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# THE ROLE OF LEAF POINTS IN THE LATE MIDDLE PALAEOLITHIC OF GERMANY

Jürgen RICHTER*

***Abstract***

*Central European Middle Palaeolithic leafpoints are usually seen as elements of one large cultural complex. The present paper informs about chronological problems and regional differences, based on data from the most important leafpoint sites, Mauern and Ranis. In Germany leafpoints occur as occasional elements of the Central European Micoquian/M.M.O. (i.e. Mousterian with Micoquian Option) throughout the whole period of the M.M.O. (ca. 60.000 B.P.–38.000 uncal. B.P.). Moreover, in the final Micoquian/M.M.O.-there seems to have been a tendency towards larger and more perfectly shaped leafpoints. This has been used to forward the term "Altmuehlgruppe" which should now be rejected as a term labelling a distinct cultural unit. In Eastern Germany another kind of leafpoints, known as Jerzmanovice points, occurred at the same time, indicating a development of two distinct cultural units (M.M.O.-C and Jerzmanovician) dividing an area which had previously belonged together within the limits of the distribution of Micoquian/M.M.O. sites. Because of the occurrence of Jerzmanovice points which correspond to those from Poland, also the term "Ranisian" should not be used for German leafpoint assemblages.*

Through the comprehensive study by G. Freund it had become clear that Central European leafpoints occurred during the Middle Palaeolithic, not in the Upper Paleolithic as in Western Europe ("Solutrean"). G. Freund named the Central European Middle Palaeolithic leafpoint assemblages "Pre-Solutrean", and G. Bosinski labelled the same industries as "Altmühlgruppe" ("Altmuehlian"), thus using a term which had originally been coined by Bohmers after the Altmühl River, a Bavarian tributary to the Danube River. Most authors since understood the Altmuehlian as one of several Western Central European branches or neighbours of the Szeletian. The Szeletian and all of its regional variants are currently seen as Late Middle Palaeolithic or "transitional" cultural phenomena.

Because they are dated to the very end of the Middle Palaeolithic, those industries are regularly involved in the discussion concerning the anthropological transition between Neanderthal Man and Homo sapiens sapiens at about 40.000 B.P. Presently, however, there is no attested association between one or the other human kind and German leafpoint industries.

In Germany there are only very few stratified sites which yielded Middle Palaeolithic leafpoints. The Weinberghöhlen near Mauern/Bavaria and Ranis Cave underneath Ranis Castle/Thüringen both delivered abundant numbers of leafpoints, other sites, such as Sesselfelsgrotte, yielded only a few pieces but provide important information on leafpoint stratigraphy (Fig. 1).

## The Weinberghöhlen stratigraphy at Mauern/Bavaria

The Weinberg group of caves is situated in the Wellheim dry valley near Mauern, a village not far from Neuburg/Bavaria. The Wellheim dry valley is part of an old riverbed of the Pre-Eemian Danube, leaving the present bed of the Danube in a northerly direction, then joining the lower Altmuehl Valley to return to the main bed of the Danube River. Weinberg and its caves are part of the jurassic limestone plateau of Southern Franconia.

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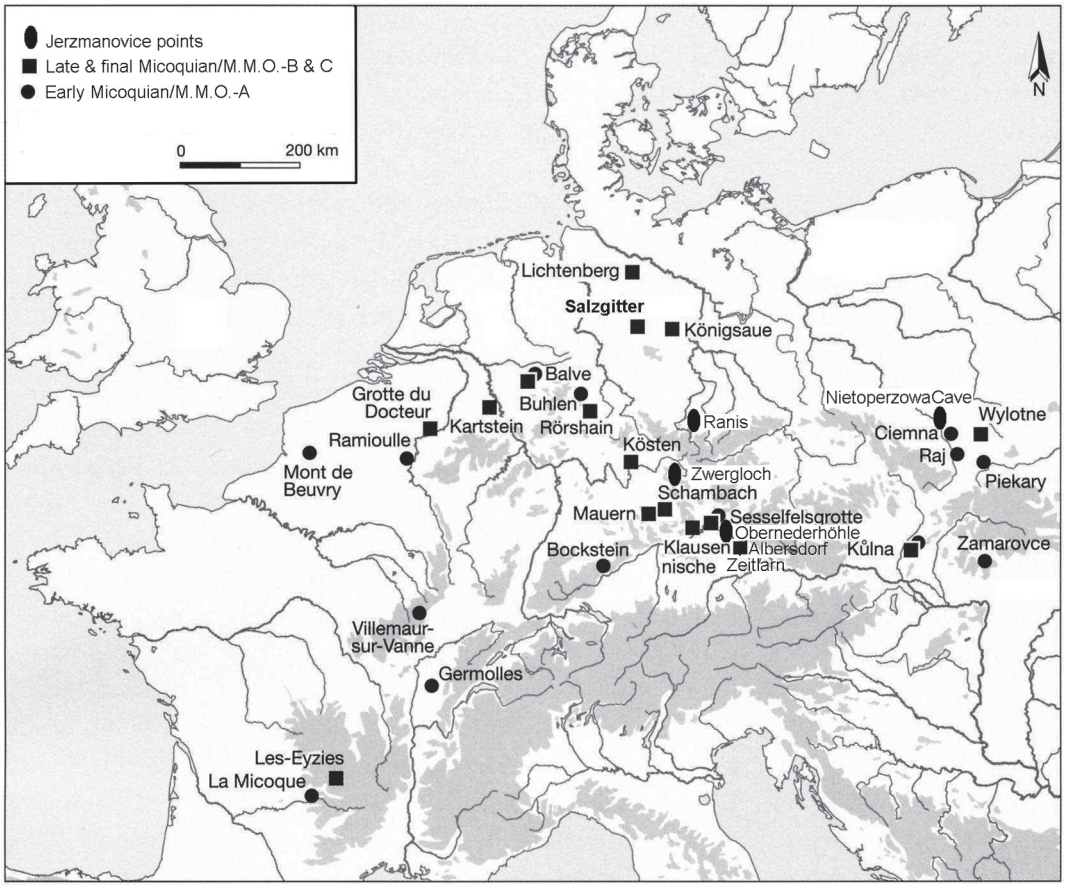


*Fig. 1. Central Europe with Micoquian/M.M.O. sites and late Late Middle Palaeolithic Blattspitzen sites (except isolated surface finds).*

The caves were excavated in 1935 by Seitz and Eckstein, in 1937 by R.R. Schmidt, in 1937–1938 by A. Bohmers, in 1947–1949 by L.F. Zotz and in 1967 by H. Müller-Beck (Koenigswald et al., eds., 1974). Under a Holocene deposit a loess layer (Zone 1) was uncovered, followed further below by a redeposited soil horizon (Zone 2), limestone rubbles with loess (Zone 3) and a sequence of different, more or less loamy layers (Zone 4 – Zone 5). Abundant faunal remains (85 taxa) indicate glacial climate for the whole sequence, possibly with a slight tendency from forest-tundra (zone 5–4) towards a more open, steppic environment (zone 3–1).

In their 1974 monograph, Müller-Beck and Koenigswald argued for an early Weichselian age (OIS 5) of Zone 5 Micoquian, an "Hengelo" (OIS 3) age for the "Altmuehlian" and a "Denekamp" age for the Gravettian.

