

The Mid Upper Palaeolithic of European Russia:
chronology, culture history and context
A study of five Gravettian backed lithic assemblages

Natasha Reynolds, Wolfson College
School of Archaeology, University of Oxford

Thesis submitted for the degree of Doctor of Philosophy in Archaeology

Michaelmas Term 2014

Abstract

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This thesis examines the Mid Upper Palaeolithic (MUP) of Russia (ca. 30,000–20,000 ^{14}C BP). During this time, as in the rest of Europe, the principal archaeological industry is known as the Gravettian. However, in Russia two other industries, the Streletskayan and the Gorodtsovian, are also known from the beginning of the MUP. Historically, there have been significant problems integrating the Russian MUP record with that from the rest of Europe.

The research described in this thesis concentrates on backed lithic assemblages (including Gravette points, microgravettes, other backed points and backed bladelets) from five Russian Gravettian sites: Kostënki 8 Layer 2, Kostënki 4, Kostënki 9, Khotylëvo 2 and Kostënki 21 Layer 3. These are studied from an explicitly Western European theoretical perspective, using standard techno-typological methods to construct typological groupings and describe the variation between and within sites. Alongside this, new radiocarbon dates from several sites (Kostënki 8 Layer 2, Kostënki 4 and Borshchëvo 5) were obtained. These radiocarbon dates are critically analysed alongside published dates and unpublished dates made available to this research.

The results of the research constitute a new culture history for the Russian MUP. Each stage of the MUP is dated and described, and the uncertainties in our knowledge outlined. One new lithic index fossil is defined and two others are re-assessed. The Russian record is compared with the contemporary archaeological record elsewhere in Europe, in order to describe large-scale synchronic variation and changes through time in the homogeneity and regionalisation of material culture. The relationship between these dynamics and climate change are discussed.

Contents

Acknowledgements	xiii
Note on transliteration and translation	xv
Note on photographs of lithics	xv
Note on graphs	xv
1 Introduction	1
1.1 The structure of this thesis	4
2 History of research, problem and aims	7
2.1 An overview of MUP research from a Western European viewpoint . . .	7
2.2 Dating the beginning and end of the Gravettian	10
2.3 Upper Palaeolithic research in Russia	12
2.4 Russian MUP sites: an overview	18
2.4.1 The Kostënki-Borshchëvo area	20
2.5 Industries of the MUP in Russia	25
2.5.1 The Eastern Gravettian	25
2.5.2 The Streletskayan	26
2.5.3 The Gorodtsovian	26
2.5.4 The Gravettian	29
2.5.5 The Kostënki-Avdeevo Culture	29
2.5.6 Shouldered point horizon	37
2.5.7 The Epigravettian	37
2.5.8 Gravettoid and Aurignacoid industries and assemblages	38
2.6 Previous culture histories	38
2.7 Aims	42
3 Lithic analysis methods	45
3.1 Selection of assemblages for study	45
3.2 Lithic analysis	47
3.2.1 Backed lithics	47
3.2.2 Aims of lithic analysis	48
3.2.3 Theoretical background to classifying and explaining variation . .	49
3.2.4 Backed bladelet recording	50
3.2.5 Core recording	52
3.2.6 Typology and morphology	52
3.2.7 Technology	55
3.2.8 Use-wear	56

3.2.9	Other methodological and interpretive considerations	56
3.2.10	Interpreting function and style	58
4	Chronology and palaeoclimates	61
4.1	Introduction	61
4.2	Climate during the Mid Upper Palaeolithic: the Greenland ice core chronology	64
4.3	Russian palaeoclimates and correlation with the Greenland ice core chronology	67
4.4	Chronostratigraphy at Kostënki and other Russian sites	70
4.5	New radiocarbon dates	74
4.6	The dating of Russian MUP sites	77
4.7	The Streletskayan	77
4.8	The Gorodtsovian	82
4.9	The Gravettian	84
4.9.1	Kostënki 8 Layer 2	84
4.9.2	Kostënki 4	87
4.9.3	Borshchëvo 5	89
4.9.4	Khotylëvo 2	92
4.9.5	Gagarino	94
4.9.6	Kostënki 1 Layer 1, Avdeev and Zaraisk	95
4.9.7	Kostënki 21 Layer 3	99
4.9.8	Kostënki 11 Layer 2	102
5	Kostënki 8 (Tel'manskaia) Layer 2	105
5.1	History of excavation and investigation	105
5.2	History of interpretation	108
5.3	Collections and sampling	114
5.4	Backed lithic assemblage	115
5.4.1	Typological categories	115
5.4.2	Microgravettes and sub-microgravettes	116
5.4.3	Other backed bladelets and points	127
5.4.4	Segments and trapezes	130
5.5	Bladelet blank production techniques	131
5.6	Discussion	132
5.6.1	Comparisons with sites in Eastern Europe	135
5.6.2	Comparisons with the Pavlovian	136
5.6.3	Comparisons with other European sites	138
5.6.4	Blank production technology and summary	138
6	Kostënki 4 (Aleksandrovskaia)	141
6.1	History of excavation and investigation	141
6.2	History of interpretation	145
6.2.1	Layer 1	145
6.2.2	Layer 2	147
6.3	Collections and sampling	149
6.3.1	Layer 1	150

6.3.2	Layer 2	151
6.3.3	Northern locus	151
6.3.4	Sampling and the various layers and areas of the site	151
6.4	Backed lithic assemblage	153
6.4.1	Sub-categories	153
6.4.2	General remarks	154
6.4.3	Typological composition by area	162
6.4.4	Gravette points, atypical Gravette points and fragments	163
6.4.5	Miscellaneous points	167
6.4.6	Regular backed bladelets	169
6.4.7	Part-backed bladelets and irregularly backed bladelets	176
6.5	Bladelet blank production techniques	176
6.6	Discussion	179
7	Kostënki 9 (Biriuch'ii Log)	185
7.1	History of excavation and investigation	185
7.2	History of interpretation	186
7.3	Collections and sampling	188
7.4	Backed lithic assemblage	189
7.4.1	Typological categories	189
7.4.2	Rectangular flat backed bladelets	189
7.4.3	Gravette point	195
7.4.4	Other backed bladelets and points	196
7.5	Bladelet blank production techniques	196
7.6	Discussion	199
8	Khotylëvo 2	207
8.1	History of excavation and investigation	207
8.2	History of interpretation	211
8.3	Collections and sampling	212
8.4	Backed lithic assemblage	214
8.4.1	Typological categories	214
8.4.2	General remarks	218
8.4.3	Khotylëvo-type Gravette points	227
8.4.4	Gravette points	232
8.4.5	Microgravettes	235
8.4.6	Shouldered pieces	236
8.4.7	Straight backed bladelets	237
8.4.8	Other backed pieces	243
8.5	Bladelet blank production techniques	245
8.6	Discussion	247
9	Kostënki 21 Layer 3 (Gmelinskaia)	251
9.1	History of excavation and investigation	251
9.2	History of interpretation	253
9.3	Collections and sampling	256
9.4	Backed lithic assemblage	257

