

Book reviews - Buchbesprechungen

Altsteinzeit. Der Weg der frühen Menschen von Afrika bis in die Mitte Europas

Jürgen Richter; Stuttgart: Verlag W. Kohlhammer, 2018, paperback, 232 pages, including 86 figures and 9 tables, 30,00 €, ISBN Nr.: 978-3-17-033676-6

reviewed by

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An accessible introduction to the Old Stone Age for a German-speaking audience has long been lacking. *Altsteinzeit. Der Weg des frühen Menschen von Afrika bis in die Mitte Europas* by Jürgen Richter endeavours to fill this void. For this reason alone, the value of the book can hardly be overrated. The small paperback offers a compact but unconventional survey of some of the main research themes in Palaeolithic archaeology that its author has engaged with over the past decades; it should be read as an updated compilation as well as a re-evaluation of this work, rather than as a fully integrated and coherent narrative. Having said this, *Altsteinzeit* heavily focuses on the ecology, society and technology of Neanderthals and their predecessors in Europe. Richter makes a valiant attempt to situate these aspects within the larger context of over 2 million years of human history and migration. The book is subdivided into 13 self-contained and broadly chronologically arranged chapters plus an introduction and conclusion, each about 10 to 20 pages long.

Richter embarks on his journey by re-casting the human story as a volatile 'history of migrations', whose end is not in sight any time soon. The ability to evade natural hazards, including climate change and environmental transformation, by means of population displacement is regarded to be a pinnacle of the evolutionary success of humans as we know them. But migration is also considered the *sine qua non* of modern humans as truly 'global organisms', perhaps denoting a unique characteristic even in the animal kingdom. Humanity, from this perspective, comes into view as a life form mediated and preserved by migratory activity. This *Homo migrans*, according to Richter, should be studied through the prism of *deep history*, and not merely in its current-day actualization. The evolved human capacity to 'move' constitutes at least the primary incentive of the CRC 806 'Our Way to Europe' to juxtapose palaeo-archaeological and palaeo-environmental research. *Altsteinzeit* is written against this backdrop. It is also intended to be the companion volume to the special exhibit *2 Millionen*

Jahre Migration originally curated from May to November 2017 by the Neanderthal Museum in Mettmann. Needless to say, migration continues to be a 'hot' topic – with considerable socio-political charge due to the new 'migratory crisis' currently engulfing Europe and the world.

Following a brief outline of some key historical and systematic prerequisites of modern research in Palaeolithic archaeology and Quaternary science, the first part of the book (Chapters 3 to 5) summarizes evidence about Pliocene and early Pleistocene migrations leading to the formation and eventual demise of the Acheulean phenomenon. Richter adopts the common view that hominization was a long and gradual process starting around 12 million years ago and resulting in the separation between *Hominidae* and *Panini* through ecological isolation, accelerated by the tectonic upheavals creating the East African rift system. In the wake of Glynn Isaac's influential writings, he draws sociocultural and ecological implications from the increasing bipedality among hominins, culminating in the defining features of the *Homo* lineage between 1 and 2 million years ago. Importantly, the author links this development with the emergence of open grassland and savannah environments in Africa, arguing that this hominin-environment co-evolution fostered elevated dependencies on the available ungulate biomass which, in turn, promoted carnivory and heightened levels of mobility. For Richter, the latter two aspects turn out to be inextricably bound and represent essential ingredients of the evolved 'human package'. The argumentation climaxes in his 'cultural carnivore' hypothesis, proposing that meat consumption originally evolved as a *cultural* strategy of adapting to open and climatically instable environments, rather than as a consequence of the derived biological make-up of hominins. The first sharp-edged stones are seen as a by-product of tapping into this cultural option. Although the 'cultural carnivore' hypothesis unquestionably offers some interesting perspectives and, with its special emphasis, is fairly original, its wider implications for interpreting the Palaeolithic record are not fleshed-out. The hypothesis seemingly contradicts the received view that stone tools initially developed as a substitute for teeth and nails and only later – *qua exaptation* – became genuine cultural artefacts. It is unfortunate that the author did not seize the opportunity to contribute to this central debate.