Nowadays, as the early Weichselian interstadials (OIS 5c and OIS 5a) have turned out to have been widely forested and of moderate climate, the glacial fauna of Zone 5 (Micoquian) would rather suggest an OIS 3 age for the lower part of the Weinberghöhlen stratigraphy. If compared to the similar but more complete stratigraphic sequence at the nearby Sesselfelsgrotte, an early to mid-OIS 3 date is quite appropriate for Zone 5, which would place the whole Mauern sequence into the Interpleniglacial (OIS 3 to OIS 3/2) of the Weichselian glaciation (60.000 B.P. – 28.000 uncal. B.P.). The faunal assemblages of Zone 4 ("Altmuehlian") do not show any differences from those of Zone 5, and the chronological distance between both assemblages could well be very small. This would place both Zone 5 and Zone 4 into the early or middle part of OIS 3. In North-Western Europe this is the time range of the Oerel, Glinde, Moershoofd and perhaps Hengelo interstadials. Above, between Zone 4

*Table 1. The Weinberghöhlen stratigraphy after Müller-Beck (Koenigswald* et al.*, eds., 1974).*

| Layer | Horizon (Müller-Beck 1974) | Cultural unit | Fauna | Number of stone artefacts found | Dating (this paper) |
|---|---|---|---|---|---|
| A–B | **Zone O** | Neolithic to medieval | – | | |
| C | **Zone 1** | Gravettian ("Pavlovien") | Cave bear, mammoth, hyaena, horse, wholly rhino, reindeer, bison etc. | 2600 | OIS 3/OIS 2 |
| D | **Zone 2** | – | Cave bear, hyaena, horse, wholly rhino, reindeer etc. | | |
| E | **Zone 3** | – | Cave bear, hyaena, horse, reindeer etc. | | |
| F | **Zone 4** | Micoquian ("Altmuehlian") | Cave bear, mammoth, hyaena, horse, wholly rhino, reindeer, bison | 398 | OIS 3 |
| G/H/I | **Zone 5** | Micoquian | Cave bear, mammoth, hyaena, horse, wholly rhino, reindeer,bison | 609 | OIS 3 |

("Altmuehlian") and Zone 1 (Gravettian) there is obviously a large stratigraphic gap.

Such a gap is repeated at the Sesselfelsgrotte. There the Middle Palaeolithic occupation (layer E3) ends at about 38.000 uncal. B.P. The occupation surface of that time underwent some erosional processes and some Gravettian artefacts were later discarded on the same surface, followed by loessic sediments of the OIS 2 glacial maximum.

In Bavarian caves and rock shelters there is not a single stratigraphic sequence to close this gap between 38.000 and 29.000 uncal. B.P. Nevertheless, the Aurignacian may partly fill it, as attested by the Aurignacian occupation of the open-air site at Keilberg near Regensburg, dated to 38.000 B.P. Later Aurignacian phenomena are totally absent from Bavaria, thus essentially contrasting South-Western Germany with its famous Geissenklösterle, Hohlenstein-Stadel and Vogelherd sites representing the whole Aurignacian time range.

The stratigraphic gap is followed by the Zone 1 Gravettian occupation, which is famous for the red-coloured female sculpture found in this horizon. Two radiocarbon dates (GrN-5000: 29,410±470 BP and GrN-6059: 28,265±325 BP) are probably connected with the Gravettian occupation (Koenigswald *et al.*, eds., 1974: 10). Such dates are in good accordance with early Gravettian dates elsewhere, indicating an age just at the end or shortly after the end of the so-called "Denekamp" interstadial.

## The Micoquian and "Altmuehlian" relationship at Mauern

The Mauern-Zone 4 assemblage became the reference phenomenon of the so-called "Altmühlgruppe" (Altmuehlian, cf. Bosinski 1967: 56–63), which is characterised by large, perfectly shaped leafpoints as *fossils directeurs*. The Zone 4 inventory comprises 43 of these tools. Some of them are very large and thin, due to the high quality of the local raw material, consisting of jurassic flintstone slabs. It has been emphasized (Richter 1997), however, that both assemblages, Zone 5 (classified as Micoquian, Fig. 2) and Zone 4 (classified as "Altmuehlian", Fig. 3) display inventories of an essentially identical type (both including leafpoints; see table 2), standard Middle Palaeolithic tools prevailing along with some bifacial tools of Micoquian character, such as flat handaxes and *Keilmesser* (backed bifacial knives). Thus, the

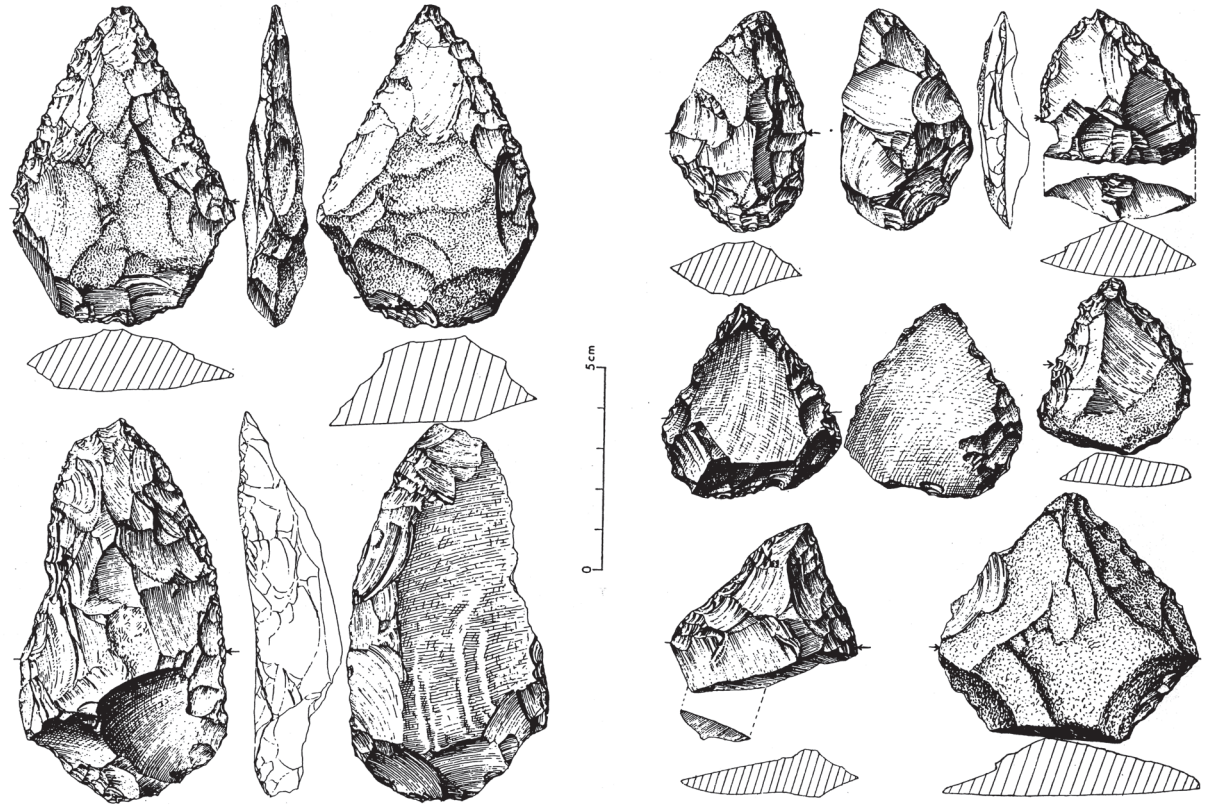


*Fig. 2. Mauern Zone 5 (Weinberghöhlen). Micoquian/M.M.O. assemblage (compiled from Koenigswald* et al.*, eds., 1974: 123 and 125).*

