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LITHICS AND HABITS – MAGDALENIAN FORAGERS IN THURINGIA (GERMANY)

ABSTRACT

The investigation is part of basic research on the Magdalenian of Central Germany. It presents quantitative and qualitative data of two lithic assemblages – one revisited 70 years after its publication, the other poorly known until now. The discussion supports archaeostratigraphic taxonomy which developed for over a century. Spatial distribution of sites does not reflect human settlement patterns but is an outcome of past and present geomorphodynamics as well as of the research tradition.

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Keywords: Upper Palaeolithic, Central Germany, lithic artefacts, lithic tool types, archaeostratigraphic taxonomy, spatial distribution of sites

*Basic science entails at least some knowledge banality.*¹

Introduction

Approximately 130 Magdalenian and Final Palaeolithic sites are known in Central Germany.² Nearly one-third of these sites have been published or re-investigated in the last 25 years (Fig. 1; Table 1). Among them are excavations, such as *Abri Fuchskirche*, *Altendorf*, *Bad Frankenhausen*, *Gera-Binsacker*, *Lengefeld-Bad Kösen*, *Kniegrotte*, *Nebra*, *Oelknitz*, *Saaleck*, or *Teufelsbrücke*, but also huge collections of surface finds, including *Ahlendorf*, *Kahla-Löbschütz*, or *Wallendorf*, among others. Additionally, numerous small surface collections have been studied, leading to first-time publications of artefact frequencies, attributes, and drawings of lithic blank and tool types. As part of these studies, the assemblages of *Gera-Pfortener Berg* and *Sankt Gangloff* were investigated in 2020 at the University of Jena. Prior to that,

only a portion of the lithic material was published for *Gera-Pfortener Berg* 70 years ago, whereas *Sankt Gangloff* was just a dot on a large-scale map.

Gera – Pfortener Berg

The *Pfortener Berg* is a narrow ridge-like hill, ca. 250 metres above sea level and 1.5 kilometres long, composed of calcareous *Zechstein* and situated on the eastern outskirts of the town of *Gera*. On its northern and southern sides, small creeks run towards the west, eventually flowing into the *Weisse Elster* River situated ca. 70 metres below the *Pfortener Berg*. Near its western end, the *Lindenthaler Hyänenhöhle* was destroyed already in the 1870s.³ Quarrying, construction of roads, and building activity have changed the surface morphology of the *Pfortener Berg*. However, between the 1870s and the 1980s, numerous archaeological relics were collected and excavated in its western part.⁴ Among them were

¹ Hussain, Soressi 2021, 25.

² Küßner 2009, 203–205.

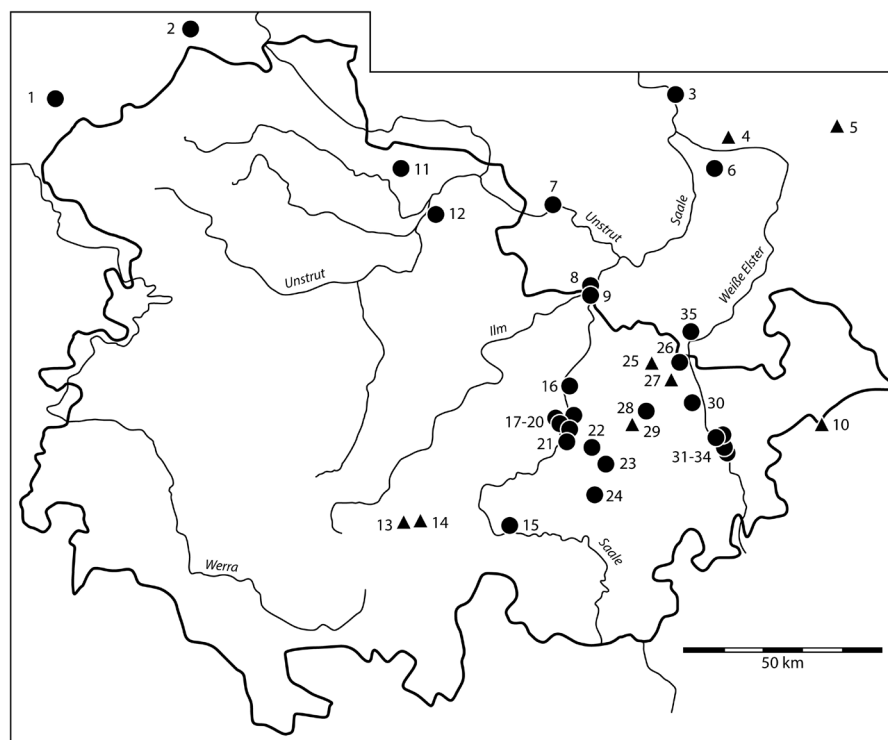
³ Küßner 2003, 337–342.

⁴ File *Gera-Pfortener Berg* at the Thuringian Office of Archaeology, Weimar (inspected by J. Jeschke in 2020).

Table 1. Magdalenian and Final Palaeolithic sites in Thuringia and adjacent areas.