9.4.1	Sub-categories	257
9.4.2	General remarks	260
9.4.3	Shouldered pieces	263
9.4.4	Points	269
9.4.5	Backed bladelets	273
9.5	Bladelet blank production techniques	278
9.6	Discussion	280
10	Discussion	285
10.1	The Mid Upper Palaeolithic of Russia: a proposed culture history	286
10.1.1	The Streletskayan and Gorodtsovian (ca. 30,000 to 28,000 ¹⁴ C BP)	286
10.1.2	The Early Gravettian: Kostënki 8 Layer 2 (ca. 28,000 to 27,500 ¹⁴ C BP)	288
10.1.3	A hiatus in occupation or a lack of evidence? (ca. 27,500 to 25,250 ¹⁴ C BP)	290
10.1.4	The Middle Gravettian (ca. 25,250 to 24,750 ¹⁴ C BP)	291
10.1.5	Another possible hiatus (ca. 24,750 to 23,500 ¹⁴ C years BP)	295
10.1.6	The Late Gravettian (ca. 23,500 to 21,000 ¹⁴ C BP)	295
10.1.7	Late Gravettian sites with Khotylëvo-type Gravette points (ca. 23,500–23,000 ¹⁴ C BP)	296
10.1.8	Late Gravettian sites with shouldered points (ca. 23,500 to 21,000 ¹⁴ C years ago)	296
10.2	The culture history of the Russian MUP: discussion	299
10.3	Microgravettes, <i>fléchettes</i> and other microliths from the Early Gravettian	302
10.4	Laterality of backing	305
10.5	The significance of lines of hearths	310
10.6	Female “Venus” figurines	312
10.7	<i>Bâtons percés</i>	316
10.8	Taxonomic units and archaeological cultures	316
11	Conclusions	323
11.1	Summary: culture history and dynamics during the MUP of Russia . . .	323
11.2	Index fossils	327
11.2.1	Late Gravettian rectangles	328
11.2.2	Gravette points with rectangular truncations	328
11.2.3	Khotylëvo-type Gravette points	329
11.3	Recommendations for future work	329
11.3.1	Further work on MUP Russian assemblages	329
11.3.2	Early MUP lithics	330
11.3.3	Female figurines, <i>bâtons percés</i> and lithic assemblages	331
11.3.4	Theoretical differences between archaeological traditions	331
11.3.5	Palaeoclimatic frameworks and chronostratigraphy	332
11.3.6	Dating	333
11.3.7	Genetics	333
11.3.8	Translation	334
11.4	Reflection	334

Appendices	339
A Recording of bladelets	339
Bibliography	343

List of Figures

2.1	Gravette points from French sites	9
2.2	Map of principal sites in Russia	19
2.3	Map of sites in the Kostënki and Borshchëvo area	22
2.4	A diorama of the Kostënki area in the Kostënki museum	23
2.5	View towards the Don river and the mouth of Pokrovskii Log, Kostënki	24
2.6	Streletskayan points from Kostënki 1 Layer 5	27
2.7	Gorodtsovian bone “shovel” from Kostënki 15	30
2.8	Fragment of Gorodtsovian bone “shovel” from Kostënki 14 Layer 2	31
2.9	Shouldered points from Avdeevo	34
2.10	Female figurine from Kostënki 1 Layer 1	35
2.11	“Dwelling structure” from Kostënki 1 Layer 1	36
4.1	NGRIP $\delta^{18}\text{O}$ and annual layer thickness profiles according to GICC05 (from 60,000 to 10,000 years b2k), with numbered Greenland Interstadials (GI)	66
4.2	Correlations between sedimentary sequences from the East Carpathians area and Central Siberia, the Netherlands interstadial sequence, and the GISP2 record	68
4.3	Schematized geological stratigraphy of the Kostënki–Borshchëvo area	71
4.4	The Upper Humic Bed visible in a section at Kostënki 14 in 2001	73
4.5	Selected calibrated radiocarbon dates for late Streletskayan sites	81
4.6	Selected calibrated radiocarbon dates for Layers 3 and 2 (Gorodtsovian) of Kostënki 14	83
4.7	Section drawing of Kostënki 8	85
4.8	Selected calibrated radiocarbon dates for Kostënki 8	87
4.9	Selected calibrated radiocarbon dates for Kostënki 4	89
4.10	Selected calibrated radiocarbon dates for Borshchëvo 5	91
4.11	Borshchëvo 5 section drawing	91
4.12	Khotylëvo 2 section drawing	93
4.13	Kostënki 8 section drawing	101
4.14	Kostënki 11 section drawing	103
5.1	Excavations at Kostënki 8, August 2013	107
5.2	Plan of Kostënki 8 Layer 2	109
5.3	Plan of Kostënki 8 Layers 2 and 3	110
5.4	Microgravettes from Kostënki 8 Layer 2	117
5.5	Microgravettes from Kostënki 8 Layer 2 (drawing)	118

5.6	Microgravettes from Kostënki 8 Layer 2: counts of whole examples and fragments	120
5.7	Microgravettes from Kostënki 8 Layer 2: histogram of widths	120
5.8	Microgravettes from Kostënki 8 Layer 2: histogram of thicknesses	121
5.9	Whole microgravettes from Kostënki 8 Layer 2: histogram of lengths	121
5.10	Nanogravettes from Kostënki 8 Layer 2	122
5.11	Microgravettes from Kostënki 8 Layer 2: backing by edge of blank	123
5.12	Left-backed microgravettes from Kostënki 8 Layer 2	124
5.13	Microgravettes from Kostënki 8 Layer 2: fragment percentages by backed edge	125
5.14	Kostënki 8 Layer 2: proximal ends of right-backed microgravettes	128
5.15	Kostënki 8 Layer 2: distal ends of right-backed microgravette	128
5.16	Kostënki 8 Layer 2: proximal ends of left-backed microgravettes	129
5.17	Kostënki 8 Layer 2: distal ends of left-backed microgravettes	129
5.18	“Segments” and “trapezes” from Kostënki 8 Layer 2	130
5.19	Backed lithics from the Epigravettian site of Amvrosievka	134
5.20	“ <i>Kreissegments</i> ” from Pavlov I similar to Kostënki 8 Layer 2 “segments”	136
5.21	“Trapezes” from Pavlov I	137
6.1	Kostënki 4: plan of excavation area	143
6.2	Backed lithics from Kostënki 4: counts of whole examples and fragments	155
6.3	Backed lithics from Kostënki 4: histogram of widths	156
6.4	Backed lithics from Kostënki 4: histogram of thicknesses	156
6.5	Backed lithics from Kostënki 4: sunflower plot of width vs thickness	157
6.6	Whole backed lithics from Kostënki 4: histogram of lengths	158
6.7	Whole backed lithics from Kostënki 4: box plot of lengths	159
6.8	Whole Gravette points and all other whole backed lithics from Kostënki 4: histograms of lengths	160
6.9	Backed lithics from Kostënki 4: backing by edge	161
6.10	Gravette points from Kostënki 4 (1)	164
6.11	Gravette points from Kostënki 4 (2)	165
6.12	Whole Gravette points from Kostënki 4: histogram of lengths	168
6.13	Whole Gravette points from Kostënki 4: histogram of widths	168
6.14	Whole Gravette points from Kostënki 4: histogram of thicknesses	169
6.15	Whole Gravette points from Kostënki 4: sunflower plot of width vs thickness	170
6.16	Miscellaneous points from Kostënki 4	171
6.17	Backed bladelets from Kostënki 4	172
6.18	Straight backed bladelets from Kostënki 4: histogram of widths	173
6.19	Straight backed bladelets from Kostënki 4: histogram of thicknesses	174
6.20	Untruncated and truncated straight backed bladelets and Gravette points from Kostënki 4: histograms of widths	177
6.21	Possible truncated Gravette points from Molodova 5 and Mezhygitsy 1 (Ukraine)	181
6.22	Retouched bladelets from Kostënki 4	183
7.1	Rectangular backed bladelets from Kostënki 9	190