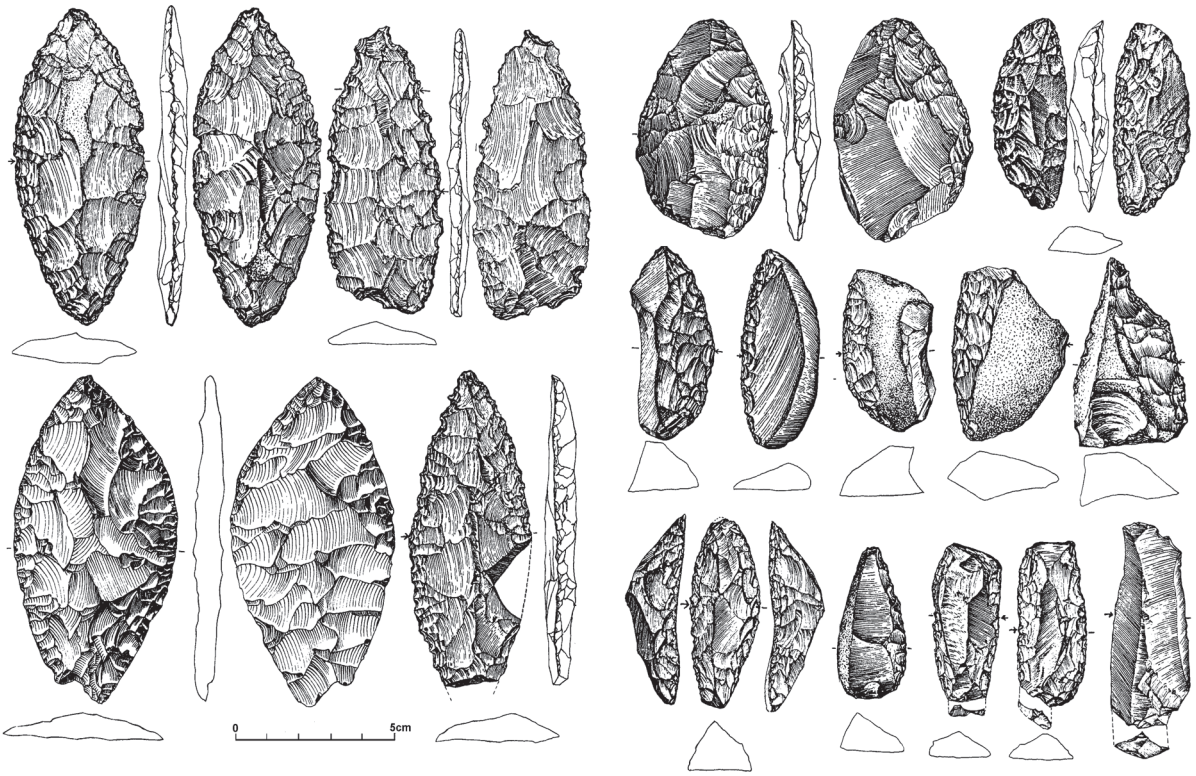


*Fig. 3. Mauern Zone 4 (Weinberghöhlen). "Altmuehlian" final Micoquian/M.M.O.-C assemblage with abundant leafpoints (compiled from Bosinski 1967: 121 and 122).*

*Table 2. Weinberghöhlen Zone 5 and Zone 4 inventories compared by type list.*

| | **Micoquian Zone 5** | **"Altmuehlian" Zone 4** |
|---|---|---|
| **Total artefacts** | **609** | **398** |
| **Subtotal tools** | **89** | **111** |
| - handaxe | 1 | 2 |
| - Keilmesser | 2 | 1 |
| - leafpoints | 6 | 43 |
| - convergent side scrapers | 16 | 11 |
| - convex side scrapers | 32 | 21 |
| - straight side scrapers | 11 | 9 |
| - concave side scrapers | 5 | 6 |
| - double side scrapers | 2 | 14 |
| - endscrapers | 4 | – |
| - notched/denticulated | 5 | 3 |
| - others | 2 points | 1 burin |
| - retouched blades | 3 | – |

Zone 4 assemblage should be interpreted in terms of particular activities carried out at the site rather than in terms of a cultural origin distinct from the Micoquian.

However, Zone 4 leafpoints tend to be much more perfectly shaped than their Zone 5 predecessors. Zotz (Zotz 1955) published one leafpoint from the lower horizon (i.e. Zone 5) which is indeed absolutely equal in quality and size to its Zone 4 equivalents, but the stratigraphic attribution remains questionable for this piece (Fig. 4).

Again, matching evidence comes from Sesselfelsgrotte where one high-quality leafpoint fragment occurred along with standard Middle Palaeolithic tools and Micoquian bifacial tools quite at the end of the Middle Palaeolithic sequence. Similar associations have been found at the nearby Hohle Stein/Schambach cave site and at the Oberneder cave site in the Altmühl valley. At all four of these sites leafpoints were found to be associated with Micoquian (M.M.O.: Mousterian of Micoquian Option) tools made mostly of local flint slabs, along with a standard unifacial toolkit mostly made of blanks produced in the Levallois technology. The kind of Levallois production applied here was designed in order to produce a considerable number of elongated flakes based on the uni-directional, parallel recurrent Levallois scheme. It seems that also end-scrapers, though absent from the Zone 4 assemblage, belong quite regularly to this kind of final Micoquian (M.M.O.) assemblages. They occur at Sesselfelsgrotte (Fig. 5) and at some Eastern Bavarian open-air sites, along with leafpoints and Micoquian bifacial tools, as recently compiled by Thorsten Uthmeier in his

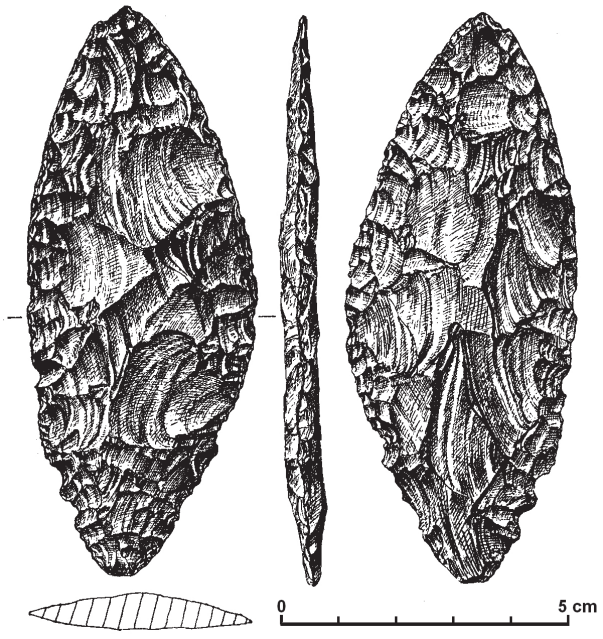


*Fig. 4. Mauern (Weinberghöhlen). Perfectly worked leafpoint attributed by Zotz to what was later labelled Zone 5 (after Zotz 1955: fig. 49).*

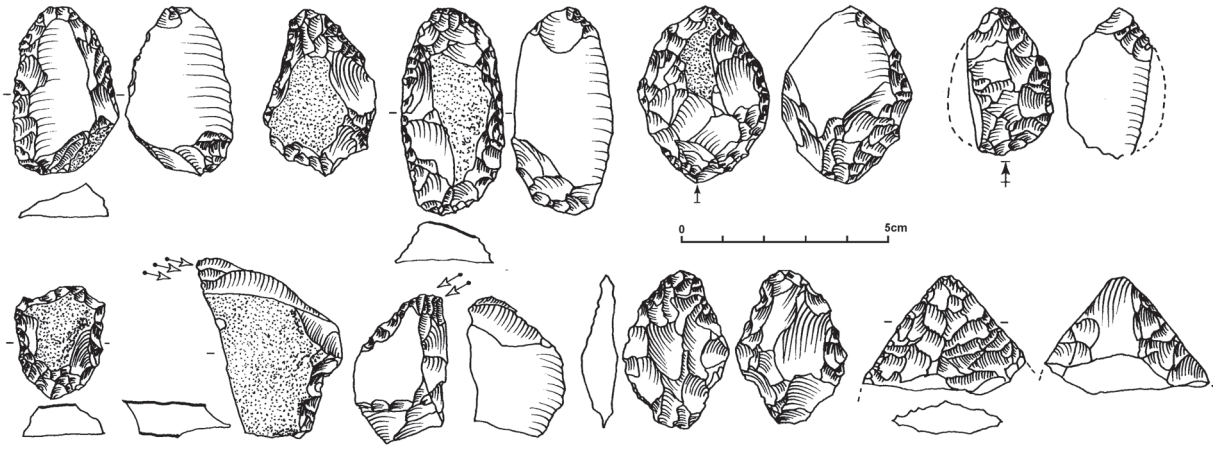


*Fig. 5. Sesselfelsgrotte, selected late Middle Palaeolithic Micoquian/M.M.O. archaeological units. Leafpoints, end-scrapers, burins (compiled by Uthmeier 2004, pl. 6).*