no. in Fig. 1	site name	references
1	Abri Stendel	Street <i>et al.</i> 2002
2	Steinkirche	Veil 1988
3	Halle-Galgenberg	Toepfer 1955
4	Oberthau	Ansorg 2020
5	Taucha	Dunkel, Dunkel 1977
6	Wallendorf	Küßner 2009
7	Nebra	Mania 1999
8	Lengefeld-Bad Kösen	Richter <i>et al.</i> 2021
9	Saaleck	Bock <i>et al.</i> 2013; Grünberg 2004; 2006; Terberger 1987; Weiß 2016
10	Gosel	Geupel 1974
11	Bad Frankenhausen	Küßner 2009
12	Gorsleben	Pasda <i>et al.</i> 2019
13	Bärenkeller	Müller <i>et al.</i> 2018/19; Pfeifer 2022
14	Abri Fuchskirche	Benecke <i>et al.</i> 2006
15	Teufelsbrücke	Bock <i>et al.</i> 2017; Feustel 1980a; 1980b; Müller, Pasda 2023; Pfeifer 2015; Wüst 1998
16	Jena	Hemmann <i>et al.</i> 2008
17	Oelknitz	Bock <i>et al.</i> 2015, 2016; Brasser 2010/11; Gaudzinski-Windheuser 2013; Gelhausen 2015
18	Rothenstein	Hemmann <i>et al.</i> 2008
19	Altendorf	Pasda 2016/17
20	Großpüschütz	Pasda <i>et al.</i> 2019
21	Kahla-Löbschütz	Balthasar <i>et al.</i> 2011
22	Hummelshain	Pasda <i>et al.</i> 2019
23	Lausnitz	Küßner 2009
24	Kniegrotte	Berke 1989; Bodenschatz <i>et al.</i> 2021; Höck 2000; Pfeifer 2020
25	Etzdorf	Bergmann <i>et al.</i> 2011
26	Ahlendorf	Balthasar 2015
27	Hartmannsdorf	Bergmann <i>et al.</i> 2012
28	Sankt Gangloff	this article
29	Renthendorf	Pasda <i>et al.</i> 2019
30	Gleina	Küßner 2003; currently under investigation at the University of Jena
31	Gera-Zoitzberg	Küßner, Terberger 2006
32	Gera-Pfortener Berg	this article
33	Gera-Binsenacker	Küßner 2009
34	Gera-Schafgraben	Küßner 2009
35	Pötewitz	Bergmann <i>et al.</i> 2012

Fig. 1. Federal State of Thuringia with major rivers (in italics), Magdalenian sites (dots), sites with mixed Magdalenian and Final Palaeolithic artefacts (triangle), and Final Palaeolithic sites (triangle). For site names, see Table 1 – compiled by C. Pasda.



ca. 15,000 lithic artefacts, reportedly including tools of the Final Palaeolithic/Azilian and the Mesolithic Period.⁵ Moreover, ceramic sherds and stone adzes from the Neolithic Period were also registered.⁶ The first information on the presence of the Magdalenian was made by Rudolf Feustel in the 1950s:⁷ he investigated the lithics from an excavation conducted by the Historical Society of *Gera* at the end of the 1930s. Within the area of ca. 8 square metres, approximately 1,000 lithics were found 40–50 centimetres below the recent humic soil, presumably in a loess. These finds included numerous blades, many backed bladelets, as well as some burins and borers. Since this publication,⁸ *Gera-Pfortener Berg* has been known as a Magdalenian site.⁹

The whole collection from *Gera-Pfortener Berg* is currently stored at the Municipal Museum of *Gera*. All the lithics, weighing nearly 27 kilograms, were investigated in a master's thesis at the University of *Jena*.¹⁰ The aim of the investigation was to present quantitative data relevant to the verification of the presence of a Magdalenian site.

As it was impossible to separate the assemblages made by different collectors and excavators all the lithic tools (Table 2) and 65 burin spalls were selected to discuss their archaeostratigraphic position.

The most common lithic tool type is the end scraper. The modification was made on short flakes and broken blades (Fig. 2. 1–4). This tool type occurred in the Final Palaeolithic, Meso-, and Neolithic.¹¹ The bifacially retouched arrow points (Fig. 2. 8–9) have straight to slightly convex lateral edges and a concave base, indicating a Middle-Neolithic type,¹² which is supported also by the presence of ceramic finds from this period. The truncations (Fig. 2. 5), the lateral retouched pieces, the borer (Fig. 2. 6), the splintered pieces, and most of the combinations are types which were manufactured from the Upper Palaeolithic to the Neolithic.¹³ The microburin (Fig. 2. 10) and the microliths (Fig. 2. 11–17) belong to the Meso- and/or Neolithic.¹⁴ The gun flints (Fig. 2. 7) date from the 16th to 19th century AD.¹⁵

⁵ Auerbach 1910; 1930; Feustel 1958, 170; 1961, 22–23; Reuter 1953/54.

⁶ Brause 1933; Schimpff 1984.

⁷ Feustel 1954/55, 8–11.

⁸ Feustel 1954/55.

⁹ Behm-Blancke 1961, Abb. 1; Hanitzsch 1957, 35; Küßner 2009, Abb. 1; Toepfer 1970, 400; Toepfer, Nuglisch 1961, 162.

¹⁰ Jeschke 2021.

¹¹ Kind 2012.

¹² Pfeifer 2011.

¹³ Floss 2012; Gehlen 2012a; 2012b; Kieselbach 2012; Pasda 2012a; 2012b; 2012c.

¹⁴ Heinen 2012; Schön 2012.

¹⁵ Weiner 2012.

Table 2. Lithic tools from *Gera-Pfortener Berg*.

tool class	N	tool type	n
end scraper	91	simple end scraper double end scraper	83 8
backed retouch	70	backed bladelet	70
burin	25	burin on truncation double burin on truncation dihedral burin burin on break multiple burin	15 1 4 4 1
microlith	22	lateral retouched microlith triangle segment trapeze microburin	11 7 2 1 1
lateral retouch	19	lateral retouch	19
borer / point	14	borer	14
splintered piece	14	splintered piece	14
arrow point	12	arrow point	12
truncation	5	truncation	5
combination	5	end scraper-borer/point end scraper-burin on truncation end scraper-truncation end scraper-splintered piece	2 1 1 1
gun flint	2	gun flint	2
total	279	total	279

Besides these tools, there are 70 backed bladelets, 25 burins, and 65 burin spalls (Fig. 3. 11). When arguments for Thuringia are applied to these lithics,¹⁶ they are datable to the Late Upper Palaeolithic. In addition to 64 unilateral backed bladelets (Fig. 3. 1–4, 6), three bilateral backed bladelets, two unilateral backed bladelets with truncation, and a single bilateral backed bladelet with two truncations were registered. Several of the backed bladelets are pointed (Fig. 3. 5, 7–9). Comparable types occur in the Upper Magdalenian.¹⁷ Whether any of them represent curved backed points of the Final Palaeolithic/Azilian (Fig. 3. 7–9), which started in Central Germany around 14 ka cal BP,¹⁸ is difficult to judge. Most burin platforms are truncations (Fig. 3. 10,

12–14). Dihedral burins are rare (Fig. 3. 15). No Lacan burins are present. To sum up, the previous proposition to consider *Gera-Pfortener Berg* as a Magdalenian site¹⁹ is supported by the master thesis as numerous backed bladelets and burins on truncation are characteristic features of the Upper Magdalenian in Central Germany.²⁰

Sankt Gangloff

In July 1959, Arno Reuter, an amateur archaeologist from Gera, collected 221 lithic artefacts at *Herber Mountain*, where a tractor had ploughed a clearing in today's State Forest of *Sankt Gangloff*. On the 27th of August

¹⁶ Pasda *et al.* 2019, 12–15.