7.2	Rectangular backed bladelets from Kostënki 9: counts of whole examples and fragments	191
7.3	Rectangular backed bladelets from Kostënki 9: histogram of widths . . .	191
7.4	Rectangular backed bladelets from Kostënki 9: histogram of thicknesses	192
7.5	Rectangular backed bladelets from Kostënki 9: backing by edge	193
7.6	A Gravette point and other points from Kostënki 9	197
7.7	Rectangular backed bladelets from Borshchëvo 5	199
7.8	Rectangles and a “microgravette” from Jaksice II	202
7.9	Backed bladelets from Pavlov, Czech Republic	204
8.1	View from Khotylëvo site towards the Desna	208
8.2	Ivory figurines from Khotylëvo 2	215
8.3	Chalk double female figurine from Khotylëvo 2	216
8.4	Mammoth ivory artefacts from Khotylëvo 2	217
8.5	Backed lithics from Khotylëvo 2: counts of whole examples and fragments	218
8.6	Backed lithics from Khotylëvo 2: histogram of widths	222
8.7	Backed lithics from Khotylëvo 2: histogram of thicknesses	222
8.8	Backed lithics from Khotylëvo 2: sunflower plot of width vs thickness . .	223
8.9	Whole backed lithics from Khotylëvo 2: box plot of lengths	224
8.10	Backed lithics from Khotylëvo 2: backing by edge	225
8.11	Selected lithics from Khotylëvo 2 (drawing)	226
8.12	Lithics from Khotylëvo 2 previously described as shouldered points . . .	228
8.13	Khotylëvo-type Gravette points from Khotylëvo 2 (1)	230
8.14	Khotylëvo-type Gravette points from Khotylëvo 2 (2)	231
8.15	Gravette points from Khotylëvo 2	233
8.16	Microgravettes from Khotylëvo 2	235
8.17	Shouldered pieces from Khotylëvo 2	238
8.18	Straight backed bladelets and stems of shouldered pieces from Khotylëvo 2: histograms of widths	239
8.19	Straight backed bladelets from Khotylëvo 2: histogram of widths	241
8.20	Straight backed bladelets from Khotylëvo 2: histogram of thicknesses . .	242
8.21	Straight backed bladelets and Gravette points from Khotylëvo 2: histograms of widths	244
8.22	Khotylëvo-type Gravette points from Gagarino	248
8.23	Gravette points with gibbositities on their backed edges from Central Europe	249
9.1	Plan of Kostënki 21 Layer 3	252
9.2	Bone points from Kostënki 21-3	258
9.3	A “ <i>bâton percé</i> ” from Kostënki 21-3	259
9.4	Backed lithics from Kostënki 21-3: counts of whole examples and fragments	261
9.5	Backed lithics from Kostënki 21-3: backing by edge	262
9.6	Backed lithics from Kostënki 21-3: histogram of widths	262
9.7	Backed lithics from Kostënki 21-3: histogram of thicknesses	263
9.8	Backed lithics from Kostënki 21-3: sunflower plot of width vs thickness .	264
9.9	Unbroken shouldered pieces from Kostënki 21-3 (1)	265
9.10	Unbroken shouldered pieces from Kostënki 21-3 (2)	266
9.11	Shouldered points from Kostënki 21-3: histogram of maximum widths .	267

9.12	Points from the southern complex of Kostënki 21-3	270
9.13	Points from the northern complex of Kostënki 21-3	271
9.14	Points from Kostënki 21 Layer 3: box plot of widths by complex	273
9.15	Whole backed bladelets from Kostënki 21-3 (southern complex): his- togram of lengths	276
9.16	Backed bladelets from Kostënki 21-3 (southern complex): histogram of widths	277
9.17	Backed bladelets from Kostënki 21-3 (northern complex): histogram of widths	279
10.1	Bone point with flint backed bladelet inserts from the site of Talitsky . .	309
10.2	Sleeping arrangements documented among Australian Aborigines and Mrabri of North Thailand	313
10.3	<i>Bâtons percés</i> from Kostënki 1 Layer 1, Kostënki 13 and Molodova V Level 7	317

List of Tables

4.1	New radiocarbon dates obtained as part of this research	76
4.2	Radiocarbon dates for Sungir'	78
4.3	Radiocarbon dates for Biriuch'ia Balka 2	79
4.4	Radiocarbon dates for Kostënki 12 Layer 1a	79
4.5	Radiocarbon dates for Kostënki 11 Layer 3	80
4.6	Radiocarbon dates for Kostënki 15	82
4.7	Radiocarbon dates for Kostënki 14	83
4.8	Radiocarbon dates for Kostënki 8	86
4.9	Radiocarbon dates for Kostënki 4	88
4.10	Radiocarbon dates for Borshchëvo 5	90
4.11	Radiocarbon dates for Khotylëvo 2	93
4.12	Radiocarbon dates for Gagarino	94
4.13	Radiocarbon dates for Kostënki 1 Layer 1	97
4.14	Radiocarbon dates for Avdeevo	98
4.15	Radiocarbon dates for Kostënki 21 Layer 3	100
4.16	Radiocarbon dates for Kostënki 11 Layer 2	102
5.1	Fauna from Kostënki 8 Layers 2 and 3	111
5.2	Microgravettes from Kostënki 8 Layer 2: counts of whole examples and fragments	119
5.3	Microgravettes from Kostënki 8 Layer 2: fragment counts and percentages by backed edge	125
5.4	Left-backed whole microgravettes from Kostënki 8 Layer 2: correspondence between proximal and distal ends	126
5.5	Right-backed whole microgravettes from Kostënki 8 Layer 2: correspondence between proximal and distal ends	126
5.6	Microgravettes from Kostënki 8 Layer 2: ventral surfaces	127
6.1	Fauna from Kostënki 4	146
6.2	Backed lithics from Kostënki 4: counts of sampling groups and sub-categories	154
6.3	Backed lithics from Kostënki 4: counts of whole examples and fragments	154
6.4	Backed lithics from Kostënki 4: backed edge by sub-category	161
6.5	Backed lithics from Kostënki 4: proportions of subcategories by excavation area	162
6.6	Backed lithics from Kostënki 4 (northern complex excavation area): proportions of subcategories by area	163

6.7	Straight backed bladelets from Kostënki 4: counts of whole examples and fragments	170
6.8	Backed lithics from Kostënki 4: comparison of widths and thicknesses by subcategory	176
7.1	Rectangular backed bladelets from Kostënki 9: backing by edge	192
7.2	Rectangular backed bladelets from Kostënki 9: treatment of ends	194
7.3	Rectangular backed bladelets from Kostënki 9: morphology of ends	194
7.4	Rectangular backed bladelets from Kostënki 9: treatment of platforms	194
7.5	Rectangular backed bladelets from Kostënki 9: treatment of bulbs	195
8.1	Fauna from Khotylëvo 2	210
8.2	Backed lithics from Khotylëvo 2: counts of whole examples and fragments by sub-category (weighted sample)	219
8.3	Backed lithics from Khotylëvo 2: counts of whole examples and fragments	219
8.4	Backed lithics from Khotylëvo 2: mean lengths by fragment type (raw sample)	221
8.5	Backed lithics from Khotylëvo 2: backed edge by sub-category	225
8.6	Gravette points from Khotylëvo 2: counts of whole examples and fragments (raw sample)	234
8.7	Straight backed bladelets from Khotylëvo 2: counts of whole examples and fragments (raw sample)	240
8.8	Straight backed bladelets from Khotylëvo 2: treatments of ends	242
8.9	Backed lithics from Khotylëvo 2: numbers and percentages made on opaque black flint	245
9.1	Fauna from Kostënki 21 Layer 3	253
9.2	Backed lithics from Kostënki 21-3: counts of whole examples and fragments	260
9.3	Shouldered points from Kostënki 21-3: ventral surfaces	268
9.4	Backed bladelets from Kostënki 21-3: subcategories by complex	275
9.5	Backed bladelets from Kostënki 21-3: ventral surfaces	275

Acknowledgements

Many people have supported me during this DPhil and I am very grateful for all the help I have received.

First, my supervisors, Nick Barton and Tom Higham, must be thanked wholeheartedly for their unfailing support. It has been a real pleasure to work with them for the last three years.

Many thanks to Rob Dinnis for his abundant intellectual and moral support.

In Russia, I have been continuously humbled by colleagues' hospitality, openness and willingness to help with providing access to material, copies of literature, and dating samples. In Saint Petersburg, great thanks are due to Andrei Sinitsyn, Sergei Vasil'ev and Aleksandr Bessudnov at the Institut Istorii Materialnoi Kultury for their patience and assistance with finding material, as well as for allowing me a place to work for so long. At the Kunstkamera, I am grateful to Gennady Khlopachëv for providing access to material and hosting me for several months. Thanks are due to Oksana Timoshenko and colleagues at the Kraevedcheskii Muzei, Bryansk, for their assistance in allowing me access to the material from the Khotylëvo excavations.

I was lucky enough to have been able to take part in or visit several excavations during the period of this research: these were incredibly valuable experiences which helped a lot in developing my understanding of the sites in question and Russian excavation practices. My thanks to Sergei Lev (Zaraisk), Konstantin Gavrilov (Khotylëvo 2), Andrei Sinitsyn (Kostënki 14), Sergei Lisitsyn (Borshchëvo 5 and Kostënki 4) and Aleksandr Dudin and Aleksandr Pustovalov (Kostënki 8). I am grateful to Aleksandr Otcherednoi for hosting me in his excavation accommodation at Khotylëvo for a month while I was studying material in Bryansk.