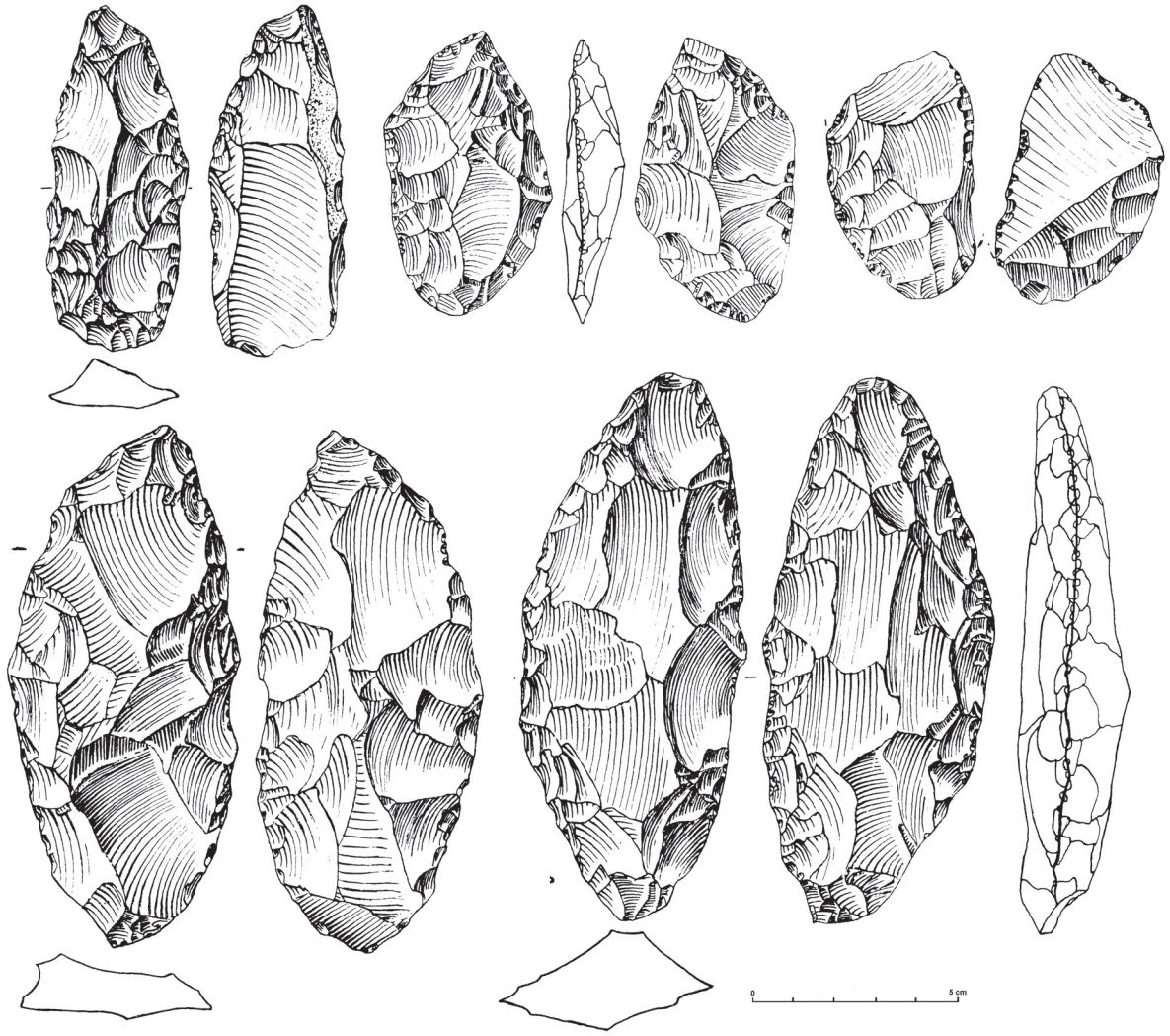


*Fig. 6. Bocksteinschmiede, archaeological unit Bockstein III. Leafpoints associated with the Early Micoquian/M.M.O.-A (after Wetzel & Bosinski 1969: pl. 93).*

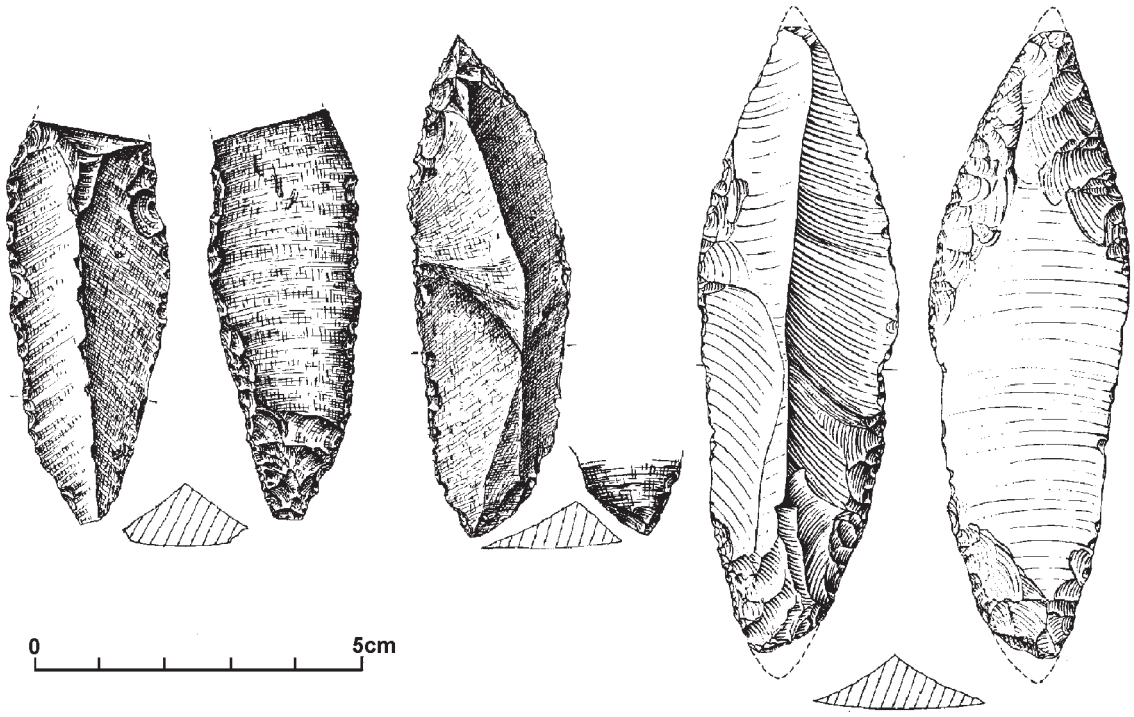


*Fig. 7. Jerzmanovice points from Bavaria.*
*1: Obernederhöhle, lower layer 2; 2: Obernederhöhle, layer 3; 3 Zwergloch/Pottenstein*
*(Freund 1987: Figs 63,5 and 44,1; Freund 1963: 81).*

thesis about the Middle to Upper Palaeolithic transition in Bavaria (Uthmeier 2002).

