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## **Solutrean Points of the Iberian Peninsula: Tool making and using behavior of hunter-gatherers during the Last Glacial Maximum.**

**Isabell Schmidt, BAR International Series 2778, Oxford, 2015, 206 pages, paperback, List price £40, ISBN 978 1 4073 1470 9**

reviewed by

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Schmidt's monograph focuses exclusively on variability in Solutrean points, the most diagnostic lithic implements manufactured during that period of the Last Glacial Maximum, from c. 25-20'000 calibrated years BP in the Iberian Peninsula. Her archaeological sample is geographically broad, comprising data from northern and southern Iberia, including major prehistoric human settlement regions in Vasco-Cantabria, the Ebro Basin, southern Mediterranean Spain, and the Estremadura area of coastal central Portugal. Thus, Schmidt's study is among the largest, most comprehensive investigations of Solutrean points ever made, integrating 273 datasets from 170 archaeological sites, including analyses of artifacts and published materials.

Iberian Solutrean points appear in several distinct forms – concave base, shouldered, etc. – that permit archaeologists to examine aspects of prehistoric hunter-gatherers' mobility, economy, social interaction networks, and technological organization during the Last Glacial Maximum, a period of climatic and environmental stress in western Europe. Each of

these artifacts preserves its own life history – a biography that can provide researchers information about lithic raw material procurement and manufacture; tool design, use, maintenance, and recycling; and artifact discard. Each of these components reflects the lithic technological organization strategies that prehistoric groups used to adapt to local and regional environmental circumstances within the context of their cultural traditions. Schmidt applied the technological organization approach to an extensive archaeological sample, which enabled her to qualitatively and quantitatively explore Solutrean toolmaking and using behavior at varying scales across the Iberian Peninsula, and to isolate geographic, and perhaps also cultural, similarities and differences in lithic strategies.

The book is divided into five parts. Parts I-III establish the foundation for Schmidt's research, including a concise summary of the Solutrean with information about technocomplexes, lithic raw material availability, Iberian topography, and the coastline, climate, and vegetation that characterized the Last Glacial Maximum. Schmidt situates the Solutrean in climatic, environmental, and geographic context with a clarity that any new student to this Upper Paleolithic period would undoubtedly appreciate. These sections also present the sample Schmidt uses in her study and outline the analytic methods that were applied to describe Solutrean point biographies. Part IV divides the Solutrean point sample into five techno-morphological types – concave base points, shouldered points from northern Iberia, shouldered points from southern Iberia, stemmed and winged points, and leaf-shaped points – and presents a chapter for each. These sections mirror each other, each assessing the same questions: (1) which organizational strategies were used to produce the points; (2) how standardized or variable the tool design and morphology was; (3) how the points were used, based on macroscopically visible wear traces; (4) how the points may have been hafted; and (5) how the points indicated variability and/or diversity in functional, morphological, or technological attributes on regional spatial and temporal scales. Each chapter concludes with a succinct summary of a point type's major attributes. Finally, Part V situates the attributes of each Solutrean point type in context and compares artifacts from northern and southern Iberia.

Schmidt observes the geographic distribution of different kinds of Solutrean points. Concave base points were mainly recovered from sites in Atlantic coastal Iberia (Vasco-Cantabria), while stemmed and winged points were more abundant in southern Iberia. Abruptly retouched shouldered points have been located throughout the Iberian Peninsula; leaf-shaped points were also widely distributed, however, they are uncommon finds. Schmidt's comparison of Solutrean point biographies supports a hypothesis that Solutrean hunter-gatherers living in northern and

southern Iberia used distinct lithic technological strategies.

Northern Iberian Solutrean groups produced shouldered, concave base, and leaf-shaped points, using quartzite as the principal raw material in western portion of the region and cryptocrystalline materials in the eastern portion (no doubt a reflection of the variable lithology on the northern Atlantic coast). These hunter-gatherers intensively resharpened and recycled these items as part of a flexible and versatile technological strategy, the points changing in both function and form throughout their use lives. Schmidt asserts that Northern Iberian Solutrean groups likely used a residential mobility system and that groups attempted to reduce risk of failure in production in order to create a lithic point toolkit that was versatile, flexible, and maintainable – they curated, transformed, and recycled this component of their technological system.

In contrast, Southern Iberian Solutrean hunter-gatherers used more homogenous technological strategies to produce their points, using cryptocrystalline materials and selecting standardized blanks to make abrupt shouldered points. The unilinear process produced Solutrean points that were not heavily recycled or flexible, but that were highly functionally specialized. These hunter-gatherers invested in initial manufacture: preforms were shaped at sites close to lithic raw material outcrops and then transported (with some finished points) to other sites. Southern groups also heat treated lithic raw materials. These strategies were used to decrease risk in the earliest production phases, a clear divergence from the northern Solutrean groups' strategies, which aimed to reduce risk through point maintenance. Schmidt hypothesizes that Southern Iberian Solutrean groups used a logistical settlement system focused on batch production at base camps and functionally specialized use at satellite camps. These groups made a significant investment in lithic manufacture, and accepted the loss of specialized pieces, rather than reworking them.