The radiocarbon dates produced during this research were obtained on samples provided by Sergei Lisitsyn from his recent excavations, and on material held at the Zoologicheskii Muzei, Saint Petersburg and curated by Mikhail Sablin. Maria Zhëltova helped me to select material for dating and also correlated the Kostënki 4 samples with

their locations in the original excavations. I am very grateful to all of them.

Other colleagues in Russia were very helpful with providing literature and with explaining and discussing points of the archaeology with me. I would like to thank Vitalic Burlaku, Biba Hromadova, Alisa Larionova, Ksenia Stepanova and especially Daria Escova.

At RLAHA in Oxford I would like to thank Fiona Brock for showing me the ropes of radiocarbon pretreatment chemistry, Katerina Douka for generously providing information on unpublished dates, and Diane Baker and Peter Ditchfield for their patience with the amount of extra paperwork I generated with my many overseas trips and visa applications.

I've been helped along the way by many people who answered questions or discussed my work, including but not limited to Yuri Demidenko, Laurent Klaric, Luc Moreau, Pierre Noiret, and many people in Oxford. Many thanks in particular to Paul Haesaerts for spending a few hours talking through Russian sites and chronostratigraphy with me. Thanks also to Walpurga Antl-Weiser at the Naturhistorisches Museum, Vienna, for providing access to the material from Aggsbach.

Finally, thanks to my family for their confidence in me, and to many friends and colleagues (especially at Wolfson College, RLAHA and the Institute of Archaeology) for making the last few years so enjoyable.

This DPhil was made possible by an AHRC studentship. Grants for fieldwork and conference attendance during the DPhil were provided by the AHRC, the Meyerstein Fund (School of Archaeology, University of Oxford), the School of Archaeology Research Fund, ERC grant no. ERC-2012-AdG 324139-PalaeoChron, and Wolfson College, Oxford.

Note on transliteration and translation

Where necessary, Russian has been transliterated according to the Library of Congress system (without ligatures). Belarusian has been transliterated using British Standard 2979: 1958. Ukrainian has been transliterated with the BGN/PCGN system. Quotations from the French have been left in the original, with a translation given as a footnote; quotations from Russian and other languages have been translated in the main text with the original given as a footnote. All translations and transliterations were made by the author.

Note on photographs of lithics

The lithics photographed in this thesis are oriented with the proximal ends of their blanks (where identifiable) towards the bottom of the images.

Note on graphs

The “sunflower plots” used in this thesis are a type of scatterplot. Where more than one datapoint has the same value, multiple “petals” show the number of datapoints sharing that value. This type of plot was used because measurements taken were usually rounded to the nearest millimetre or half millimetre, so there are frequent cases of data having the same values.

It may be noted that the tickpoints on the x-axes of the histograms in this thesis are usually offset slightly from the edges of the vertical bars. This is again because of the use of rounding during data collection. One solution to having many datapoints at the boundary between bins is to specify that the histograms are “right-closed” or “left-closed”, but the meaning of this is not universally known and it can be confusing to the reader. To avoid this, the breaks between bins were chosen so that they would not coincide with the datapoints, leading to the offset appearance of the histograms.

Chapter 1

Introduction

“...a complete and unified reappraisal of the material from some of the central and east European sites is badly needed, with a modern classification of the artifacts and a host of fresh radiocarbon dates to help decide the chronological order of the various industries.” (Roe, 1971, p. 83)

Sites described as Gravettian are found the entire way across Europe, including in Russia. In order to understand the Gravettian tradition as completely as possible we must study it over its full geographical extent. Unfortunately, the Russian record has historically been quite inaccessible to Western archaeologists, and it has been studied in a rather different way from material found farther west. This thesis examines a significant part of the Gravettian record of Russia from a Western European viewpoint, and contextualises it by way of comparisons with the rest of the European record.

The quotation above exactly describes the situation that motivated the choice of research topic for this thesis. The fact that something written more than forty years ago remains applicable to the present state of affairs only emphasizes how sluggish progress has been. This is despite the strong interest among archaeologists worldwide in the Russian Upper Palaeolithic. The Sungir’ burials, reconstructions of dwelling structures from Kostënki and elsewhere, and female (“Venus”) figurines are iconic features of the Upper Palaeolithic record for non-Russian archaeologists as for Russian. Furthermore,

study of Russian material is essential to tackle questions regarding, for example, the origins and spread of the Gravettian, human responses to climate change, and the “open social networks” that have been postulated for this time period. Yet the record as a whole remains little-known and badly understood outside the former USSR.

This thesis takes a step towards ameliorating this situation. It examines the Mid Upper Palaeolithic (MUP; used in this thesis as elsewhere as a chronological term referring to the period from ca. 30,000–20,000 ^{14}C years BP) of European Russia. (Crimea is not included in the definition of European Russia used in this research.) Two main strands form the core of the thesis. First, the chronology of the entire period is reassessed, with reference to new and previously published radiocarbon dates and to other chronostratigraphic information. Second is a study of backed lithics from five Russian Gravettian sites. These assemblages are compared with each other and with published descriptions of tools from other Russian and European Gravettian sites, in order to better understand variation among lithics during this period.

To understand the European Gravettian, a strong chronological framework and an integrated understanding of the diachronic and synchronic variation in lithic and other technologies are essential, as is a consideration of the geographical diversity known to have existed during the period. In short, robust and comparable regional culture histories are required, for all parts of Europe. As shall be seen in Chapter 2 this has been rather lacking for Russia: although culture histories have previously been proposed, they often lack precision and there is an absence of strong consensus on many important aspects. Furthermore, these culture histories have often been constructed using very different theoretical assumptions and methodologies from those used by Western archaeologists.

There are numerous reasons why engagement with the Russian record by Western archaeologists has been relatively limited. The language barrier remains an obvious but serious problem, as very few Western archaeologists know Russian. Although an increasing amount of research by Russian colleagues and on Russian material is being published in Western European languages, there is a huge amount of literature which

remains inaccessible to most non-Russian archaeologists. There are other practical difficulties for establishing truly open dialogue between the West and Russia: the expense of travel, visa problems and cultural differences can be stumbling blocks for academic collaboration and communication in both directions.

Furthermore, there remain deep if sometimes quite subtle contrasts between the theoretical approaches employed in the former USSR and the West. One fundamental difference concerns the understanding of variation within the MUP. As shall be seen, the MUP/Gravettian in Western and Central Europe is described in terms of multiple *faciès* which existed in succession. But in Russia, the MUP, including the Gravettian, has often been described as consisting of various cultures, technocomplexes or *faciès* which *co-existed* for thousands of years (even within the very small area of Kostënki-Borshchëvo, where the vast majority of Russian sites are found). This is also the case for larger archaeological taxonomic units: the Aurignacian, the Gravettian, and the local Russian phenomena of the Streletskayan and Gorodtsovian. No Russian archaeologist has put forward a schema in which each of these was replaced by another. Rather, interpretations proposing overlap between them are the norm.

The question of the co-existence of cultures often preoccupied archaeologists both East and West during the twentieth century: the famous controversies between Bordes and Binford regarding the Middle Palaeolithic in France (Binford & Binford, 1966; Bordes & de Sonneville Bordes, 1970; Dibble, 1987), and the debates regarding the Perigordian associated with Peyrony (Djindjian & Bosselin, 1994), are obvious (Western) examples. But it is interesting, and has not been much noted, that in this century the conceptions of how culture changed during the MUP differ strongly between different parts of the continent. Although synchronic variation is certainly recognised within models of the Western European MUP, this involves variation between separate geographical areas (e.g. Klaric, 2007; Rigaud, 2008). This concept is fundamentally different from those invoked in published descriptions of the Russian record.

Within the scope of a single project it would not be possible to exhaustively document the archaeological variation seen within the MUP of European Russia. Instead,

and as explained in more detail in Chapter 3, only Gravettian sites were studied, with a focus on backed lithics (including Gravette points and other backed points, backed bladelets and shouldered points). The choices made regarding which sites to study and what aspects of the assemblages to examine were driven by the desire to include the greatest possible range of variation among Gravettian assemblages.