If leafpoints, Levallois blades and end-scrapers belong to final Micoquian phenomena, this does not mean that leafpoints are generally absent from earlier Micoquian assemblages. The Bockstein-III assemblage (Fig. 6), which is supposed to be early Micoquian (early OIS 3 as the present author presumes), contains a number of classical leafpoints (Bosinski 1967, pl. 73). Thus, in Southern Germany leafpoints usually reach back to the early OIS 3 (around 60.000 B.P.) but only quite rarely further down to the early Wechselian glacial (115.000–60.000 B.P.) and the Eemian interglacial (130.000–115.000 B.P.), when unifacial Mousterian industries prevailed.

To summarize the evidence from the Weinberghöhlen stratigraphy and neighbouring sites, the term "Altmuehlian" should be rejected as a distinct cultural unit. The "Altmuehlian" assemblages are part of the final Micoquian (M.M.O.), principally not distinguished by typological or technological means. The final Micoquian marks the very end of the Middle Palaeolithic before 38.000 B.P. In Southern Germany this was immediately followed by the Upper Paleolithic Aurignacian both at Keilberg/Bavaria and Geissenklösterle/ Baden-Württemberg. There is no space left for "transitional" industries, the Final Micoquian being essentially Middle Palaeolithic and the Aurignacian being Upper Palaeolithic.

This applies also to a possible Jerzmanovician industry in Bavaria. Most interestingly, three typical Jerzmanovice points (Fig. 7) were found in Bavaria, two in the Oberneder cave and one in the Zwergloch cave near Pottenstein (Northern Bavaria). According to the Bavarian evidence, there is no exclusive time span for a Jerzmanovician transitional stage, and the Jerzmanovician can only be contemporaneous with the final Micoquian, thus indicating a distinct cultural unit neigbouring the final Micoquian to the east. The stratigraphic position of the German Jerzmanovician can be established from the Ranis cave site in Central Germany.

## The Ranis cave stratigraphy in Central Germany

The Ilsenhöhle cave at Ranis castle is situated in a Zechstein dolomite rock rising more than 100 m above the Orla basin near Pößneck/Gera (Fig. 1). The first excavations began 1926 and were continued by W. Hülle 1932–1938 (Hülle 1977).

The stratigraphy (up to 10 m) consists mainly of typical cave sediments. Under medieval debris (layer I) and humic, calcareous sands (layer II) there followed a sandy, brown layer and a dark layer (layer III–IV), a horizon of abundant rodent remains (layer V), then yellow loams with an incorporated dark cultural horizon (layer VI), then brown loams with weathered limestone rubble (layer VII), a dark grey "black cultural layer" (layer VIII), a brown (layer IX) and a basal greyish layer (layer X) covering the bedrock.

The basal layer (Ranis 1) lacks diagnostic pieces, except a large bifacial point and a bifacial scraper (or *Keilmesser*), which are usually attributed to some kind of Micoquian (Hülle 1977: 104). The artefacts are made of flintstone slabs, which is exceptional for Ranis (Fig. 8). Hülle described the Ranis 1 inventory as quite heterogenous, attesting to possibly more than one occupation. As possible hunting prey, reindeer occurred in this layer.

*Table 3. Ranis stratigraphy, compiled after Müller-Beck (Hülle 1977, 58) and Feustel (Hülle 1977, 61); dating and cultural units as interpreted by the present author.*

| **Layer** | **Stage** | **Cultural Unit** | **Fauna** | **Number of stone artefacts** | **Dating** |
|---|---|---|---|---|---|
| I–II | – | Prehistoric to medieval | | | OIS 1 |
| V–III | **Ranis 5** | Late Palaeolithic | Pig, red deer, fox, rodents | 48 | OIS 2/1 |
| VI | **Ranis 4** | Mixed Upper/Late Palaeolithic | Reindeer, horse, wholly rhino, cave bear, aurochs, musk ox, rodents etc. | 62 | late OIS 2 |
| VIII–VII | **Ranis 3** | Aurignacian with Middle Palaeolithic admixture | Cave bear, red deer, wholly rhino | 140 | OIS 3 |
| X–IX | **Ranis 2** | Jerzmanovician | Cave bear, wholly rhino, red deer, cave hyaena | 63 | OIS 3 |
| XI | **Ranis 1** | Micoquian (?) | Cave bear, reindeer | 16 | ? |

*Table 4. Stone artefacts from Ranis 1 and Ranis 2 compared (Hülle 1977, 103, 106).*

| | **Micoquian Ranis 1** | **Jerzmanovician Ranis 2** |
|---|---|---|
| **Total artefacts** | **16** | **63** |
| **Subtotal tools** | **2** | **63** |
| - flat handaxe *Faustkeilblatt* | 1 | – |
| - bifacial scraper | 1 | 6 |
| - Jerzmanovice points | – | 24 |
| - leafpoints | – | 19 |
| - scrapers etc. | – | 11 |
| - tools made on quartzite | – | 3 |

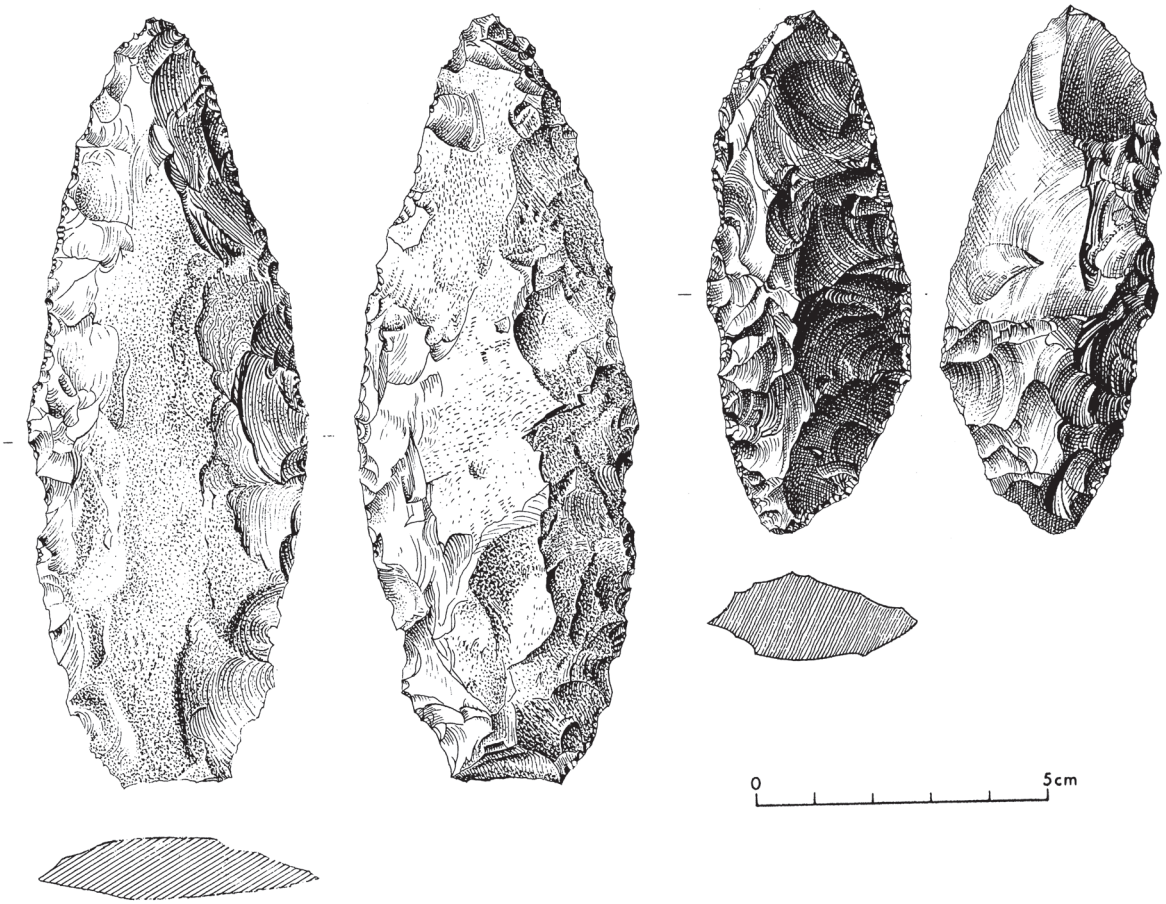


*Fig. 8. Ranis 1 (Ilsenhöhle). Micoquian/M.M.O. assemblage.*
*Faustkeilblatt and bifacial scraper (Hülle 1977, pl.1 and pl. 2).*