Richter proposes that the Acheulean designates a profound change in the relationship between lithic technology and the ecological niche of its hominin bearers. In sync with the predominant view in the field,

he suggests that the first wave of Out-of-Africa I dispersals was tied to an expansion of grassland and savannah environments into the Caucasus, for instance reflected in the structural similarities in the associated faunal communities of FLK Zinj in Olduvai Gorge (Tanzania) and Dmanisi (Georgia). The idea here is that the basic technological substrate in the Oldowan and pre-Oldowan ('Lomekwian') did not change due to its stable ecological role; the observable variability in tool frequencies and technological details is thought to indicate subtle variations in activity patterns, raw material availability and the organization of landscape-scale mobility. The first sustainable modification of the 'fundamental' niche (*Fundamentálnische*) of *Homo* is considered a consequence of aridization processes in East Africa around 1.5 million years ago, favouring an accretion of the mega-herbivore guild and the development of heavy-duty, bifacial tools in order to facilitate the exploitation of these animals including their bone marrow. The Acheulean phenomenon is regarded to be the ultimate result of this process – its lithic technology, anchored in the iconic and versatile handaxe, enabled the spread of hominins into the forest steppes of Eurasia's northern latitudes. According to Richter, inhabiting these environments required the incorporation of wood-dwelling stationary animals into the diet. The eastward expansion of hominins – i.e. the second wave of Out-of-Africa I – leading to the initial settlement of India and especially China between 1.5 million and 600'000 years ago falls into this category. The key site of Ubeidiya (Israel) with its 1.5 million year old layers combining chopping tools and early handaxes is identified as a transitional locale at the interface between the two techno-ecological regimes. From this point of view, the archaeological signature of the Acheulean *sensu lato* demarcates the consolidation of a culture-mediated carnivorous lifestyle based on 'optimized marrow extraction'. In Central Europe and Northern Eurasia, this behavioural package was initially bound to interglacial cycles and the respective regions were consequently re-settled multiple times from different source areas. Richter pinpoints the so-called 'Hippo-Diffusion' ca. 1 million years ago as part of this third wave of Out-of-Africa I dispersals, during which early hominins presumably re-populated Central Europe alongside hippopotamus and other mammals from the East (strictly speaking, the term 'Out-of-Africa' is thus not fully appropriate here). For Richter, the faunal spectrum of the *Homo heidelbergensis* type-site of Mauer near Heidelberg (Germany) signifies the establishment of this 'woodland' niche in Central Europe between ca. 700'000 and 500'000 years ago.

Chapter 5 tackles the complicated Lower Palaeolithic record of Central Europe in more detail. Importantly, Richter defends a relaxed *short chronology* for the region, arguing that the scanty lithic evidence is currently not reliable for the timeframe before 600'000 years ago. He asserts that stone artefacts that

presumably fall into the respective period either lack a secure archaeological context or are disputable in terms of their status as hominin-made objects. Similarly, stratified sites of the timeframe postdate the palaeomagnetic Matuyama-Brunhes inversion and have not yielded *Mimomys savini* remains, indicating an onset of the Lower Palaeolithic not before MIS 14. It can be added that east of the Rhine, handaxes continue to be the exception and are encountered either as isolated finds or are associated with Middle Palaeolithic industries. The overall picture suggests that hominin presence was rather liminal and fluctuating at that time, with only a couple of sites such as Kärlich-Seeufer unambiguously attesting a noteworthy hominin contribution to the archaeosphere before MIS 9/10. The author's critical discussion of the Middle Pleistocene chronology and archaeo-stratigraphy of Central Europe is of vital importance in this context. The crux of the problem is the 'Holstein interglacial', which has traditionally been dated to MIS 11. As Richter rightly stresses, the eponym stratigraphic unit at the Holstein type-site has recently been radiometrically re-dated, yielding a series of age determinations consistently falling into MIS 9. This re-assessment of the palaeobotanical evidence renders a number of key sites, including Schöningen and Bilzingsleben, much younger than previously thought. These arguments considerably shorten Central Europe's Lower Palaeolithic chronology and highlight that the classic dating method of counting palaeosoil formations has to be treated with extreme caution.

Richter appears to be generally sceptical about the techno-cultural status of the recently proposed 'microlithic techno-complex' encompassing the sites of Schöningen, Rudko, Wrocław, Trzebnica and potentially some of the lithic finds from Mauer, among others. He is equally sceptical about the presence of an independent *concept* of bifacial volume construction in this timeframe as suggested by some researchers based on the lithic evidence from Bilzingsleben. Clearly, Richter favours to acknowledge the distinct nature of the associated technological entities, and considers 'reduction effects' and raw material constraints as primary explanatory factors. As a second explanation for the puzzling character of the Central European Lower Palaeolithic record, the author invokes the possible presence of land-use systems sustaining activity patterns not found in the West, where the classic Acheulean complexes are documented. Handaxes may have played a key role here as highly mobile objects primarily used outside of the regular sites and therefore not typically encountered there. These certainly important considerations raise the question of the technological relationship between *débitage* and *façonnage* systems in this chrono-geographic setting. As Richter correctly points out, this issue has experienced not enough attention in the past and has rarely been approached from an explicitly *techno-logical* point of view.