1.1 The structure of this thesis

Chapter 2, *History of research, problem and aims*, outlines the background information necessary to understand this thesis: the current state of knowledge of the European Gravettian and the Russian MUP and, particularly for the latter, some of the interpretative disagreements and differences in opinion. It also sets out in detail the problem this thesis seeks to address and the aims of this research.

The following chapter, *Lithic analysis methods*, discusses the approach taken to the analysis of the stone tool assemblages studied. This includes an explanation of exactly what was studied, why, and how. Discussion of the theoretical underpinnings of my approach, and of recent work that informed the choice of methods, is also part of this chapter.

Chapter 4, *Chronology and palaeoclimates*, details the results of my assessment of the dating of key Russian MUP sites. The chronological review presented here is based in part on new radiocarbon dates obtained as part of this research as well as unpublished dates that were kindly made available to me, and on comparison of palaeosol stratigraphies and other proxy climate records.

The following five chapters present the results of my lithic analysis, with one chapter dedicated to each assemblage studied. Each chapter begins with a history of research into the site, including information on field research and previously published interpretations. Information on the collections and sampling strategy employed is noted. The bulk of each chapter is taken up by descriptions of the backed lithic assemblages and the typological categories used in analysis. Evidence for bladelet blank production

techniques is provided and discussed. The final section of each chapter is reserved for discussion of the backed lithic assemblage, summarizing the findings and noting possible analogies and points of comparison.

Chapter 10, *Discussion*, puts forward the culture history I suggest for this period. This is based on the preceding analyses and assessment of the literature describing sites which were not studied at first hand. The proposed culture history is contextualised by comparing each phase of it with the contemporary record elsewhere in Europe. This chapter also discusses various points raised by this research, such as diversity among Early Gravettian microliths and the relationship between female “Venus” figurines and lithic assemblages.

The final chapter summarizes the conclusions of this research and makes some recommendations for future work.

Chapter 2

History of research, problem and aims

The research described in this thesis was consciously undertaken from a Western European viewpoint. However, it deals with material that has previously mostly been studied by Russian colleagues, who belong to a different intellectual tradition. The purpose of this chapter is to outline the relevant background to the research. This includes a discussion of some Western European ideas about the MUP, which have shaped the approach taken in this thesis. It also explores some of the aspects of Soviet and post-Soviet archaeological research that differ from usual Western practice. In addition, some outline information is given on the lithic industries and sites relevant to this research, and on previously proposed culture histories for MUP Russia. The chapter concludes with a discussion of the problem that this research sought to address, and sets out the specific aims of the study.

2.1 An overview of MUP research from a Western European viewpoint

The MUP of Europe is frequently defined as a time period of approximately 10,000 years, from ca. 30,000 to 20,000 ^{14}C years BP (ca. 34,000–24,000 cal years BP) (Djind-

jian et al., 1999; Roebroeks et al., 2000). Since the resolution of the “Perigordian question” (Djindjian & Bosselin, 1994), the Gravettian has generally been seen as the most important archaeological unit attributed to this time period in Western and Central Europe. But the MUP of this area is far from monolithic: the Gravettian contains many stages, some with specific names (such as the Rayssian or Pavlovian). The Gravettian is generally characterised, if not universally defined, by the presence of Gravette points and backed bladelets. Gravette points are straight, elongated points with backing on one edge and retouch shaping both ends; the proximal end is ogival or pointed (Demars & Laurent, 1992) (Fig. 2.1). Although this works most of the time, there are a number of points of tension and debate, and the MUP, “the Gravettian” and assemblages containing Gravette points and backed bladelets are not perfectly coincident. This is particularly the case for the Early MUP, where there remains disagreement on the definition of the Bayacian and Maisierian/Fontirobertian industries and whether they should be described as Gravettian (Pesesse, 2008a, 2010; Pesesse & Flas, 2012). It is also pertinent to the end of the MUP, where the status of the Proto-Magdalenian, Badegoulian and other industries, and their connections with the Gravettian, have been subject to debate (Ducasse, 2012; Nespoulet et al., 2013).

There is an extensive and worthwhile literature regarding the definition of “the Gravettian” and what it describes (e.g. de la Peña Alonso, 2012; Noiret, 2013; Pesesse, 2013), but these issues will not be explored in detail here. It will suffice to say that there have been and are a variety of positions on whether the sites described as Gravettian represent a single “culture” (or population, etc.) and on what that means. What is worth stressing in the context of this research, however, is that definitions of the Gravettian and its *faciès* in Western and most of Central and Mediterranean Europe have been heavily reliant on index fossils. These index fossils have been rigorously defined for Western and parts of Central Europe (de Sonneville Bordes & Perrot, 1954, 1956a,b; Demars & Laurent, 1992) and the description of new index fossils (or reassessment of old ones) is an important feature of recent Gravettian research in Western Europe (e.g. Klaric et al., 2002; Pesesse, 2006). As shall be seen, the approach taken to index fossils

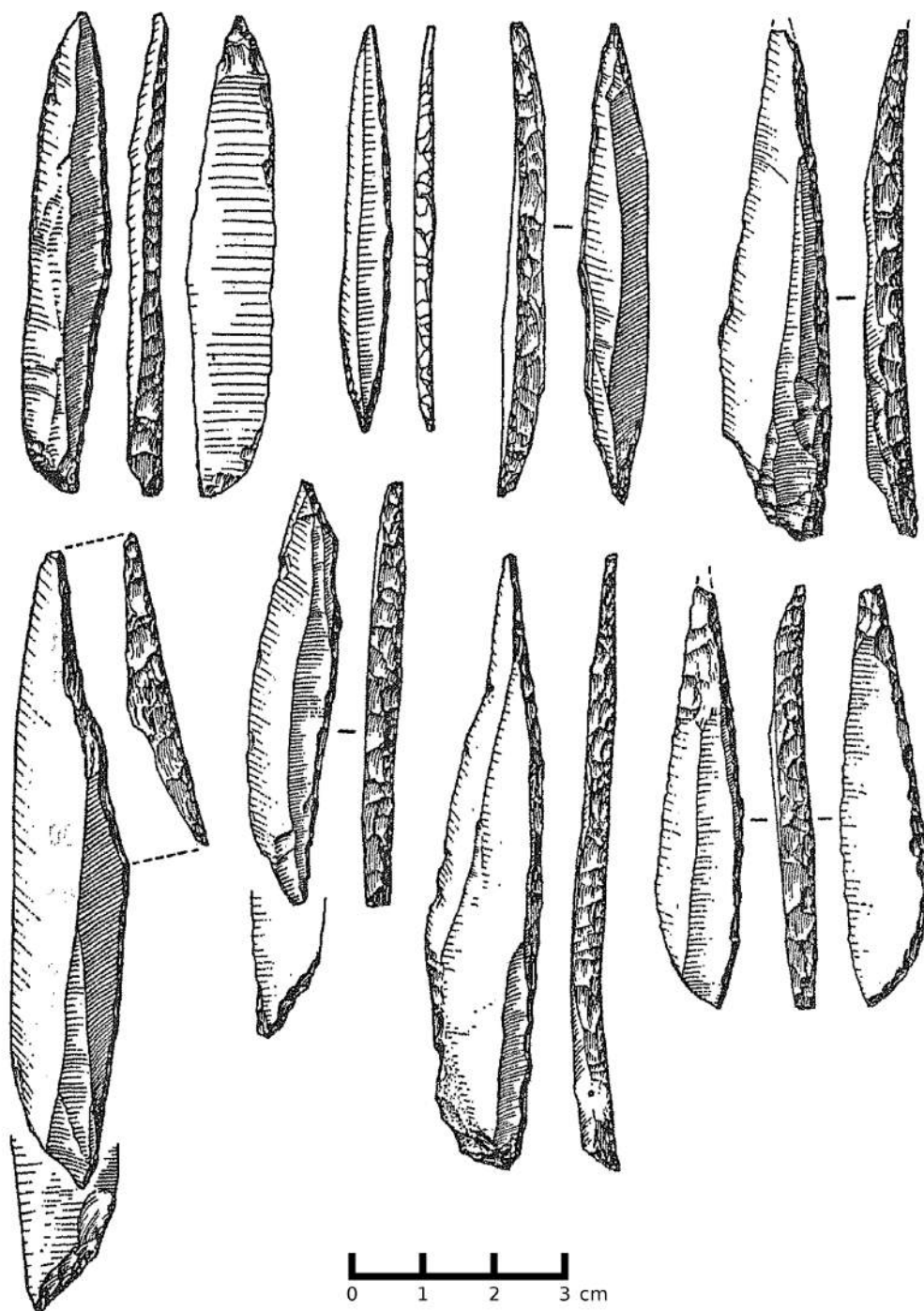


Figure 2.1: Gravette points from French sites (modified after Demars & Laurent, 1992, Fig. 36)

and the definition of sub-units of the Gravettian in Russian MUP research has differed from that taken in the West.