The next horizon is also known as Ranis 2, and it became famous for its series of perfectly made "Jerzmanovician" points (Fig. 9). Such points are made of pointed blades or elongated flakes, with partial or total surface shaping on both the upper and lower faces. Along with those classic Jerzmanovice points, Ranis 2 yielded also some large leafpoints which can be very well compared to final Micoquian ("Altmuehlian") leafpoints from the Weinberghöhlen-Zone 5 and 4 assemblages. Ranis 2 lacks any remnants of lithic production, as cores, flakes and chips are totally absent. This underlines the special function of the Jerzmanovician occupation, the Ranis cave obviously serving as a site for renewing lance or spear points, used pieces to be discarded at the place. The Jerzmanovice points can be compared perfectly well to the finds from the Nietoperzova cave near Jerzmanovice/Poland, which gave its name to the *fossils directeurs* and to the connected cultural unit, dated at about 38.000 uncal. B.P. Red deer occurred among the Ranis 2 faunal remains as the only species possibly connected with hunting.

Above the Jerzmanovician horizon there follows the Ranis 3 complex (Fig. 10), tentatively attributed to the Aurignacian by J. Hahn (1977). The assemblage is obviously admixed by Middle Palaeolithic elements, as Levallois cores and products occur. Two backed points may indicate also a Late Palaeolithic admixture, coming from Ranis 4 or Ranis 5. After the Ranis 3 occupation the roof of the cave collapsed and probably the cave was abandoned for several thousands of years. Contradicting the excavators´ opinion, both Ranis 4 and Ranis 5 indicate possible Late Upper Palaeolithic and obvious Late Palaeolithic human occupations of the cave, as shown for example by a number of backed points (*Federmesser*). This is also

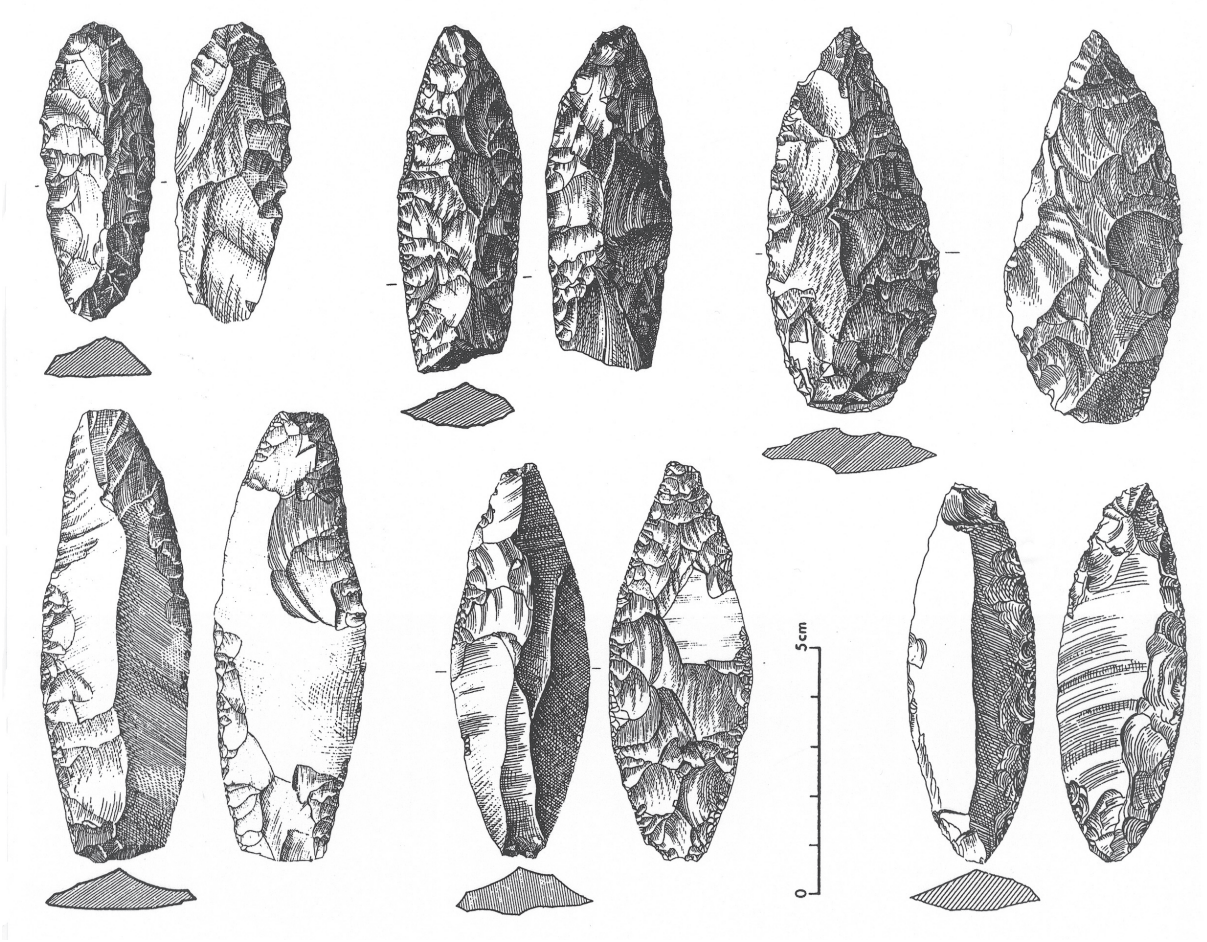


*Fig. 9. Ranis 2 (Ilsenhöhle). Jerzmanovician assemblage.*
*1–3: leafpoints or bifacial scrapers and 4–6: Jerzmanovice points (Hülle 1977, pl. 8, pl. 17, pl. 30, pl. 31).”*

emphasized by the presence of animals adapted to forest environment, such as aurochs and pig, in these horizons.

To summarize, Ranis Cave is the most important site in Germany with regard to the relative chronology of the Jerzmanovician, attesting to its stratigraphic position above a kind of Micoquian and under a kind of Aurignacian.

## Leafpoints in Ranis and Mauern compared: the German chronology

Being the most important observation from Mauern, the “Altmuehlian” cannot be proven to be a Late Middle Paleolithic cultural horizon which is clearly distinct from the final Micoquian, but it is rather an integral part of the same cultural unit.

On the other hand, the Jerzmanovician assemblage from Ranis displays some exclusive typological and technological features, i.e. the particular production of bifacially/partially retouched points on blades which are almost totally absent from the Micoquian, except some very rare imports in South-Eastern Germany (see below). Thus, the Jerzmanovician must be accepted as a distinct cultural unit – distinct from the preceding Micoquian, distinct from the contemporaneous final Micoquian/“Altmuehlian” and also from the subsequent Aurignacian.

