

Chronology of the European Russian Gravettian: new radiocarbon dating results and interpretation

Die Chronologie des Europäisch-Russischen Gravettien: neue Radiokarbon-Ergebnisse und deren Interpretation

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ABSTRACT - It is now well established that many previously obtained radiocarbon dates for the earlier part of the Upper Palaeolithic are problematic, and that archaeological chronologies based on such dates may require revision. In order to help address this problem for the Gravettian of European Russia, eight new radiocarbon dates were obtained on samples of bone from Kostënki 8 Layer II, Kostënki 4 and Borshchévo 5. The dates for Kostënki 8/II agree with the most ancient date previously obtained for the layer and confirm the dating of the assemblage to ca. 32 000-31 000 calBP, or early Greenland Stadial (GS) 5. The new dates for both Kostënki 4 and Borshchévo 5 are markedly more ancient than those previously published. They indicate that both sites are ca. 2 000 years older than formerly believed, and that both date to ca. 29 500-28 500 calBP, i.e. the very end of GS 5 or Greenland Interstadial (GI) 4. The dates suggest that Kostënki 4 and Borshchévo 5 are both older than the sites of the Kostënki-Avdeev Culture, with which they previously seemed to be contemporary. The revised chronology suggests that cold stadial conditions were associated with a relatively low number of archaeological sites in Russia, but also that a notably greater geographical distribution and number of sites may have been associated with GI 3 than with the preceding GI 4. This means that a straightforward correlation between climatic conditions and site numbers should not be postulated based on present evidence.

ZUSAMMENFASSUNG - Chronologie ist grundlegend für jede Studie des Paläolithikums, besonders auch um Variationen im mittleren Jungpaläolithikum (MUP) Europas, ca. 30 000 – 20 000 ¹⁴C BP, zu entschlüsseln. Die wichtigste archäologische Industrie des mittleren Jungpaläolithikums in Europa ist das Gravettien, definiert durch die Präsenz von Gravette-Spitzen und anderen rückengestumpften Steinartfakten. Die Variation zwischen den einzelnen Gravettien Fundplätzen ist groß, und zahlreiche geographisch und zeitlich beschränkte Gravettien faciès wurden identifiziert. Gravettien-zeitliche Fundplätze erscheinen in ganz Europa, inklusive Russland, wobei dort die Mehrheit der Fundstellen in der kleinen Kostenki-Borshchevo Region entlang des Flusses Don liegen. Bisher haben Datierungen des russischen Gravettien eine zeitliche Lücke von mehr als 4000 Jahren zwischen dem frühen Gravettien, repräsentiert durch einen einzigen Fundplatz, Kostenki 8/II, und allen anderen Gravettien Fundplätzen gezeigt. Diese beinhalten sowohl die Fundstellen der Kostenki-Avdeev Kultur (z.B. Kostenki 1/I, Avdeev und Zaraisk) als auch weitere Fundplätze (z.B. Kostenki 4 und Borshchevo 5)

Neue Radiokarbonaten wurden von acht Proben der Inventare von Kostenki 8/II, Kostenki 4 und Borshchevo 5 erzielt. Die Ergebnisse für Kostenki 8/II stimmen mit dem bisher ältesten Datum für diese Schicht überein und untermauern die Datierung dieses Fundinventars zu ca. 32 000-31 000 calBP, oder frühes Grönland Stadial (GS) 5. Die neuen Datierungen für Kostenki 4 und Borshchevo 5 sind deutlich älter als bisher veröffentlicht. Die Ergebnisse deuten an, dass beide Fundplätze etwa 2000 Jahre älter sind als bisher angenommen. Beide datieren nun ca. 29 500-28 500 calBP, das heißt am Ende von GS 5 oder Grönland Interstadial (GI) 4. Dies deutet darauf hin, dass diese Fundplätze älter als die der Kostenki-Avdeev Kultur sind, mit welchen sie bisher zeitgleich erschienen.

Die Ergebnisse haben zahlreiche Auswirkungen auf unser Verständnis der internen Chronologie des Russischen MUP. Das Alter von Kostenki 8/II und seine Zuordnung zum frühen Gravettien wurden bestätigt. Die zeitliche Lücke, die bisher im mittleren Teil des russischen Gravettien bestand, wurde verkürzt. Die Unterschiede in den Steinartefaktinventaren von Kostenki 4 und Borshchevo 5 und späteren Fundstellen kann nun teilweise mit diachronischem Wandel erklärt werden. Jedoch kann nicht der klare Unterschied zwischen Kostenki 4 und Borshchevo 5 erklärt werden, welche momentan zeitlich nicht unterschieden werden können (obgleich dies nicht heißt, dass sie zeitgleich waren). Zuletzt deuten die Ergebnisse darauf hin, dass das Klima einen großen Einfluss auf die

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Entwicklung des russischen Gravettien gehabt haben könnte. Die Lücke im archäologischen Rekord nach Kostenki 8/II korreliert mit dem späten GS 5, welches nach Erkenntnissen von Proxy Archiven in Europa mit schwerwiegenden Klimaveränderungen assoziiert ist. Die Anzahl der Populationen in Russland ging vielleicht zurück, oder die Menschen verschwanden gänzlich zu dieser Zeit. Jedoch erklären klimatische Faktoren allein nicht alle Entwicklungen ausreichend. Die deutliche Zunahme von Fundplätzen in Russland in GI 3 kann nicht allein durch interstadiale Bedingungen erklärt werden. Hierfür spricht, dass das vorherige Interstadial GI 4 keine vergleichbare Zunahme von Fundplätzen verzeichnet.