There is a long history of research on the chronology of the Upper Palaeolithic in Western and Central Europe, aided by excellent, well-recorded excavations of cave and rock-shelter sites with long stratigraphies. Furthermore, the description, ordering and dating of *faciès* of the Gravettian has been a key aim for researchers. As a result, in most of Western, Central and Mediterranean Europe, there is a fairly well-defined culture history for the Gravettian, although it predictably remains subject to some debate (Djindjian et al., 1999; Noiret, 2013; Otte & Noiret, 2003; Rigaud, 2008). Most Gravettian *faciès* are both chronologically and geographically restricted; their geographical boundaries often differ from one sub-stage to the next (Klaric, 2007).

The position taken in this research is that the term “Gravettian” is a useful shorthand to refer to MUP assemblages containing Gravette points and/or other typical backed lithics. This does not imply that the Gravettian should be regarded as a monolithic cultural entity. The difference between the Aurignacian and Gravettian (and other industries such as the Streletskayan) does seem to be meaningful, reflecting strong differences in technology and economy, and perhaps in cultural identity. The main interest of this thesis, however, is in variation *within* the Gravettian. This variation is both geographical and temporal, and patterns of regionalisation and homogenisation vary through time. The meaning of this variation, and its connection with cultural groupings, is regarded as a matter for further discussion.

2.2 Dating the beginning and end of the Gravettian

The timing of the earliest appearance of Gravettian industries is a focus of ongoing research and debate. There have been various claims from across Europe for early (pre-30,000 ^{14}C BP) appearances of the Gravettian. Some of the most intensive work has centred around the Swabian Jura (Germany), with a substantial amount of literature arguing for the first appearance of the Gravettian in this region and for its autochthonous

development from the local Aurignacian (Conard & Bolus, 2003; Conard & Moreau, 2004; Moreau, 2011, 2012). The Early Gravettian of Willendorf II Layer 5 has been dated to ca. 30,500 ^{14}C BP (Haesaerts et al., 2007; Otte & Noiret, 2003), but there is now some doubt that the layer is that old (Noiret, 2013, p. 36). In a detailed review of the evidence, Jöris et al. (2010) have argued against the dating of Gravettian assemblages in Central Europe to before 30,000 ^{14}C BP. However, they do accept the dating of the Gravettian in several areas of Central and Western Europe to before 29,000 ^{14}C BP. Conservatively, then, the appearance of the Gravettian by 29,000 ^{14}C BP in Western and Central Europe seems well supported and generally accepted; whether it appeared earlier than that remains a subject for debate.

In Crimea there is an assemblage at Buran-Kaya III (Layers 6-2, 6-1 and 5-2) described as Gravettian, dated to ca. 35,000–31,000 ^{14}C BP, an exceptionally early date (Prat et al., 2011). According to Sinitsyn (2013, p. 8), “the Gravettian attribution of the collection from the layer is not as unambiguous as it is portrayed by the authors of the publication”.¹ Indeed, although there are certainly backed lithics illustrated from the collection, of which a small number could perhaps be fragments of Gravette points, there are no absolutely convincing Gravettian index fossils illustrated. In addition, the extremely early dating of the layer is very surprising: it will be interesting to see how resilient these claims will be to further study. Previous arguments for a very early Gravettian represented by the “Kozarnikian” in Bulgaria have since been apparently overruled (Svoboda, 2007; Tsanova et al., 2012).

It should also be noted that in some parts of Europe it has been suggested that there is “late” persistence of Aurignacian industries past 30,000 ^{14}C BP, for example at Mitoc-Malu Galben (Romania), Alberndorf (Germany) and Breitenbach B (Germany) (Haesaerts et al., 2007; Jöris et al., 2010). Although many other dates for Aurignacian assemblages are younger than 30,000 ^{14}C BP, the known problems with radiocarbon dating for this time period (Higham, 2011) mean that arguments based solely on unex-

¹“Граветтская атрибуция инвентаря слоя не так однозначна, как это представляется авторам публикации”

pectedly late radiocarbon dates should be treated with caution. It has been frequently claimed in Eastern Europe that the Aurignacian and Gravettian overlap for thousands of years (Anikovich, 2005; Kozłowski, 2008a; Stepanchuk et al., 2009). These conclusions are based on radiocarbon dates of mixed reliability from various sites, and/or on archaeological sequences whose integrity has not been fully established. They also rely, as further discussed below, on theoretical frameworks which allow for the long co-existence of different archaeological cultures. Such claims of overlap between the Aurignacian and Gravettian have been critically examined for the Bistrița Valley (Romania) and were rejected (Steguweit et al., 2009).

2.3 Upper Palaeolithic research in Russia

The history of research into the MUP in Russia diverged widely from that in the West throughout the twentieth century, and strong differences in approaches remain.

Historical materialism—the official philosophy of the Soviet Union—was a Marxist-Leninist interpretation of history, economics, and human society, to which all orthodox intellectual endeavour had to conform. It saw the causes of economic and social change in the internal dynamics and contradictions of societies, with a particular focus on productive forces and the distribution of capital. This philosophy expected progress through various stages of societal development, from pre-capitalist to capitalist to socialist to communist.

In the late 1920s and 1930s, especial efforts were made to develop a historical-materialist framework for Palaeolithic archaeology (Trigger, 1989, pp. 217–219), with Efimenko’s 1938 volume being the most influential (Efimenko, 1938). This framework was based (since Marx and Lenin had almost nothing to say on the subject) on Engels’ *The Origin of the Family, Private Property and the State*, and elaborated his schema for the development of human societies. It placed the Palaeolithic period within the era of pre-class societies, which was subdivided as follows: Pre-Clan Society (Primitive horde and Primitive commune), Era of Clan Organization (Matriarchal and Patriarchal), and

the Stage of the Decomposition of the Clan and the Emergence of Class Society (Davis, 1983, p. 408).

The most important thing to note here is that from a very early stage, an entirely unique approach was taken to archaeology within the USSR. The stadial approach, or “Theory of Stages,” saw “cultures,” as listed above, as socioeconomic structures, with leaps, or revolutions, between each stage. The impetus for each cultural transformation derived from internal economic conflicts and contradictions, leaving no role for migration or diffusion, which were rejected as explanations (Malina & Vašíček, 1990, pp. 92–93). Synchronic variability did not fit the stadialist theory and was “either ignored or said not to exist” (Davis, 1983, p. 410). The purpose of archaeology was to elaborate this framework through the study of the history of material culture, not to test it.

In the early Soviet period, “veshchevedenie”², which has previously been translated as “artifactology” or “thingization”—the study and classification of material culture in its own right, other than for how it indicated the existence of one social and economic stage or another—was strongly discouraged (Soffer, 1985; Trigger, 1989). This meant that no study of material culture sufficient to build sound culture histories or to compare material with that from elsewhere took place (Bulkin et al., 1982, pp. 288–289). French nomenclature—Aurignacian, Solutrean, etc.—was certainly borrowed to describe various assemblages, but the study of typologies in their own right took second place to the necessity of illuminating economic stages.

From the 1950s, though, the stadial theory became untenable (Malina & Vašíček, 1990, p. 93) and there is certainly a change in the published literature around this time. However, no new explanatory framework took its place, and many archaeologists focused on gathering and publishing data rather than interpreting it (Davis, 1983, p. 411). There were numerous strands of thought at this time concerning archaeological theory and interpretation, including reworkings of historical-materialist approaches and the increased acceptance of migration and diffusion as explanations for culture change (Bulkin et al., 1982; Malina & Vašíček, 1990). The impact of stadial theory, though,

²“вещеведение”

was long-lasting and widespread. Even now, some Russian scholars dislike using migration and diffusion as explanations for cultural change, preferring to see developments as being caused by local factors even when they are synchronous with those in other regions.