Both final Micoquian/“Altmuehlian” and Jerzmanovician have the same chronological position in common, between local Micoquian and local Aurignacian. Both cultural units, final Micoquian/“Altmuehlian” and Jerzmanovician, were obviously contemporaneous neighbours. This is emphasized by the attested presence of an

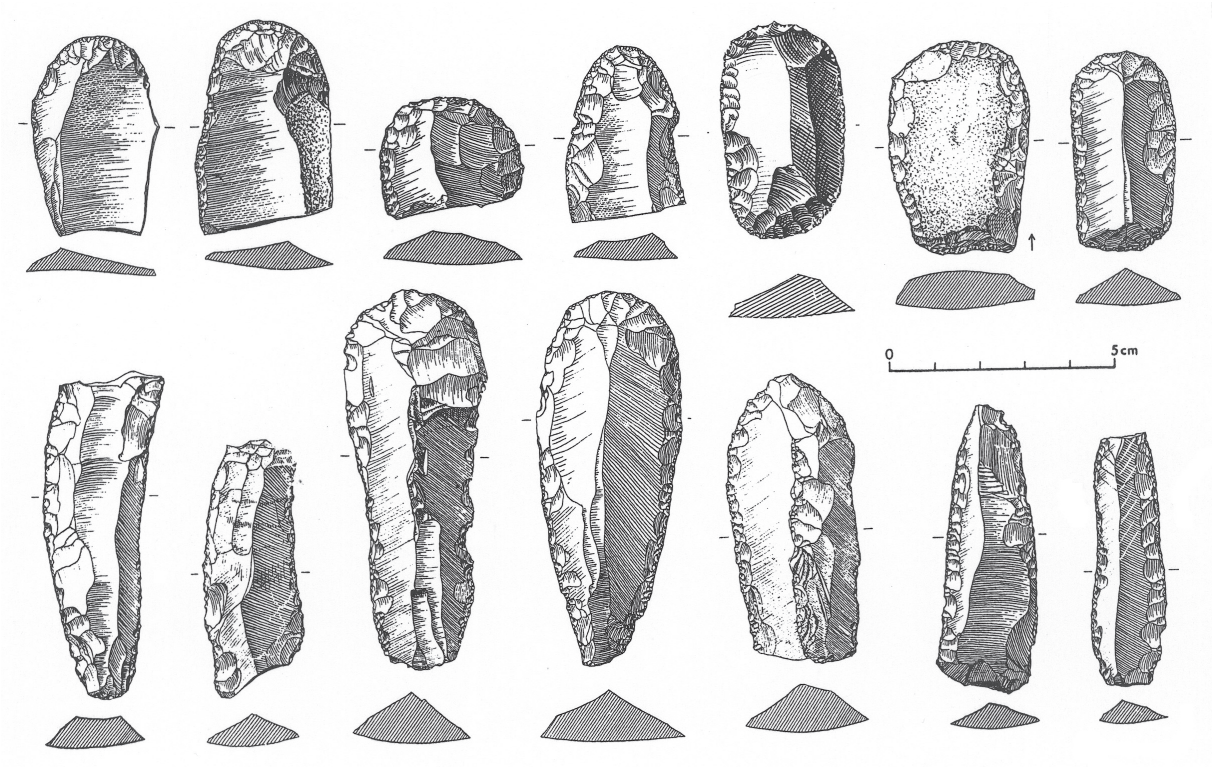


*Fig. 10. Ranis 3 (Ilsenhöhle). Early Upper Palaeolithic (Aurignacian ?). 1–4: end-scrapers; 5–8: double scrapers; 9–10 and 14–15: retouched blades; 11–13: end-scrapers on retouched blades (Hülle 1977, pl. 47 and pl. 48).*

imported "Altmuehlian" leafpoint (Bolus 2004 after Th.Weber) made of Bavarian plaquette silex within the Ranis 2 assemblage. Vice versa, two Jerzmanovician points have been found along with a Micoquian assemblage at the Oberneder cave, and another one was recovered from the Hasenloch cave near Pottenstein.

Growing functional diversity seems to be another feature which final Micoquian/"Altmuehlian" and Jerzmanovician have in common.Toolkits highly specialized on virtually one single tool form, such as the Ranis 2 case, cannot represent the whole artefact spectrum of one cultural unit: it is quite clear that such assemblages display only a small part of the whole range of artefacts and a small range of connected activities. If compared with a larger sample of leafpoint assemblages, it seems that assemblages with not much more than one or two leafpoints (f.e. Haldensteinhöhle) were connected with hunting activities within radial settlement systems, centering around family camps. In this case, the leafpoint sites would have been short halts or overnight camps of hunters groups, sent out from a central campsite. Larger assemblages of the same degree of specialization (such as Ranis 2) are then best explained as mere aggregations of such short hunting halts, and not as a principally distinct functional group of sites. If larger leafpoint assemblages cannot be interpreted as campsites, the question arises what such campsites may have looked like. The corresponding campsites should not only display larger assemblages, but they must also show a higher diversity of tools. This would mean that the campsites corresponding to the Ranis 2 hunting halt are still to be searched and found in Eastern Germany.

For the Southern German case the situation is much better known, since Th. Uthmeier forwarded a comprehensive model of the final Micoquian/"Altmuehlian" annual land use pattern. In this model, Mauern-Zone 4 would be a short hunting halt, corresponding to campsites like Hohler Stein and Sesselfelsgrotte, where final Micoquian assemblages have been

*Table 5. The German OIS 3 chronology.*
*Absolute dating: note that the upper part of the table shows uncalibrated $^{14}C$ years, but the lower part estimated solar years (mostly based on TL dates).*

| **Absolute dating B.P.** | **Southern Germany** (Richter 1997) | **Blank production** | **Facial production** | **Mobility, land use and toolkit** | **Eastern Germany / Poland** |
|---|---|---|---|---|---|
| 38.000–29.000 uncal. | **Aurignacian** | blade production | Few bifacially worked tools | High degree of functional and seasonal differentiation | Aurignacien |
| 40.000–38.000 uncal. | **M.M.O. - C Final Micoquian** | Parallel and centripetal Levallois ***blades*** | Plano-convex bifacial tools ***Jerzmanovice points*** | Growing differentiation between workshop and consumption sites, sometimes with abundant leafpoints | ***Jerzmanovician*** |
| ca. 50.000–40.000 | **M.M.O. - B Late Micoquian** | Centripetal Levallois | Plano-convex bifacial tools | Growing sesaonal differentiation with either unifacial or bifacial preference, sometimes with abundant leafpoints | Late Micoquian |
| ca. 60.000–50.000 | **M.M.O. - A Early Micoquian** | Quina or discoidal production, few Levallois | Plano-convex bifacial tools | | Early Micoquian |

*Table 6. Late Middle Palaeolithic leafpoint assemblages in Germany, except isolated surface finds. The asterisk* indicates sites previously attributed to the "Altmuehlian" by some authors. References are given preferably for general overviews over leafpoint assemblages, such as Freund 1952, Uthmeier 2004 and Bolus 2004.*