**KEYWORDS - Russia, Mid Upper Palaeolithic, palaeoclimates, ¹⁴C dating, Kostënki, Borshchëvo
Russland, Mittleres Jungpaläolithikum, Paläoklima, ¹⁴C Datierung, Kostenki, Borshchevo**

Introduction

Chronology is a key consideration in any study of the Palaeolithic. Its particular importance for understanding the European Mid Upper Palaeolithic (MUP, ca. 30–20 000 BP or 34–24 000 calBP) lies in its necessity for untangling the relationships between various archaeological industries and facies thereof, which may be linked to population interactions and/or migrations. The most significant archaeological industry of the MUP in Europe is the Gravettian, characterised by the Gravette points and other backed lithics found, often in abundance, at sites dating to this period (Demars & Laurent 1992; Djindjian et al. 1999; Noiret 2013).

Opportunities for dating the MUP accurately and precisely have improved greatly in recent years, thanks to developments in radiocarbon dating methods (e.g. Bronk Ramsey et al. 2004; Higham et al. 2006; Brock & Higham 2009; Marom et al. 2012). It is likely that at least some Upper Palaeolithic dates obtained prior to the introduction of these methods are unreliable (see Higham 2011). These problems are particularly acute for the Early and Mid Upper Palaeolithic, which helps to explain the large and archaeologically implausible spreads of dates previously published for many Gravettian sites (e.g. Damblon et al. 1996; Djindjian et al. 1999; Abramova et al. 2001). Obtaining new dates using proven methods should be a priority in any reassessment of the chronology of the earlier parts of the Upper Palaeolithic where there is doubt over the reliability of published dates.

The Gravettian is a complex Upper Palaeolithic archaeological culture. Within the Gravettian *sensu lato*, numerous smaller archaeological technocomplexes or cultures can be defined, such as the Noaillian and Pavlovian. These diverse archaeological units are often geographically as well as temporally restricted (e.g. Grigor'ev 1993; Djindjian et al. 1999; Klaric 2007). Their developments and disappearances may be linked to the rather dramatic climatic changes that occurred during this period. The timing of the beginning of the Gravettian is a subject of active debate (e.g. Conard & Moreau 2004; Jacobi et al. 2010; Jöris et al. 2010; Higham et al. 2011; Moreau 2012; Noiret 2013) and thus it is not clear exactly how it relates to the Greenland interstadial/stadial cycles.

The problem of possible time lags in the onsets of interstadial/stadial conditions across Europe also remains. However, in the Late Glacial at least, it appears that the lags between regions were of the order of decades or centuries, rather than millennia (Lane et al. 2013). The earliest Gravettian assemblages may date to before 30 000 BP, in which case they appeared around the same time as Greenland Interstadial (GI) 6, but this early dating remains rather controversial (Jöris et al. 2010; Noiret 2013; Rasmussen et al. 2014). In any case the earlier stages of the Gravettian certainly include the relatively substantial warm period of GI 5, which was followed by colder conditions during the long Greenland Stadial (GS) 5, to which time Heinrich Event (HE) 3 is also dated (Sanchez Goñi & Harrison 2010). Although there were two more GIs (4 and 3) during the Gravettian, these were short-lived in comparison with earlier interstadials. The final disappearance of Gravettian assemblages across Europe may be linked with the onset of the Last Glacial Maximum (LGM).

The Gravettian as a technological tradition is generally accepted to be restricted to Europe (Kozłowski 2015). The easternmost sites attributed to the Gravettian are found in European Russia, and the similarities between the sites found there and those farther west have been recognised for many decades (Garrod 1938; Roe 1971). However, for a number of reasons (language and communication barriers, differences in intellectual traditions, etc.) it has been very difficult for Western archaeologists to integrate information about the Russian record into general overviews of the European Gravettian. Such an integration is highly desirable, in order to address some of the most interesting questions concerning the European Upper Palaeolithic. These include the nature of the beginning of the Gravettian, responses to climatic and environmental changes during the MUP, the relationships between various sub-units of the Gravettian, and the possible existence of open cross-continental social networks, postulated especially on the basis of finds of female "Venus" figurines at sites across Europe (Gamble 1982, 1991).

A number of sites in Russia are commonly attributed to the Gravettian on the basis of their lithic assemblages and other elements of their material culture (e.g. figurines). The majority of these sites are