The second part of the book (Chapters 8 to 12) offers an overview of the lithic technology and environment of the Central European Middle Palaeolithic. Richter identifies the Middle Palaeolithic as the period of 'standardized flake-production'. Two dimensions of this definition are brought to the fore: First, the Middle Palaeolithic sees the diversification of formalized patterns of flaking – the reason why archaeologists recurrently encounter *débitage* systems of the Levallois-, Quina-, or Discoid-type. Secondly, the standardization that generally goes along with the emergence of these technical systems is regarded to be a latent reflex of the increasing importance of complex hafted tools, of which the lithic implements represent primarily the active parts. Middle Palaeolithic artefacts, in this light, are thought to echo a profound re-organization of the wider technical milieu in which stone tools were manufactured and brought to use. The appearance of this distinct Middle Palaeolithic technicity is tied to what Richter terms 'Levallois generalization' – a process that rendered the Levallois flaking concept the dominant and general feature of most lithic assemblages. The author further argues that the re-assessment of the Holstein interglacial results in a shorter chronology for this phenomenon, with the earliest Levallois industries probably dating to MIS 9. In general, the coalescence of the Middle Palaeolithic is considered to be paralleled by a process of 'Neanderthalization' – the gradual fixation of the skeletal construction plan of classic Neanderthals within hominin populations across Western Eurasia.

Again, special attention is paid to the available chronological model for organizing and understanding the succession of Middle Palaeolithic industries in time. Apart from the already mentioned re-localization of the Holstein interglacial from ca. 400'000 to ca. 300'000 years ago, Richter highlights the re-dating of the Drenthe glacier advance from about 250'000 to 150'000 years ago, demonstrating once more that the internal structure of MIS-units can be much more intricate than often anticipated. These re-evaluations are critical for our understanding of the beginning of the Middle Palaeolithic in Central Europe before the onset of the Eemian. They necessitate a re-appraisal of the chrono-stratigraphic position of early Middle Palaeolithic key sites such as Markkleeberg and Rheindahlen, which appear to harbour much shorter archaeological sequences now. New investigations at Rheindahlen are of particular importance here, since these have demonstrated that interglacial soils may form rather rapidly and successively within a single MIS-cycle. Richter confronts the crucial early Levallois sequences of Achenheim and Korolevo with these insights, arguing that the emergence of the fully developed Levallois flaking concept is probably younger than traditionally thought and likely falls into MIS 7. This opens up the possibility that the Lower-to-Middle Palaeolithic boundary in Central Europe must

be placed somewhere around 250'000 years ago. Richter's important discussion naturally evokes basic questions about the nature of the transition and brings the old problem of the existence of a clear-cut distinction between the Lower and the Middle Palaeolithic to the table again. Regrettably, these and cognate questions are not followed up on in the book.

Chapter 11 throws the spotlight on Neanderthal presence in the Eemian and post-Eemian landscapes of Central Europe. At the outset, the author outlines the cornerstones of his landscape-archaeological approach, distinguishing between 'environment' (*Umwelt*) and 'landscape' (*Landschaft*). The former describes the totality of objectifiable parameters defining the natural surroundings of hominin groups or populations, whereas the latter term refers to the culture-mediated perception or recognition of these parameters, including their relative significance. In general, this approach – propagated by Richter, Uthmeier, and others – juxtaposes the characteristics of the natural environment with the corresponding settlement and subsistence patterns deduced from the archaeological record in order to grasp the specific *landscape concept* of the target groups or populations. The chapter in particular proposes that interglacial Neanderthals paid special attention to prominent water bodies, while fully glacial Neanderthals oriented their spatial behaviour towards the edges of uplands and low mountain ranges. These two extremes are thought to showcase the overall variability of land-use systems observable in the Neanderthal timeframe. This variability, in turn, is argued to elucidate the dynamics between micro- and macro-movements that must have played a key role in settling the Central European heartland in this period – especially along the North-South geo-climatic gradient – a process that was most likely characterized by recurrent population retreats and local extinctions.

