high numbers at Tybrind Vig (pp. 289–229).

The broadly-based economy of the Tybrind Vig settlement is demonstrated in chapter 6. Foremost well-preserved animal bones, but also shells of invertebrates, plant remains and analytical data for human bones as well as the investigated food crusts reveal dietary habits. Furthermore, the topographic location and tools associated with hunting and fishing verify the exploitation of terrestrial and marine resources. In part 2, Tine Trolle presents the human bones and, in addition, particularly detailed results and measurements of the investigation of animal

bones. Here, important information about hunting and processing of game, dominated by red deer, roe deer and wild boar, is offered. Moreover, the seasons of residence at the site are thereby indicated. Furthermore, an important amount of bones of pine marten and other fur bearing animals was recorded, which probably were trapped intensively with the aim to use their fur. In contrast, evidence of sea mammals and birds is modest at Tybrind Vig, but fish bones occur in high number, dominated by cod (pp. 426–496). One special find sheds light on hunting practices. The shoulder blade of a wild boar with a partially healed arrow wound is presented and discussed by Bodil Bratlund in part 2 of the book (pp. 497–503). The wide range of animal species reflects the ideal location of the site that provided access to different biotopes. Moreover, the site was visited during all seasons and thus can be characterized as a sedentary settlement. Hunting terrestrial game and fur animals as well as fishing were characteristic elements in the economy of Tybrind Vig. Evidence of gathered plants substantiates an additional supplier to the human diet (pp. 293–301).

In chapter 7, Tybrind Vig is integrated in the regional settlement system. The site is compared with other known settlements, firstly with settlements in the coastal area, especially with those of Little Belt, and secondly with those of the inland area of Funen. Differences concerning size, function, artefact spectrum and population groups could be worked out. Therefore, a picture of extensive and stable coastal settlements like Tybrind Vig, and coeval small localities in the inland region was developed by Andersen. Furthermore, well-developed coastal communication to the south becomes apparent by similarities to Ertebølle settlements on the North German Baltic coast (Hartz et al. 2014).

In the last report, Hans Dal, the leader of the practical tasks at the excavations between 1978 and 1987, described the equipment and excavation techniques as well as the organization of the field work under water and above sea level. Indeed, the development of gear and working procedures that was undertaken by the Marine-Arkæologisk-Gruppe (MAG) and a group of archaeologically-interested volunteer scuba-divers was pioneering in Northern Europe and served as an example for further examinations on submerged settlement sites, for instance, in Sweden and Northern Germany (Hartz et al. 2014).

The Tybrind Vig book contains very special information about the investigations of specific artefacts, but also tells the comprehensive story about a typical Danish cultural phenomenon and an interesting part of archaeological research history beneath the surface of the Baltic Sea. The relatively rapid process during the completion of the book, I assume, resulted in editorial work that could not prevent minor inaccuracies or contradictions. Therefore, the book is not perfectly edited, but inspiring and fascinating through

the diversity of the presented archaeological remains and applied scientific methodology. But the greatest treasure of this book is the complete overview on the current state of research about the Ertebølle Culture offered by the author and his colleagues. Because of the detailed and good structured information in short sections and with its many photos, drawings and figures, it is a pleasure to browse over and study this substantial monograph.

I am grateful to Eileen Küçükcaraca for revising the English language of this manuscript.

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