¹⁷ Cattin 2012, fig. 17; Debout 2003; Veil 1983, Tafel 22.

¹⁸ Pasda 2018.

¹⁹ Behm-Blancke 1961; Feustel 1954/55; Hanitzsch 1957; Küßner 2009; Toepfer 1970; Toepfer, Nuglisch 1962.

²⁰ Pasda, Weiß 2020.

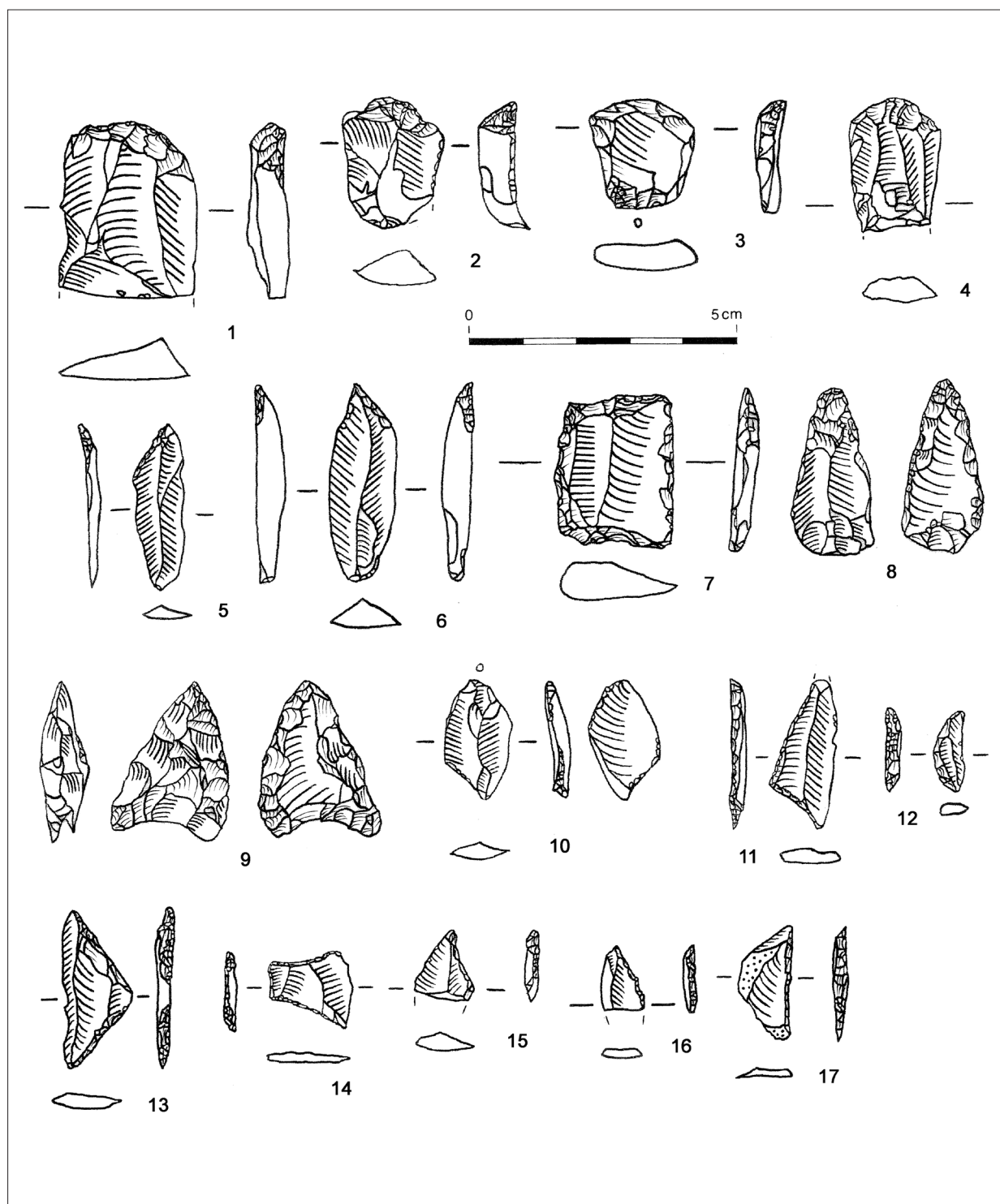


Fig. 2. Lithic artefacts from *Gena-Pfortener Berg* (1–4 – end scraper; 5 – truncation; 6 – borer; 7 – gun flint; 8–9 – arrow point; 10 – microburin; 11, 13 – triangle; 12 – segment; 14 – trapeze; 15–16 – fragmented microlith; 17 – lateral modified microlith. Drawings by J. Jeschke, adapted and completed by C. Pasda.