| | **Site name** | **Region** | **Cultural attribution** (this paper) | **Reference** |
|---|---|---|---|---|
| 1 | Albersdorf | Bavaria | *Micoquian/M.M.O. | Uthmeier 2004, 275 |
| 2 | Arnsheim/Kirtorf | Hesse | Micoquian/M.M.O. | Fiedler 1994, 245–246 |
| 3 | Bocksteinschmiede III | Baden-Württemberg | Early Micoquian/ M.M.O. | Wetzel & Bosinski 1969, pl. 93 |
| 4 | Große Grotte/Blaubeuren II | Baden-Württemberg | Micoquian/M.M.O. | Uthmeier 2004, 275 |
| 5 | Haldensteinhöhle | Baden-Württemberg | *mixed | Uthmeier 2004, 275 |
| 6 | Hohler Stein/Schambach IV,2 | Bavaria | Final Micoquian/ M.M.O. | Uthmeier 2004, 275 |
| 7 | Ilsenhöhle | see Ranis | | |
| 8 | Kartstein III | Northrhine-Westfalia | Micoquian/M.M.O. | Richter 1997, 239 |
| 9 | Klausennische | Bavaria | Micoquian/M.M.O. | Freund 1952, 126, fig. IX,4 |
| 10 | Kösten | Bavaria | Micoquian/M.M.O. | Uthmeier 2004, 275 |
| 11 | Lenderscheid | Hesse | Micoquian/M.M.O. with MtA type handaxes | Fiedler 1994, 252–257 |
| 12 | Maden/Gudensberg | Hesse | Micoquian/M.M.O. | Fiedler 1994, 259 |
| 13 | Mauern-Zone 4 | Bavaria | *Final Micoquian/ M.M.O. | Uthmeier 2004, 275 |
| 14 | Mauern-Zone 5 | Bavaria | Micoquian/M.M.O. | Uthmeier 2004, 275 |
| 15 | Mittlere Klause | Bavaria | ? Micoquian/M.M.O. | Freund 1952, 126, fig. IX,4 |
| 16 | Mundelsheim | Baden-Württemberg | *Micoquian/M.M.O. | Bolus 2004 |
| 17 | Rörshain | Hesse | Micoquian/M.M.O. with MtA type handaxes | Bolus 2004 |
| 18 | Obere Klause | Bavaria | ? Micoquian/M.M.O. | Freund 1952, 126, fig. IX,1–2 |
| 19 | Obernederhöhle | Bavaria | Micoquian/M.M.O. with imported Jerzmanovice points | Uthmeier 2004, 275; Freund 1987, fig. 63.5 and fig. 44.1 |
| 20 | Ranis 2 | Thuringia | *Jerzmanovician | Uthmeier 2004, 275 |
| 21 | Schönsreuth | Bavaria | ? Micoquian/M.M.O. | Freund 1952, 126, fig. IX,12 |
| 22 | Sesselfelsgrotte G1 | Bavaria | Final Micoquian/ M.M.O | Uthmeier 2004, 275 |
| 23 | Treis/Staufenberg | Hesse | Micoquian/M.M.O. | Fiedler 1994, 227–228 |
| 24 | Weinberghöhlen | see Mauern | | |
| 25 | Wahlen/Kirtorf | Hesse | Micoquian/M.M.O. with MtA type handaxes | Fiedler 1994, 229–244 |
| 26 | Zeitlarn 1 | Bavaria | *Micoquian/M.M.O. | Uthmeier 2004, 275 |
| 27 | Zwergloch/Pottenstein | Bavaria | Jerzmanovice point | Freund 1963, 81 |

detected, comprising parallel unipolar (blade) Levallois production with a standard Mousterian (unifacial) toolkit, along with a number of bifacially worked *Keilmesser* and related tools mostly made of plaquette silex. Occasionally, a few leafpoints or fragments of them were also found along with small-sized end-scrapers and "groszaki" end-scrapers as part of the same inventories, thus displaying a very high degree of tool diversity. Presumably, leafpoints were neither produced at sites like Mauern-5 nor at sites like Sesselfelsgrotte, as both lack indicative remnants of the particular *chaine operatoire*. Sites exclusively used as workshops have so far not come to our knowledge, but some open-air sites exist in Eastern Bavaria where short term camps seem to have been combined with leafpoint production (Albersdorf, Zeitlarn; see Fig. 11).

The comparison between Mauern and Ranis shows that Late Middle Palaeolithic leafpoints are either part of Micoquian/M.M.O. assemblages or they occur at the very end of the Middle Palaeolithic within the final Micoquian in Western and Southern Germany and in the Jerzmanovician in South-Eastern and Eastern Germany. All other German occurrences of Late Middle Palaeolithic leafpoints can easily be integrated into this pattern, as Table 6 shows. In all cases where Micoquian/M.M.O. is indicated, leafpoints were found along with other Micoquian bifacial tools such as *Keilmesser, Faustkeilblätter* etc.

## Conclusions

Most interestingly, the "Altmuehlian" leafpoints represent a functional feature which obviously had become more important towards the end of the Southern German Micoquian and which gained possibly more technological perfection than previously seen but still continued an existing typological and technological tradition. By contrast, the Jerzmanovician points from Ranis represent the introduction of a typological and technological innovation which was unknown to the preceding Micoquian.

Thus, the role of the leafpoints was rather different: In Bavaria they represent the high-end of a long-lasting tradition within the Central European Micoquian/M.M.O., but in Eastern Germany they occur as innovative Jerzmanovice points, indicating a new context area stretching from South-Eastern Germany to Eastern Germany and Poland, and possibly to North-Western Europe ("Lincombian")

The evidence on German leafpoints suggests that

1. in Southern and Western Germany leaf-points occur throughout the whole period of the Central European Micoquian/M.M.O.
2. The "Altmuehlian" assemblages are part of the final Micoquian (M.M.O.), principally not distinguishable from the rest of the Micoquian by typological or technological means.

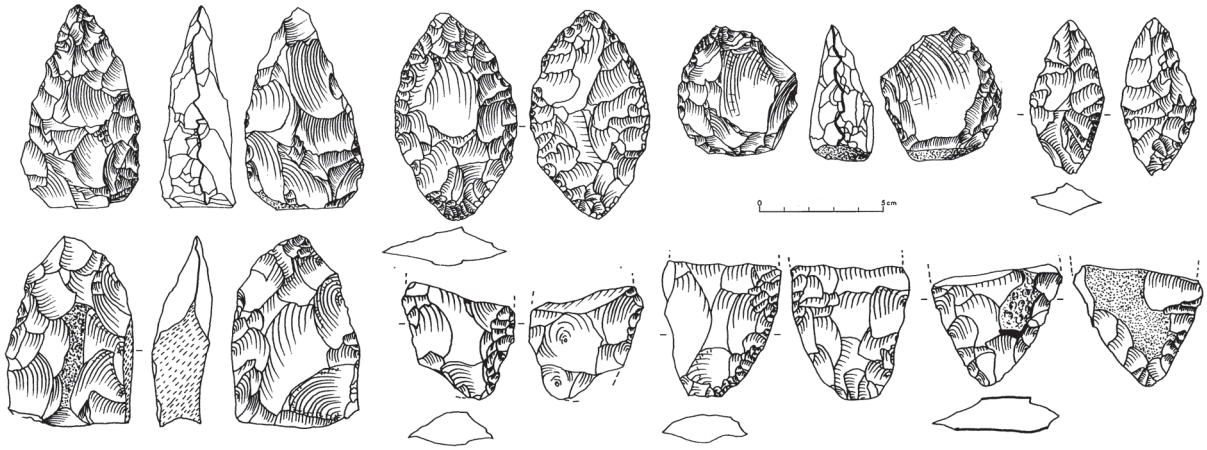

*Fig. 11. Albersdorf and Zeitlarn. Bavarian „Szeletian" assemblages, now attributed to the Micoquian/M.M.O. by Th. Uthmeier (Uthmeier 2004, pl. 30 and pl. 35).*

3. The term "Altmuehlian" should be rejected as a distinct cultural unit. If kept, it should only be used as an alternative term for "Final Micoquian with leafpoints in Southern Germany".
4. At the time of the Final Micoquian/ M.M.O.-C, a distinct cultural unit called the Jerzmanovician occurred in Eastern Germany, which corresponds to similar assemblages in the Nietoperzowa Cave near Jerzmanovice/Poland, dated to about 38.000 uncal. B.P.
5. The term "Ranisian" should be rejected because the finds from Ranis 2 are well comparable to what was earlier named Jerzmanovician.
6. Two cultural units are found to have been neighbours at the same time in Central Europe: the Final Micoquian and the Jerzmanovician.
7. Contacts between them are indicated by reciprocal import.

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