Overall, Schmidt's analysis indicates that regional differences in Solutrean points likely originated in distinct hunter-gatherer tool making and using behaviors. Solutrean point diversity is a known aspect of this archaeological period – it has been linked to cultural and economic changes in relation to Last Glacial Maximum climatic shifts, where humans adjusted their groups' composition and/or territories and developed regionally distinct technological traditions. While differences emerged, Solutrean groups maintained long-distance networks that helped them retain some technological similarities despite geographic separation. Schmidt asserts that these networks were a key Solutrean adaptation, resulting in similar technological strategies (e.g., abrupt shouldered points, leaf-shaped points) in geographic locations primarily defined by regional point types

(e.g., concave base points in northern Iberia vs. stemmed and winged points in southern Iberia). While there may have been distinct southern and northern Solutrean regional cultures – sets of technological strategies and settlement patterns uniquely adapted to the Mediterranean and Atlantic regions, respectively – they were part of a much broader "Solutrean" world.

While Schmidt has presented a largely excellent study of Solutrean points, I believe there are two shortcomings in the research, which I do not offer to criticize Schmidt's investigation, but rather as important points that I believe Upper Paleolithic researchers should consider in their future studies.

First, Solutrean points are a very small portion of Solutrean lithic artifacts. Studies that exclusively focus on single artifact types are restricted in the kinds of behavioral inferences that archaeologists can make. While Schmidt's focus on Solutrean points permits scalar comparison of archaeological sites over a large geographic area, it remains a study of specific trees within the forest of Solutrean lithic technology. Schmidt has produced a meaningful study of a single artifact category that future studies should build upon, assessing *whole Solutrean lithic assemblages, including tools and débitage*, at similar geographic scales in order to test Schmidt's hypotheses of variability in northern and southern Solutrean hunter-gatherer adaptations.

Second, I find Schmidt's classification of lithic raw materials as cryptocrystalline or quartzite rather meaningless. While lithic toolstone conveyance was not the primary focus of her study, I was disappointed to see that major lithic outcrops (e.g., Barrika, Treviño, and Urbasa in northern Iberia) were not recognized separately from the cryptocrystalline catch-all category. Based on my own research in the Vasco-Cantabrian region, there are over a hundred visually distinct cryptocrystalline lithic toolstones of variable knapping qualities, along with quartzites of diverse grain sizes (Fontes 2016). Identification of so-called "tracer" flints would have provided further evidence of Solutrean social networks beyond the technological similarities visible in point biographies. Schmidt's research underscores the importance of large-scale analyses in understanding Upper Paleolithic human adaptations; future studies should integrate this scalar approach *and* interdisciplinary work between archaeologists and geologists aimed at raw material studies in order to learn more about prehistoric behavioral groups, movements, territories, and networks, in addition to technological processes.

Overall, Schmidt presents an ambitious and detailed study of Solutrean points. This work is particularly important for its scale, assessing a point dataset from the entire Iberian Peninsula. Schmidt also creatively uses the lithic technological organization framework to study a single artifact type, while others (myself included), typically apply this research design

to assemblage-level economic analyses. Her approach will likely encourage others to conduct organizational studies using similar materials, methods and research scales, improving archaeological understanding of prehistoric economic behaviors. Schmidt's monograph is unique and will be essential reading for anyone studying the Solutrean period, whether a new student of the Upper Paleolithic or a seasoned researcher, and to those who wish to apply the lithic technological organization framework to archaeological questions.

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## Die Geologie der Paläolithischen Fundstellen von Schöningen. Forschungen zur Urgeschichte aus dem Tagebau von Schöningen, Bd. 2.

Thomas Terberger & Stefan Winghart (Hrsg.), 267 S., Abb., Tab., RGZM Mainz, 2015, Ladenpreis 65€, ISBN 978 3 88467 276 9

Besprochen von  
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Bis zur Stilllegung im Jahre 2016 war der Braunkohlen-Tagebau Schöningen bei Helmstedt der größte und tiefste Tagesaufschluss in Niedersachsen. Die altpaläolithischen Sedimente mit den Flözen mitsamt den mächtigen quartären Deckschichten waren ein beliebtes Ziel für geologische Exkursionen und weiterführende Untersuchungen; angesichts der steilen Abbauwände nicht einfach. Die vielfältigen Sedimente und rasch wechselnden Lagerungsverhältnisse fortlaufend zu erfassen und zu dokumentieren wäre Aufgabe des damaligen Niedersächsischen Landesamtes für Bodenforschung gewesen, war aber wegen Personalmangels nicht möglich.