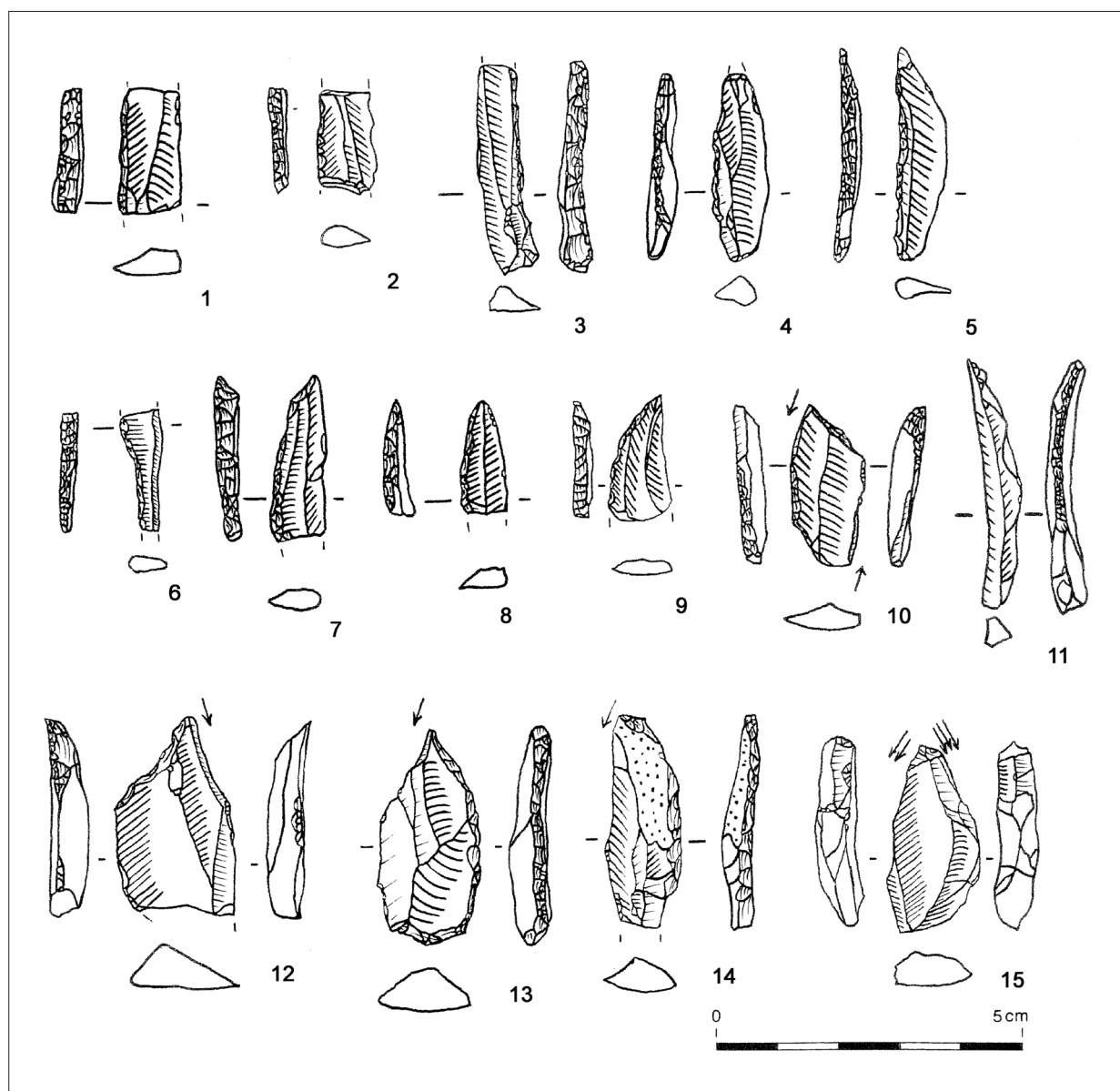


Fig. 3. Lithic artefacts from *Gera-Pfortener Berg* (1–9 – backed bladelet; 10 – double burin on truncation; 11 – burin spall; 12–14 – burin on truncation; 15 – dihedral burin. Drawings by J. Jeschke, adapted and completed by C. Pasda.

1959, the Archaeological Museum of Thuringia, *Weimar*, recorded the locality as a Stone Age site. The collection obtained there is stored at the Municipal Museum of *Gera*. This museum holds also another, smaller box, marked with the caption *St. Gangloff*. It contains ten lithic artefacts – four blades, one flake, two lateral retouched pieces, a backed bladelet, a truncation and a splintered piece – and a few ceramic sherds. This assemblage was collected by Willi Misslitz, another amateur archaeologist from *Gera*,

on the 30th of November 1960. On the 28th of February 1961, the Archaeological Museum of Thuringia in *Weimar* noticed the Reuter collection as belonging to the small site discovered by Reuter the year before.²¹ It seems that, one and a half years after ploughing and reforestation with pines, Misslitz found only large lithics, as all the artefacts were larger than 1 centimetre – all burin spalls and small backed bladelets had been collected by Reuter already in 1959. The ceramics collected in 1960 may be dated to the

²¹ File *Sankt Gangloff* at the Thuringian Office of Archaeology, *Weimar* (checked by C. Pasda in 11/4/2021).

Römische Kaiserzeit,²² thus it has nothing to do with the Stone Age. However, the collections of *Sankt Gangloff* were recognised as representing Magdalenian presence already in 1961 by Günter Behm-Blancke,²³ at this time the head of the Archaeological Museum of Thuringia. The archaeostratigraphic position was later confirmed by Hanitzsch.²⁴ One has to emphasize that Sankt Gangloff is the only Magdalenian site in Thuringia which is situated in a forest – a characteristic which will be discussed later.

The objects found by Reuter²⁵ and Misslitz²⁶ were analysed by the male author of this article using a modified version of a published lithic attribute list.²⁷ Today, 231 lithic artefacts are known from *Sankt Gangloff* (Table 3). As in nearly all Magdalenian sites of Central Germany, erratic flint was used most often, with quartzite being a rare find (Fig. 4. 16).²⁸ The small amount (8.0%) of lithics smaller than 1 centimetre is common for surface collections.²⁹

Table 3. Blank type and raw material from *Sankt Gangloff*.

blank type	flint	quartzite	indet.	total (n)	total (%)
flake	121	2	–	123	53,2
flake with cortex	17	–	–	17	7,4
cortex flake	2	–	–	2	0,9
preparation flake	4	–	–	4	1,7
blade	46	1	–	47	20,3
blade with cortex	4	–	–	4	1,7
primary crested blade	4	–	–	4	1,7
core	1	–	–	1	0,4
burin spall	6	–	–	6	2,5
heat chunk, chunk or frost debris	3	–	1	4	1,7
unmodified blank < 1 cm	19	–	–	19	8,2
total	227	3	1	231	100

In *Sankt Gangloff*, lithics affected by fire amounted to 8.2 % (n=19), being more common in comparison to other Magdalenian sites.³⁰ A summary of attributes of lithics of the Magdalenian in Central Germany was presented two years ago.³¹ Sankt Gangloff adds new data: the lithics (Table 4) are characterised by the same amount of faceted and non-faceted butts and by a greater frequency of irregular than regular butts. The blanks often show dorsal reduction, irregular distal ends, and hinges. Unidirectional negatives predominate. 2.1% (n=5) of the lithics show an *en éperon* preparation of the butt (Fig. 4. 18–19).