A deliberate strategy of opening large-scale horizontal exposures at Upper Palaeolithic sites has been and remains in effect. This approach was explicitly an attempt to reveal past socioeconomic structures, as expressed through dwelling structures and site organisation, which could then be used to demonstrate the stadial theory (Davis, 1983, p. 410). The fact that, unlike in Western Europe, nearly all sites are open-air rather than in caves and rockshelters (Hoffecker, 2011), contributes to the ubiquity of the horizontal approach, but is not the only determining factor.

There were many positive aspects to Soviet archaeology. The famous development of usewear (traceological) analyses by Semënov (1957) is frequently cited. The practice of horizontal excavation and a focus on the spatial organisation of sites were also, I believe, highly suited to the Russian archaeological record and had international significance for the development of spatial research in archaeology (the discovery of apparent dwelling structures in the USSR gained wide publication abroad; see e.g. Childe, 1950; Leroi-Gourhan & Efimenko, 1954). Many of the excavations of this time are commendable for their high standards of recovery of material and descriptions of spatial and stratigraphic information. When considering the idiosyncrasies of archaeology in the USSR, it must be remembered at all times that Soviet archaeologists were working under repressive and (especially up until the 1950s) often dangerous conditions, with limited communication with their colleagues in the West (Miller, 1956).

The differences between the Soviet and Western approaches to archaeological research were real and substantial, and these differences persist in post-Soviet times. Because the two traditions are to a large degree genuinely incompatible with one another, it is important for Western archaeologists to take the time to understand Russian theoretical approaches and how they have shaped interpretations.

One of the most important differences between Russia and the West has been in the

construction of archaeological taxonomic units or archaeological cultures. In Western Europe we are accustomed to the definition of *faciès* within the Gravettian, such as the Noaillian. One of the most important difference between such *faciès* and the “archaeological cultures” of Eastern Europe is that, as mentioned above, the former are generally defined based on the presence or absence of index fossils. The Rayssian, for example, is defined by the presence of Rayssian burins. “Archaeological cultures” in the Russian sense, on the other hand, are not usually defined by the existence of index fossils. They are defined by combinations of features, each of which is usually found more widely than the archaeological culture itself. This inevitably leads to ambiguity and disputes.

Various approaches to the definition of archaeological cultures have been used in recent times in Russia; the following are just two examples. One major approach has been to seek to classify archaeological sites into a hierarchical taxonomy, as expressed in the following quotation from Grigor’ev (1993, p. 51):

“The terminology employed in classifying all these sites [of the “Willendorf-Pavlov-Kostënki-Avdeevo Cultural Unity”] depicts three levels: (1) archaeological culture (the smallest classificatory unit in this case) . . . (2) archaeological unit (a unity that results from mutual interactions and ties between a few related cultures) . . . and (3) the Eastern Gravettian (a chronological or stadial term).”

This analysis is superficially similar to some Western approaches (in that the Gravettian has also been sub-divided elsewhere in Europe) but differs in part in its relative lack of dependence on chronology. The assumption of “mutual interactions” between multiple sub-units is only logically sustainable if the sub-units existed simultaneously. It also assumes that contemporary human cultures can be separated into discrete units.

A different approach has been to continue to define not just apparent genetic links between cultures but also similarities in technological or economic strategies which cross between otherwise unconnected cultures. The influence of Soviet philosophy here is not

hard to see, in giving significance to types of technological or economic approach, regardless of whether these types arose independently or are the result of direct cultural connections. Anikovich (2005) makes a distinction between “technocomplexes” and “archaeological cultures”, as follows:

“Archaeological culture is [sic] a system of traditions developed by certain social groups under specific historical conditions, materially expressed in the results of human activities that have become archaeological sources and that can be interpreted by the analysis of these sources . . . The technocomplex is a relatively stable system of technological devices generating similarities in tool types. These similarities originate and exist within broad geographical and chronological limits, and can be associated with different genetically unrelated cultural and historical forms.” (Anikovich, 2005, p. 79)

The distinction made by Anikovich echoes past differences between Soviet researchers in whether archaeological cultures represent similarities in “historico-cultural”/“historic-ethnographic” or “techno-economic”/“economic-cultural” groupings (Davis, 1983; Soffer, 1985). Its difference from usual Western approaches lies in using these “technocomplexes” as units of analysis, at the same time as independently taking a historical (and, to Western eyes, more conventional) approach to cultural diversity and change.

There are other important differences between Russian and Western approaches to the Palaeolithic. In general there has been less attention paid to lithic assemblages in Russia than might be expected, in large part because other areas of research (such as the study of spatial data) have been more important there. The approach used for the description of stone tools remains almost universally typological and less formalised than in Western Europe, and there has been (with some notable exceptions; e.g. Girea & Bradley, 1998; Lev et al., 2011; Seleznev, 1998) relatively little detailed study of the technology of lithic production. This may now be changing, with many younger researchers (as well as some of their established colleagues) maintaining strong interests in lithic technology. The principal influence on the study of lithics in Russia, in the

present as in the past, derives from the French rather than the Anglo-American school.

The use of lithic terminology in published literature may be less strict than researchers in the West are accustomed to: for example, Anikovich et al. (2008c) describe “Azilian-type points” at Kostënki 21 Layer 3 (Section 9.2). In Western Europe material of known MUP age would probably never be described as “Azilian-type,” no matter how similar it was to a true (i.e., Azilian-age) Azilian point. Debates on the naming and definition of index fossils obviously constitute a large part of Western Palaeolithic research, and there are numerous theoretical and methodological viewpoints, but in general in the West we are reluctant to apply chronologically specific terms to material of a different age.

Another important feature of Soviet and Russian theory has been the willingness, from the 1950s on, to accept the possibility that diverse societies with very different material cultures co-existed within small areas without noticeably influencing one another. Examples of this sort of thinking are given in Section 2.6 below, and are particularly evident in the work of Efimenko, Rogachëv and Sinitsyn. They may appear similar to Western twentieth century ideas, for example those of Peyrony (Djindjian & Bosselin, 1994) but differ in that the Russian models do not necessarily postulate continuous lines of parallel cultural development. Rather, they suggest the co-existence of groups of people during a limited period of time (although they may be suggested to have links with earlier and later groups).

Certain specific features of the Russian tradition of excavation need to be noted. Excavation usually proceeds over a large area (more than 25 m² is not uncommon) with the entire layer being excavated simultaneously, as opposed to digging one square at a time. Artefacts are usually left in place as they are found and only removed once the entire layer has been excavated. Although there are many advantages to this approach—Russian archaeologists praise it for the opportunity to see and interpret spatial features *in situ*—there are some disadvantages. In particular, in comparison with smaller scale excavations or those in which excavation proceeds one square at a time, it is very difficult to maintain a high level of stratigraphic control. This may be exacerbated by the fact

that, due to the relative lack of resources, recording of the position of artefacts and deposits using a total station or similar equipment is not common even in the present day. Finally, sieving of spoil, including from cultural layers, is not universally carried out, meaning that many collections, including those from recent years, may be biased towards larger artefacts.

2.4 Russian MUP sites: an overview

The village of Kostënki on the Don river, some 30 km south of the city of Voronezh (Fig. 2.2), is the location of by far the greatest concentration of excavated Palaeolithic sites in Russia. Twenty-one Upper Palaeolithic sites are known from Kostënki, and another five at the neighbouring village of Borshchëvo (Fig. 2.3). The sites at Kostënki are both numbered and named, and may be referred to in either way; those at Borshchëvo are referred to by number alone. About half of these contain more than one cultural layer. Although many sites contain only Early Upper Palaeolithic (EUP) material, or Upper Palaeolithic material of unknown age, many of them do contain MUP material as enumerated in Section 2.5. Beyond Kostënki-Borshchëvo, there is a broad distribution of MUP sites, mostly with single cultural layers and found in association with various rivers (Fig. 2.2). These sites are Khotylëvo 2, Gagarino, Zaisk, Avdevo, Sungir', Biriuch'ia Balka 2, and Garchi. The site of Talitsky in the Urals has been argued to date to the MUP on geological grounds, although the available radiocarbon dates place it after the end of the MUP (Pavlov & Indrelid, 2000). Because of the lack of available information on this site and the uncertainty of its attribution to the MUP, it is excluded from this study.