Based on newly available data on the terrestrial vegetation-cycle of the Eemian, Richter introduces the following phaseology for this moderate to favourable climate phase: (i) Early to Mid-Eem with a mixture of deciduous and coniferous woodland in which hominins targeted primarily mega-herbivores such as rhinoceros and elephant and relied strongly on Levallois technology with generic scrapers and diverse denticulates; (ii) Late Eem to Early post-Eem with more open environments in which the respective hominins exploited especially aurochs, horse, and deer and employed a heterogeneous spectrum of lithic technologies, perhaps indicating regionally distinct technical traditions. Within this broader pattern of hominin-environment articulations, the author points out the special status of Crimean Neanderthals inhabiting open *Artemisia* steppes even during interglacial periods. Importantly, Richter proposes that interglacial woodland adaptations resulted in a preference for unifacial tool concepts, whereas these open steppe

environments probably afforded highly mobile bifacial technologies, explaining why the Crimean interglacial turns out to be bifacially enriched.

The archaeological evidence from the first phase of the Eem in Central Europe is interpreted as a behavioural strategy in which the selective hunting of solitary and preferably less-mobile prey, trapping, and potentially scavenging are the core features. Since lake shore settings naturally support this strategy, standing water bodies emerge as key locales in the landscape. Notable is Richter's proposition that ambush hunting might have played an important role in this context – a hypothesis that has recently received empirical support by a new study of hunting lesions from the interglacial site of Neumark-Nord (Gaudzinski et al. 2018). Remarkable is also the statement that interglacial Europeans might have lived in 'affluent societies' – in particular because Richter's ecological premise that ungulate biomass was markedly reduced during the interglacial has been challenged by other scholars who argue that Eemian environments may have been characterized by unusually high carrying capacities instead (Kindler et al. in press). Having said this, Richter contrasts Early to Mid-Eemian lifestyles centred on fixed landscape features, which he identifies with a 'circular' mobility pattern, with a focus on mobile herd animals in the second phase of the Eem and Early post-Eem supporting more specialized and often mono-specific hunting strategies. Even though the author does not make this point himself, in light of the presented evidence it is tempting to describe Neanderthal mobility in the first phase as 'quasi-residential', whereas in the second phase a more 'logistical' type of mobility appears to have been adopted (*sensu* Binford 1980).

Richter then turns to the Late Middle Palaeolithic, identifying the latter as a turning point in the early prehistory of Western Eurasia with consequential changes in the structure, and potentially density, of hominin populations across different regions. He argues that in earlier periods, hominins living on different continents still shared a generalized technological repertoire – a situation that, considerably changed in the Late Middle Palaeolithic. Richter advocates the *Sonderweg* taken by European populations during the Weichsel glaciation, insisting on the circumstance that for the first time in human history region- and time-specific artefact forms can be encountered. The divergent lithic signatures of extended 'contextual areas' such as the MtA (*Moustérien de tradition acheuléenne*), the M.M.O. ('Mousterian with Micoquian Option'), and the Eastern Micoquian are regarded to illustrate this general development. Exemplified by the Late Middle Palaeolithic 'G-complex' of the Sesselfelsgrotte in the Altmühl valley – harbouring the reference stratigraphy for the M.M.O. – this increasing complexity of hominin lifestyles is shown to have resulted in seasonally differentiated land-use strategies. The intensity of raw

material use and the changing composition of lithic toolkits within a single stratigraphic cycle is interpreted as a shift between 'circular' mobility in spring and early summer and 'logistical' mobility in late summer and autumn. The open-air site of Salzgitter-Lebenstedt is diagnosed to belong to the same land-use system, representing an ideal-typical autumn hunting camp at the northern periphery of the M.M.O. *ecumene*. Similarly, the author re-interprets high-elevation cave sites such as Wildkirchli as potential instances of summer encampments within the same regional site cluster.

For Richter, the integrated settlement system that comes into view in this way foreshadows Upper Palaeolithic modalities of land-use and anticipates the seasonally differentiated activity profiles of modern-day and/or historic hunter-gatherers. A key point is the problematization of the distinction between 'Mousterian' and 'Micoquian'. The notion of the M.M.O. was explicitly developed to make room for the possibility that both typo-technological expressions may represent different activity-specific segments of a larger annual mobility cycle. In total, Richter's account cautions against the trend to move from the classification of assemblages directly to chronological or sociocultural statements, without first calibrating the respective findings on a landscape-scale. However, the account is also meant to express criticism – and I think rightly so – on the longstanding idea that a 'complex' organization of mobility is an exclusive ingredient of the 'modern human package' and as such inextricably bound to the often-invoked 'Upper Palaeolithic Revolution'.