Due to their dimensions (Table 5), the blanks of *Sankt Gangloff* are comparable to the blanks of Altendorf,

a modern excavation with sieving, which is situated 20 kilometres to the west.³²

With 9% (n=21), the amount of lithics with natural edge damage is low. This may indicate a Palaeolithic site well-preserved in a forest until its discovery after clearing in the late 1950s.

Backed bladelets are the most common tool type at *Sankt Gangloff* (Table 6). Among them are seven simple backed bladelets (Fig. 4. 1–6, 9), a simple backed bladelet with truncation (Fig. 4. 7), and a simple backed bladelet with additional lateral retouch (Fig. 4. 8). The single burin has an oblique and straight truncation as a platform for removal of burin spalls (Fig. 4. 10). Six burin

²² Determination by C. Brückner, *Jena* 2020.

²³ Behm-Blancke 1961, Abb. 1: 52.

²⁴ Hanitzsch 1972, Abb. 21: 20.

²⁵ City Museum of *Gera*, inventory no. 85/89-7.

²⁶ City Museum of *Gera*, inventory no. 85/89-12.

²⁷ Auffermann *et al.* 1990.

²⁸ Bodenschatz *et al.* 2021, 2.

²⁹ Balthasar *et al.* 2011, 301.

³⁰ Bodenschatz *et al.* 2021, 15.

³¹ Bodenschatz *et al.* 2021.

³² Pasda 2016/17, Tab. 5.

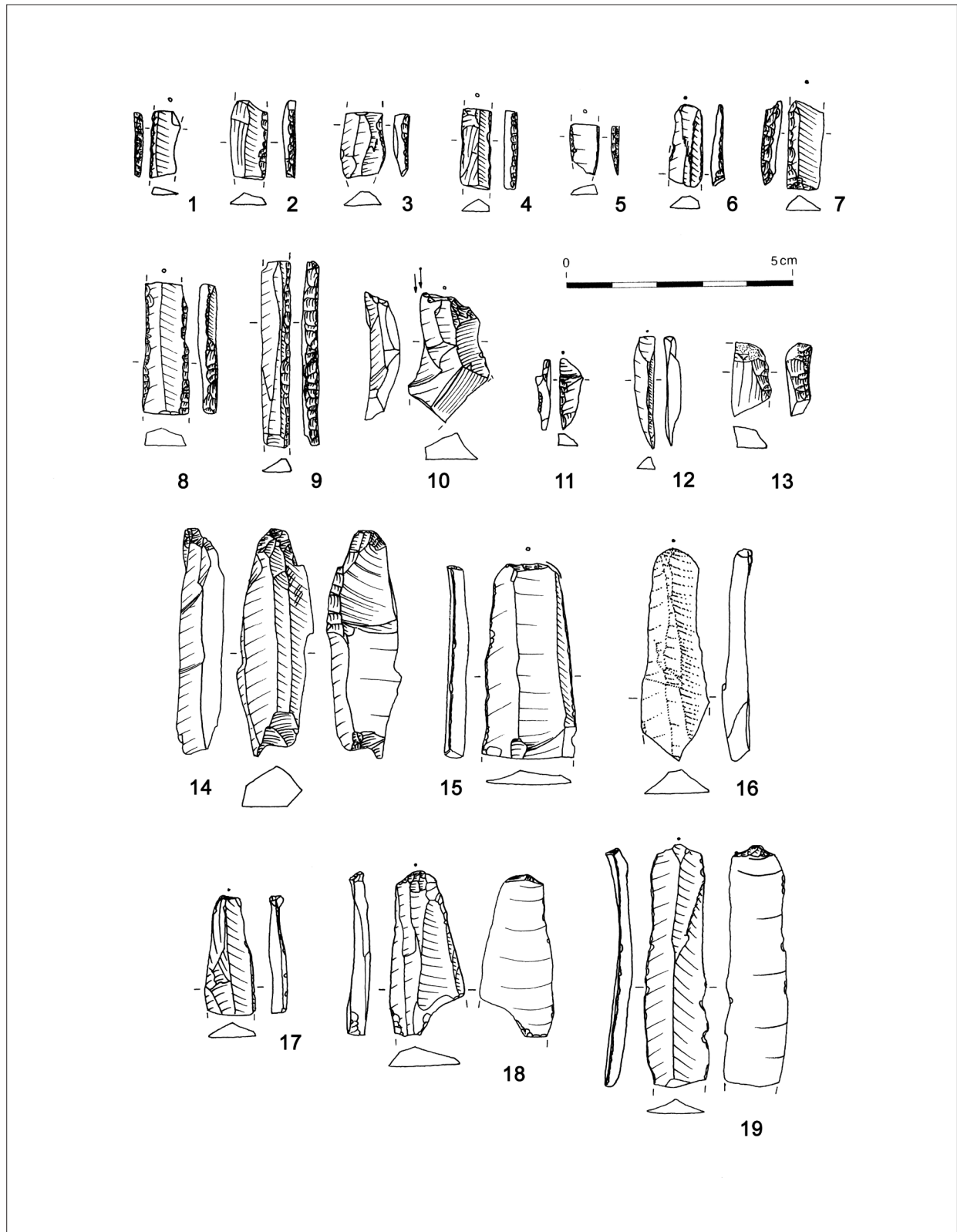


Fig. 4. Lithic artefacts from *Sankt Gangloff* (1–9 – backed bladelet; 10 – burin on truncation; 11–12 – burin spall; 13 – lateral modified piece; 14 – splintered piece; 15 – truncation; 16–17 – blade. Reuter collection: 1–8, 10–13, 17; Mißlitz collection: 9, 14–16, 18–19. Drawings by C. Pasda.