Auf Anregung von H. Thieme, seinerzeit mit Ausgrabungen im Tagebau-Umfeld beschäftigt, wurden nacheinander im Nordfeld des Tagebaus (Abbaufeld Esbeck) vier Diplomanden vom Geologischen Institut der Universität Hannover angesetzt, die von J.-P. Groetzner und dem Rezensenten betreut wurden, wobei letzterer auch Leitgeschiebe-Analysen vornahm. Es waren die Arbeiten von H. Elsner (1987), T. Hartmann (1988), R. Lenhard (1989) und W. Tschee (1991), alle auch zitiert im vorgelegten Band. In diesen Arbeiten wurde das stratigraphische Grundgerüst des Quartärs im Tagebau-Umfeld erarbeitet, das noch heute Bestand hat. Im Südfeld des Tagebaus setzte D. Mania 1992 verdienstvoller Weise die Profilaufnahme bis 2008 fort.

Im Jahre 2009 wurde mit dem Abbau des noch verbliebenen Trennstückes, dem sog. «Bahnpfeiler», zwischen den beiden Abbaufeldern begonnen, wobei auf Anregung von K.E. Behre (Mitglied der vom Niedersächsischen Minister für Wissenschaft und Kultur einberufenen wissenschaftlichen Kommission) der Rezensent bis zum Ende des Abbaus die Profile untersuchte, auch erneute Geschiebeaufsammlungen vornahm, unterstützt von J. Lang. Diese Untersuchungen fanden ihren Niederschlag im Band 1 der «Forschungen zur Urgeschichte» in dem Beitrag Meyer 2012. Der nun hier zu besprechende Band 2 umfasst drei Arbeiten: D. Mania & M. Altermann, J. Lang et al. und G. Böhme.

### Mania, D. & Altermann, M.: Das Quartär von Schöningen im nördlichen Harzvorland, S. 1 – 190, 73 Abb., 5 Tab., 20 Taf.

Die umfangreiche, ausführlich bebilderte und mit hervorragenden Fototafeln ausgestattete Arbeit von Mania & Altermann ist das Ergebnis von jahrelanger, mühsamer Geländearbeit; diese angesichts des Umfangs angemessen zu würdigen, ist kaum möglich, zumal auch einige offene Fragen zur Sprache gebracht werden müssten und nicht der neueste Stand widergegeben ist.

Der Beitrag von Mania (147 S.) beginnt mit einer ausführlichen Übersicht der quartärgeologischen Verhältnisse des Harzvorlandes, speziell des subherzynen Beckens sowie des Saalegebietes, bevor die Geologie des Schöninger Gebietes zur Sprache kommt. Gleich zu Beginn (Abb. 7) werden die Profile der eingangs aufgeführten vier Diplomarbeiten dargestellt. Abb.8 zeigt, in die mächtige Grundmoräne eingetieft und mit Beckenschluff an der Basis, ein gut 100 m breit austreichendes Holstein-Interglazial (Urban et al. 1988). Leider fehlt in Abb. 7 die Position desselben, die jedoch aus Abb. 11 bei Meyer 2012 ersichtlich ist (Punkt P), dort genau in der angeblichen Rinne II zu liegen kommt («Reinsdorf»). Gleiches trifft auch für das Holstein-Profil P 13 von Hartmann (1988) zu.

Die angebliche «Reinsdorf-Rinne» im Nordfeld ist also durch zwei pollenanalytisch gesicherte Holstein-Profile gekennzeichnet. Hinzu kommt noch P 19 als weiteres Holstein Profil (Abb. 10), nun in der angeblichen Rinne III liegend. Die Kartierung zeigt jedoch, dass die Holstein-Schichten nicht in Rinnen auftreten, sondern an flache Mulden gebunden sind. Das Profil der Dipl.-Arbeit von Lenhard (1989) wird in Abb. 10 widergegeben; es verläuft in seinem Nordteil nur wenige 10er m östlich desjenigen von Hartmann (1988). Humose Schluffe mit Torflaggen werden von Urban et al. 1991 einer «Schöningen – Warmzeit» zugerechnet und von Mania einer gesonderten Rinne III zugewiesen. Da die organogenen Schichten aber im gleichen Niveau wie das benachbarte Holstein auftreten, ist eine Gleichsetzung zu erwägen (Abb. 5, Meyer 2012). Eine selbständige Schöningen-Rinne ließ sich durch das Nordfeld nicht verfolgen, auch nicht am «Bahnpfeiler».