Middle Palaeolithic leafpoints and leafpoint-like knives which have traditionally been grouped under the label 'Altmühlgroup' (*Altmühlgruppe*) are also regarded to represent activity-specific manifestations of the genuine 'bifacial potentiality' of the M.M.O., countering classic taxonomic arguments for their status as distinct chrono-cultural markers. It is surprising, one might think, that Hopkinson's work (2004) is neither cited nor discussed in this context since this author has offered a similar account of the differential role of leafpoints in Late Middle Palaeolithic land-use systems of the area – even proposing explicit technology-environment ties which could have been re-examined and potentially criticized. Having said this, Richter posits that the M.M.O.-inherent tendency to engender increasingly refined leafpoints and cognate artefacts ultimately laid the foundations for the coalescence of the distinct 'transitional industries' of Central Europe. The large leafpoint-bearing M.M.O.-C on the one hand, and the so-called Jerzmanovician characterized by points made on narrow-elongated blanks on the other. These two complexes divide the formerly interconnected Central European Late Middle Palaeolithic into two separate techno-cultural hemispheres. The question that imposes itself at this point but remains largely

unaddressed concerns the long-term consequences of this bifurcation of the Central European heartland: Did the division structurally pre-establish North-South gradients of interaction between late Neanderthals and newly arriving anatomically modern humans (AMH)? The author does point out, however, that the Late Middle Palaeolithic record of the Altmühl valley reveals important differences to the preserved archaeological sequences from the Swabian Jura up the Danube. By discussing the example of the Weinberg caves near Mauern, he argues that the former hosts an extensive Late Middle Palaeolithic MIS 3-occupation yet lacks Early Aurignacian settlement traces of similar intensity, while the situation in the other region appears to be the inverse. Again, it is a pity that this important observation is not followed up on, in particular because the role of the Danube is long been discussed in the context of modern human incursions into Central Europe and the lurking possibility of substantiating a tangible pattern of Neanderthal-AMH co-existence along the Danube catchment.

Chapter 13 initiates the concluding part of the book, which is exclusively devoted to the appearance of *Homo sapiens* on the European landscape. This last part is written in a very compact fashion and is much less detailed than the first two parts; the outlined topics and themes are also more selective. Richter returns to the issue of migration, tracing the journey of AMHs from African savannah landscapes to the iconic 'mammoth steppes' of Western Eurasia. Following a brief overview of the palaeo-genetic background of modern humans and the nature of their fossil record, Richter sketches the trajectory of Out-of-Africa II dispersals, ultimately leading to the colonization of the entire globe. The author adopts the now common view that this population-level process can be subdivided into two consecutive phases: (a) 'Out-of-Africa II-1' which falls into the timeframe between ca. 190'000 and 90'000 years ago and has resulted in the non-successful initial settlement of Arabia, the Levant, and – along the so-called 'southern route' – perhaps South-East Asia; and (b) 'Out-of-Africa II-2' between ca. 70'000 and 40'000 years ago during which the ancestral L3-population began to spread into the Balkans, Western Europe, Australia, Central Eurasia, and, ultimately, the Americas. Richter underlines that the initial settlement of Europe, flagged by the archaeological signature of the Aurignacian, corresponds to a period of 'unrest' and 'transformation', both in terms of techno-cultural developments rooted in the preceding Late Middle Palaeolithic and unstable and fluctuating climate regimes. It is suggested that the lasting success of AMHs in incorporating new regions into their range was facilitated by 'short-grass' habitats, echoing comparable arguments by Teyssandier et al. (2010) and Otte (2015). Richter insists on the fact that the Middle-to-Upper Palaeolithic transition brought

about an important structural re-organization of technological repertoires. Whereas Middle Palaeolithic industries are generally characterized by a heightened diversity of technical concepts, often serving complementary functions, fully developed Upper Palaeolithic industries tend to be anchored in integrated 'mono-specific' systems of laminar production. This latitudinal 'reduction' in the technical space of stone knapping is compensated for by a marked expansion of working organic materials – a phenomenon that the author baptizes 'bone technique revolution' (*Knochentechnik-Revolution*). The solicited antagonistic logic is certainly striking and suggests that Middle and Upper Palaeolithic technicities express different adaptive needs.