Table 4. Butt type, butt form, dorsal reduction, type of distal end, and direction of dorsal negatives of flakes and blades (with and without cortex) from *Sankt Gangloff*.

preparation of the butt	cortical	plain / not prepared	primary facettet	secondary facettet	indet. facettet	total
flake	3	12	1	3	4	23
blade	–	5	6	–	6	17
total (n)	3	17	7	3	10	40
form of the butt	irregular	oval	triangular	rectangular or trapeziform	chapeau de gendarme	total
flake	18	3	–	3	1	25
blade	7	4	4	2	–	17
total (n)	25	7	4	5	1	42
preparation of platform edge	no dorsal reduction	light dorsal reduction	normal dorsal reduction	dorsal reduction with edge abrasion	heavy dorsal reduction	total
flake	8	5	2	1	7	23
blade	3	3	5	3	2	16
total (n)	11	8	7	4	9	39
shape of distal end	pointed	straight	irregular	hinge	foot of core present	total
flake	2	7	5	7	5	26
blade	2	2	1	2	–	7
total (n)	4	9	6	9	5	33
direction of dorsal negatives	unidirectional	bipolar	unidirectional and transverse	bipolar and transverse	transverse	total
flake	20	–	10	1	3	34
blade	18	4	6	–	1	29
total (n)	38	4	16	1	4	62

Table 5. Dimensions (in cm) of lithic blank types from *Sankt Gangloff*.

length	mean value	standard deviation	median	minimum	maximum	n
flake	1.5	0.7	1.4	0.4	5.4	87
blade	2.4	1.3	1.9	1.1	5.6	42
width	mean value	standard deviation	median	minimum	maximum	n
flake	1.3	0.5	1.2	0.4	3.4	87
blade	0.9	0.4	0.7	0.4	2.2	42
thickness	mean value	standard deviation	median	minimum	maximum	n
flake	0.3	0.2	0.2	0.1	0.9	87
blade	0.3	0.1	0.3	0.1	0.6	42

Table 6. Lithic tool types from *Sankt Gangloff*.

tool type	n
backed bladelet	9
burin on truncation	1
truncation	1
lateral modified flake	1
splintered piece	1
total (n)	13

spalls (Fig. 4. 11)–12) indicate that more burins than just this one were manufactured at the site. The piece with lateral retouch is part of a larger tool of unknown type (Fig. 4. 13). Additionally, a splintered piece (Fig. 4. 14) and a blade with truncation (Fig. 4. 15) are present.

When comparing the lithic tools of *Sankt Gangloff* with other sites in Central Germany, the lack of tool types which are present in *Breitenbach*³³ and *Bilzingsleben-Simsensee*³⁴ is evident. No triangles are present, like those in *Kniegrotte* and *Oelknitz*,³⁵ no shouldered points similar to those from *Etzdorf*,³⁶ and no curved backed points resembling those known from *Abri Fuchskirche*.³⁷ This indicates that *Sankt Gangloff* is neither an early/middle Upper Palaeolithic nor a Hamburgian or Final Palaeolithic/Azilian site. In contrast, the dominance of blades for tool manufacture and the many backed bladelets³⁸ may suggest that *Sankt Gangloff* is a site from the Upper Magdalenian.

Discussion

Besides information on research history, the present article is the first to present quantitative data on lithics from *Gera-Pfortener Berg* and *Sankt Gangloff*. This is not a banality but a scholarly contribution to 150 years of

knowledge production in Palaeolithic archaeology. In this kind of basic research, it is seen as “a virtue rather than a burden to produce comparatively unspectacular findings and to recede from result-oriented research interests and quick dissemination strategies. Basic science, in this view, at least includes a ‘slow’ component of knowledge production in which the evidence is continuously expanded, archived, reviewed, re-analysed, and re-conceptualized and in which ‘data’ is considered as important as reflecting upon preconditions of knowledge production”.³⁹

When reflecting on knowledge production, two aspects have to be emphasised. First, for over 100 years there has been a continuity in assigning lithic assemblages in Central Germany to the archaeostratigraphic units of the Magdalenian, and Final Palaeolithic/Azilian: the views of such researchers as Behm-Blancke, Feustel, Hanitzsch, Mania, or Toepfer are, more or less, supported and expanded by new local excavations, re-investigations, development of a more precise chronostratigraphy, as well as new research abroad.⁴⁰ Ongoing discussions on details show that archaeology has learned to deal with problematic questions – for example, whether *Etzdorf* should be assigned to the Hamburgian or the early Final Palaeolithic.⁴¹ Contradictory results are often due to mixed assemblages, “old” excavation methods, and preservation conditions. For example, some assemblages should be left out of discussion on the Late Upper Palaeolithic, since convincingly Magdalenian artefacts have been absent at *Lindenthaler Hyänenhöhle*,⁴² *Rehmen*,⁴³ *Seehausen*,⁴⁴ *Udersleben*,⁴⁵ *Urdhöhle*,⁴⁶ and *Wandersleben*.⁴⁷ The same applies to assemblages with only one or few burins, with the simultaneous lack of other diagnostic tool types. These assemblages are *Bad Sulza*, *Merkers*, *Oldisleben*, *Trockhausen*, and *Ranis-Schmalzgrube*.⁴⁸ For other sites, for example, *Mauna*,⁴⁹ the origin of Magdalenian artefacts is questionable. Only a few sites have not been recently revisited, for example, *Großseutersdorf*,⁵⁰ *Kleingrabe*,⁵¹ *Magdala*,⁵² *Orlamünde/Eichenberg*,⁵³ the *Herta* Cave and the *Ilse* Cave at *Ranis*,⁵⁴ or the *Wüste Scheuer*.⁵⁵

³³ Moreau 2012.

³⁴ Mania 2009.

³⁵ Bock *et al.* 2015; Höck 2000.

³⁶ Bergmann *et al.* 2011.

³⁷ Benecke *et al.* 2006.

³⁸ Küßner 2009; Pasda, Weiß 2020.

³⁹ Hussain, Soressi 2012, 25.

⁴⁰ Benecke *et al.* 2006; Grünberg 2006; Höck 2000; Küßner 2009; Küßner, Terberger 2006; Pasda 2018; Pasda *et al.* 2019; Pasda, Weiß 2020; Pfeifer 2015; 2020; 2022.

⁴¹ Bergmann *et al.* 2011.

⁴² Küßner 2003, 337–342.