Richter's 'bone technique revolution' hence addresses a long-overlooked paradox in theorizing modern human adaptation and ecological success. On the one hand, the bearers of the Upper Palaeolithic, including the Châtelperronian, showcase the systematic exploitation of complete animal carcasses, pushing the significance of animal resources beyond the realm of immediate subsistence needs. On the other hand, Upper Palaeolithic complexes represent quasi-continental and sometimes transcontinental entities – also captured by the notion of 'civilization' in the French literature – indicating that their bearers had developed elevated levels of ecological flexibility. Therefore, the paradox, insightfully discussed also by Bon (2009), consists of the circumstance that the 'bone technique revolution' implies an intimate dependency on local environmental particularities and seems to require well-developed ecological knowledge, but the archaeological complexes that brought it about clearly transgress ecological boundaries. The Upper Palaeolithic is puzzling to this effect and appears to balance dependency and flexibility in entirely unprecedented ways. This paradox and its potential solutions are only alluded to, however. The one solution that Richter seems to offer is at least surprising. He argues that the 'bone technique revolution' must probably be regarded as a long-term consequence of an increasing specialization towards ungulate populations already initiated by late Neanderthals and then potentially adopted by arriving modern human groups. According to Richter, the European *Sonderweg* is thus continued in the Upper Palaeolithic, and this may demonstrate that the genuine contribution of Neanderthals to the 'modern human package' is much more substantial than most scholars would argue.

Richter concludes *Altsteinzeit* by putting the topos of the *Homo migrans* into diachronic perspective and emphasizing its actuality. His panoptic view accentuates the dialectics between population-level expansions and retreats which have shaped the human story since its early beginnings. The author sketches a cyclic perspective on consequential migrations and localized developments, which resulted in a patterned rhythm of growth and decline, failed attempts, and even

technological forgetting. This changing and heterogeneous character of human becoming is taken to indicate that human nature cannot adequately be grasped if we re-cast its deep history as a story of 'origin', 'success', and 'progress' alone. The 'globality' of *Homo sapiens*, one might say, is born out of failure and disappointment. It presents us a constant reminder of both the dangers and opportunities of large-scale population movements – an observation that we should, perhaps, especially remember today.

In total, *Altsteinzeit* represents a considerable achievement. The book has many strengths and covers enormous ground without becoming superficial. Although the Upper Palaeolithic clearly falls too short, the author successfully addresses two audiences at once – interested students and more experienced practitioners. The book can either be utilized as a non-systematic introduction to some of the key issues in current Palaeolithic research or it may be exploited as a source of fresh ideas and at times surprising interpretations. Yet, this dual ambition is also its main weakness – the book wants to accomplish too much. It endeavours to provide an overview of the earliest part of human history, to offer critical and detailed reviews of key research problems, while at the same time introducing students to selected aspects of Palaeolithic archaeology's systematics (Chapters 9 and 10) and methodologies (Chapter 6). The outcome of this approach is a somewhat scattered structure, making it difficult, at times, to follow up on the central lines of argumentation. The logical order of the presented content is also not always intuitive.

In spite of these minor reservations, everyone interested in the Lower and Middle Palaeolithic of Central Europe should read *Altsteinzeit*. It is original, accessible, well written, and provides a wealth of updated tables and figures, reflecting the current state of the art in the field. The book elegantly highlights the complexities of the Palaeolithic record and is not easily satisfied with simple answers. Richter's survey of the Lower and Middle Palaeolithic record makes clear that new technological research is urgently required in order to avoid common interpretive pitfalls and to provide a more complete account of these periods. The author convincingly elucidates that similarity in artefact appearance is often misleading and that more attention must therefore be paid to the status of the respective lithic objects in their technical system(s) – an agenda of lithic research that I can only applaud.

Having said this, however, the book would have certainly benefited from a more explicit theoretical treatment of human-environment relations and migration/mobility in the context of non-sedentary societies. It nonetheless pursues an interesting 'middle ground' between the environmental determinism that often prevails in Anglophone reconstructions and the type of sociocultural determinism typically encountered in French techno-anthropological inquiry

(cf. Hussain 2018 for a detailed analysis of these and cognate issues). Personally, I hope that Richter's *Altsteinzeit* will inspire more book projects in the German language – projects that self-consciously take interpretive risks and thereby enrich the discourse on the becoming of us all.

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Die Pflanzen von Schöningen. Botanische Makroreste aus den mittelpleistozänen Ablagerungen und das Nutzungspotential einer interglazialen Paläoflora

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