⁴³ Pasda *et al.* 2019, 2–3.

⁴⁴ Pasda *et al.* 2019, 7.

⁴⁵ Pasda *et al.* 2019, 7.

⁴⁶ Terberger *et al.* 2003.

⁴⁷ Pasda *et al.* 2019, 1.

⁴⁸ Pasda *et al.* 2019.

⁴⁹ Bock *et al.* 2013, note 1.

⁵⁰ Mania, Mania 1994.

⁵¹ Küßner 2009, 203.

⁵² Küßner 2009, 203.

⁵³ Mania, Mania 1994.

⁵⁴ Küßner 2009, 203.

⁵⁵ Küßner 2009, 203.

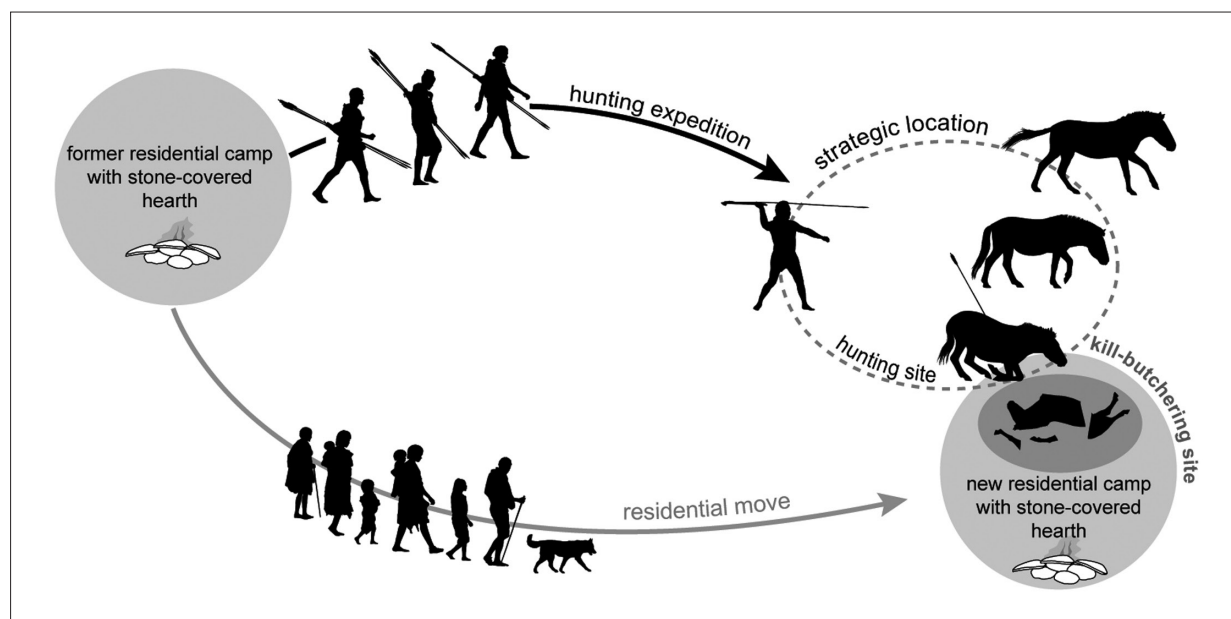


Fig. 5. Model proposed by Denise Leesch for the creation of the material record during the Magdalenian by hunting, group mobility, and domestic activities using stone-covered hearths (original from Leesch *et al.* 2019, 115, adapted by Müller, Pasda 2023; reprinted with permission).

Second, in a recent contribution, Denise Leesch presented a model explaining how the material record of the Magdalenian was created.⁵⁶ Her interpretation is based on two recently excavated and exceptional well-preserved Magdalenian sites analysed with a combination of refitting of lithics and rocks, reconstruction of the operation chain, typology, spatial data, study of micro-refuse, contextualisation of this data with experiments, and a critical review of Upper Palaeolithic, ethnographic, and ethno-archaeological studies. According to this model, the material record of the Magdalenian was created after a successful hunt in the vicinity of the kill site where hunters and other members of a small social unit met to consume the prey (Fig. 5). Consumption and related domestic activities were done while using an open-air, stone-covered hearth.⁵⁷ Hearth use was performed within a very short time period as only a single or few large animals had to be processed and supplemented with hunting small prey.⁵⁸ This behaviour did not differ seasonally nor between open-air, rock shelter, and cave sites but, due to the successive hearth uses, a huge amount of lithic artefacts, rocks, and animal bones could accumulate at a given locality. As more or less the same domestic activities were performed during each hearth use, the material

record is more or less uniform.⁵⁹ This model has important implications for the current view of human life in the Magdalenian – and, maybe, for the whole Upper Palaeolithic: i) humans did not use base camps and affiliated special-task camps but rather lived in very small groups with high residential mobility (Fig. 6), ii) the architecture and placement of residential buildings remains unknown⁶⁰, iii) the material record is a result of domestic activities after a singular hunting event, iv) the kill site is difficult to detect today, as small features of the Pleistocene landscape, which may have favoured hunting, have disappeared today due to erosion or are covered and levelled by thick Holocene deposits.⁶¹ Thus, Magdalenian sites can be expected everywhere. Of course, this is not the case as research tradition and geomorphodynamic processes influence the discovery of sites.⁶² This will be shown in the following section.

In Thuringia, the late Upper Palaeolithic sites are concentrated in the eastern part of the Federal State (Fig. 1). This does not reflect dense Magdalenian occupation along the rivers *Saale*, *Weißer Elster*, and *Orla* but results from research history: the majority of the sites (n=13) have been discovered by a few enthusiastic amateurs around their hometowns in the late 1920s and

⁵⁶ Leesch 2014; Leesch *et al.* 2019.

⁵⁷ Leesch 1997; Leesch, Bulinger 2012; Moseler 2020; Plumettaz 2007.

⁵⁸ Leesch 1997; Morel, Müller 2010; Müller 2013.

⁵⁹ Pasda, Weiß 2020.

⁶⁰ Leesch, Bullinger 2012.

⁶¹ Rodzik *et al.* 2014; Wolf, Faust 2013.

⁶² Barbieri *et al.* 2018; Eriksen 1991: 78–81; Floss *et al.* 2022.

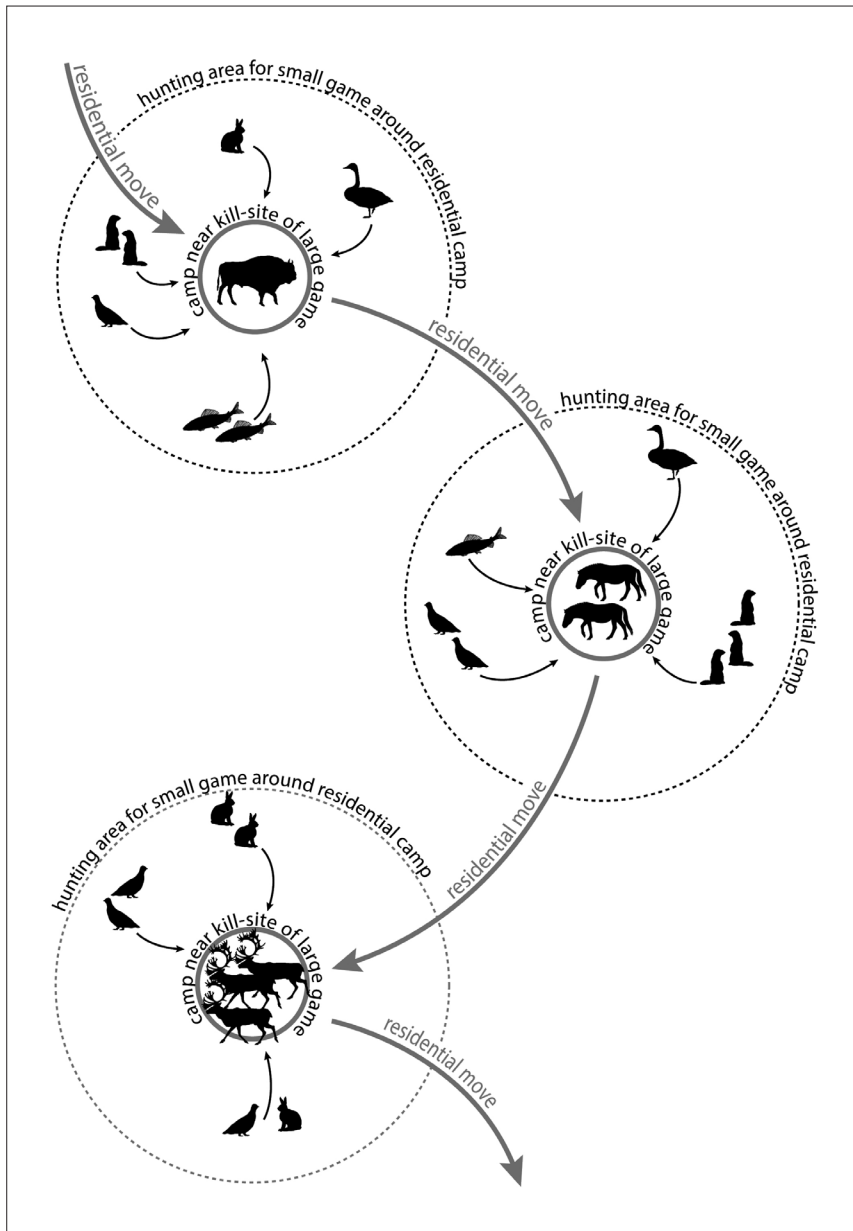


Fig. 6. Model proposed by Denise Leesch for high residential mobility of small groups in the Magdalenian (original from Leesch *et al.* 2019, 122, adapted by Müller, Pasda 2023; reprinted with permission).

1930s, mainly by surface surveying, for instance along the *Saale* River to the south of Jena (collectors Bromme and Trommler), in *Gera* (collectors associated with the local Historical Society), and along the *Weisse Elster* River to the north of *Gera* (collectors Kretzsch and Misslitz). At the same period, other sites were excavated, legally and illegally, by amateurs in the *Orla* valley. Two sites were discovered already in the late 19th century by early excavations conducted by Klopffleisch, a professional archaeologist from the University of *Jena*. In contrast, from

the 1950s to the 1980s new sites were discovered in other areas of Central Germany, mostly in the effect of works undertaken by professional archaeologists. When taking knowledge of the Late Pleistocene sediment deposits into consideration, the lack of sites connected with Late Weichselian fluvial deposits has to be mentioned. These deposits are important archives for the Magdalenian in the *Paris* Basin.⁶³ In *Thuringia*, these layers are situated several metres below the contemporary rivers,⁶⁴ which renders them invisible on the surface. A single dihedral

⁶³ Taborin 1994.

⁶⁴ Ballasus *et al.* 2022; Bischoff 1999; Kirchner *et al.* 2022; Marcinek *et al.* 1970; Steinmüller 1971, 2002.

burin was found in 1983 at *Merkers*, extracted from fluvial deposits ca. 2 metres below the surface.⁶⁵ *Merkers* is situated in westernmost Thuringia, where the *Werra* River leaves the federal border for the first time (Fig. 1: left side of the map), ca. 140 kilometres far away from eastern Thuringia where the majority of sites have been discovered. Thus, *Merkers* may be not only an indication of the archaeological potential of sub-surface sites in Thuringian River valleys, maybe as well-preserved as those in the *Paris* Basin, but also of the possibility that many more sites outside of eastern Thuringia await discovery.

Last not the least, *Sankt Gangloff*, the site presented above, has to be mentioned. *Sankt Gangloff* is the only site in Thuringia which was discovered in a contemporary forest. All other sites are situated on agricultural land, in caves, rock shelters, or on eroding slopes. Thus, like recently in south-western Germany,⁶⁶ prospection in contemporary forests, which cover 33% of Thuringia,⁶⁷ may have the potential to reveal previously unknown sites and increase our knowledge on the Magdalenian in and outside the current research areas, far away from the major river valleys.

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⁶⁵ Feustel 1983; Pasda *et al.* 2019, 1.

⁶⁶ Floss *et al.* 2019, 2022; Wettengl *et al.* 2021.

⁶⁷ Leibniz-Institut für Länderkunde 2003, 93.

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