Several factors have strongly influenced the map of the Russian MUP. Romanowska (2012) has proposed a “loess hypothesis” to explain the distribution of Lower Palaeolithic sites in Central and Eastern Europe. In short, this argues that the thick covering of Pleistocene loess across much of this area (see Haase et al., 2007) has buried Lower Palaeolithic cultural remains so deeply that they have only very rarely been found.

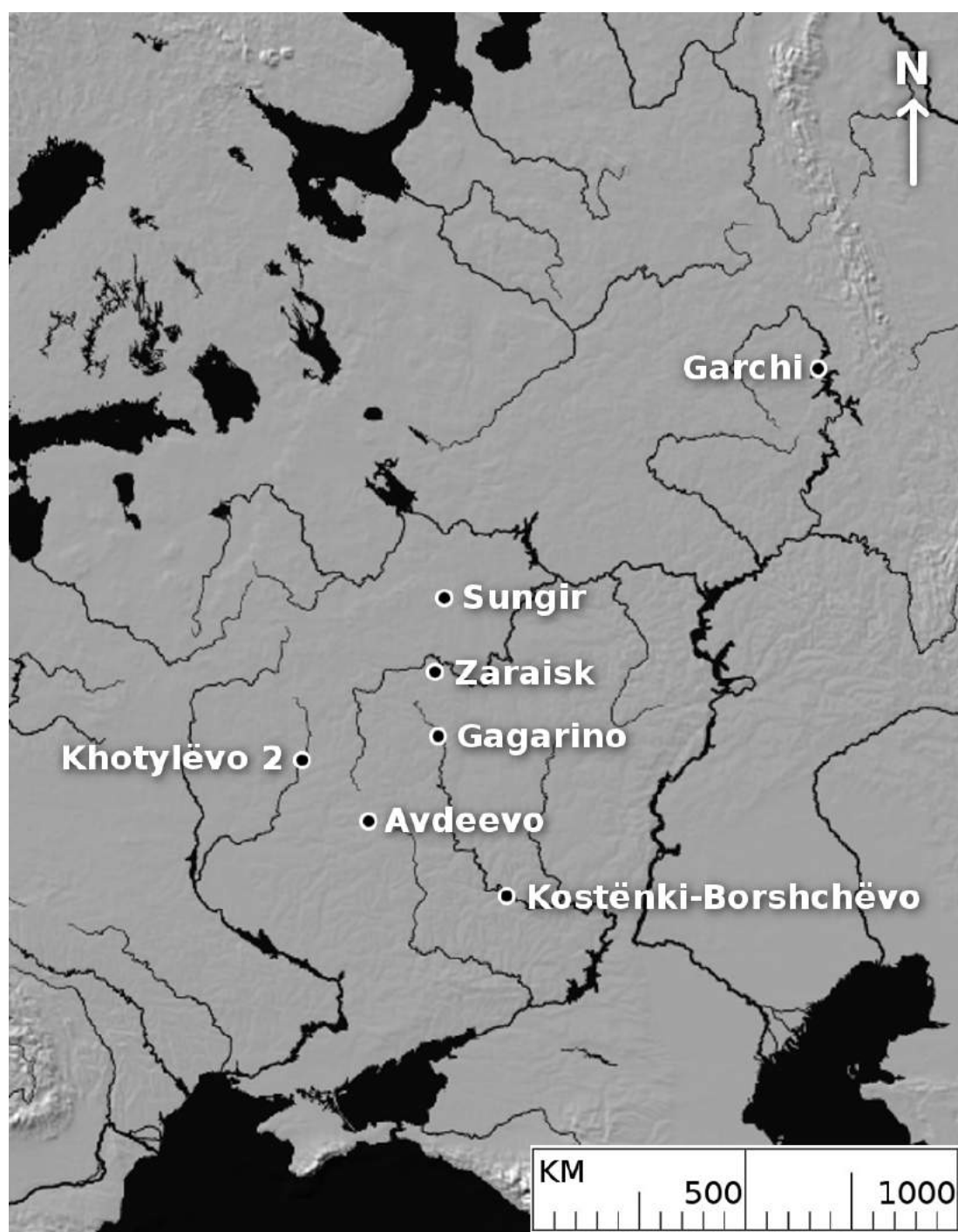


Figure 2.2: Map of principal sites in Russia.

This taphonomic argument can be extended to the Upper Palaeolithic archaeological record. As is very obvious at sites such as Khotylëvo 2, Upper Palaeolithic cultural layers can also be buried under many metres of loess sediment (much of which was deposited during the Last Glacial Maximum). This will certainly have influenced the likelihood of their discovery.

Other disciplinary factors and research biases have influenced the distribution of known sites. In Eastern Europe, a few large-scale archaeological survey and excavation projects (for example, before dam construction) created localised clusters of known Palaeolithic sites (Miller, 1956), which has affected our wider picture of the Upper Palaeolithic even though the Russian MUP record has not been directly shaped by this factor. At Kostënki-Borshchëvo, a long tradition of investigation and the existence of local infrastructure (facilities for excavation teams and a museum) has meant that there has been intensive testing of the area for archaeological deposits, using coring and test-pitting. This has undoubtedly contributed to the high density of sites known from the locality. Furthermore, almost all the Russian MUP sites we know of are located close to cities and large towns (e.g. Kostënki-Borshchëvo, Khotylëvo 2) or even within their limits (e.g. Sungir', Zarsk). In much of sparsely-populated rural Russia, the chances of Palaeolithic sites being found, recognised, and notified to the proper authorities are low relative to areas located closer to urban centres.

2.4.1 The Kostënki-Borshchëvo area

Because so many sites are found around Kostënki and Borshchëvo, it is worth briefly outlining the geography of the area. The sites are found on the right side of the Don river; the right bank of the Don in this area is often steep and high. The left bank, on the other hand, is low and borders an extensive floodplain. Most of the sites are situated within a series of large ravines roughly perpendicular to the course of the Don, with a few found on the edge of the river floodplain itself (Praslov & Rogachëv, 1982) (Fig. 2.3). The ravines are named, e.g. Biriuch'ii Log, Aleksandrovskii Log, Pokrovskii Log (the Russian word *log* means a dry valley or ravine). The photograph in Fig. 2.4 is of a

diorama in the Kostënki museum of the local topography, which shows the landscape of the right side of the Don, cut by ravines, and the river valley itself. Fig. 2.5 shows part of the present-day landscape at Kostënki. Sequences of palaeosols and loessic deposits formed during the Late Pleistocene on terraces within the ravines, and the majority of sites have been found within these deposits. The loesses found at Kostënki are not, however, as extensive as those found in other areas. The geology of the Kostënki area will be further discussed in Chapter 4.

Kostënki-Borshchëvo is located at the edge of two very different topographical zones. The contrast between the two banks of the river—the right high, the left low—reflects the differing landscapes on either side of the river. To the west (i.e., the right side), the landscape for hundreds of kilometres is made up of a chalk plateau, cut by frequent large gullies; to the east is an extensive floodplain and the flat Oka-Don Plain. The difference between the two landscape zones is extremely obvious when at the sites. The border between them is marked by the Don river itself, presenting a third major local habitat. This location at the juncture of three different and extensive ecological zones would have provided significant opportunities for past inhabitants of the Kostënki-Borshchëvo area. Although it is unlikely that the map of Russian archaeological sites actually reflects the true distribution of Upper Palaeolithic human settlements, for reasons mentioned in the previous section, it does seem plausible that the area was attractive to hunter-gatherers for its proximity to multiple types of environments.

There is no known source of good-quality flint near Kostënki. It was suggested many years ago that flint was brought to the sites from the area of Sary Oskol, ca. 100 kilometres to the south-west (Boriskovskii, 1961; Yurgenson et al., 2012); this suggestion has still not received full published evaluation based on petrographic or chemical analyses. Some low-quality flint is apparently found locally. Generally speaking, good-quality and black flint is treated as imported; “coloured” and low-quality flint is regarded as being locally-derived. Further work on this issue would be extremely useful.

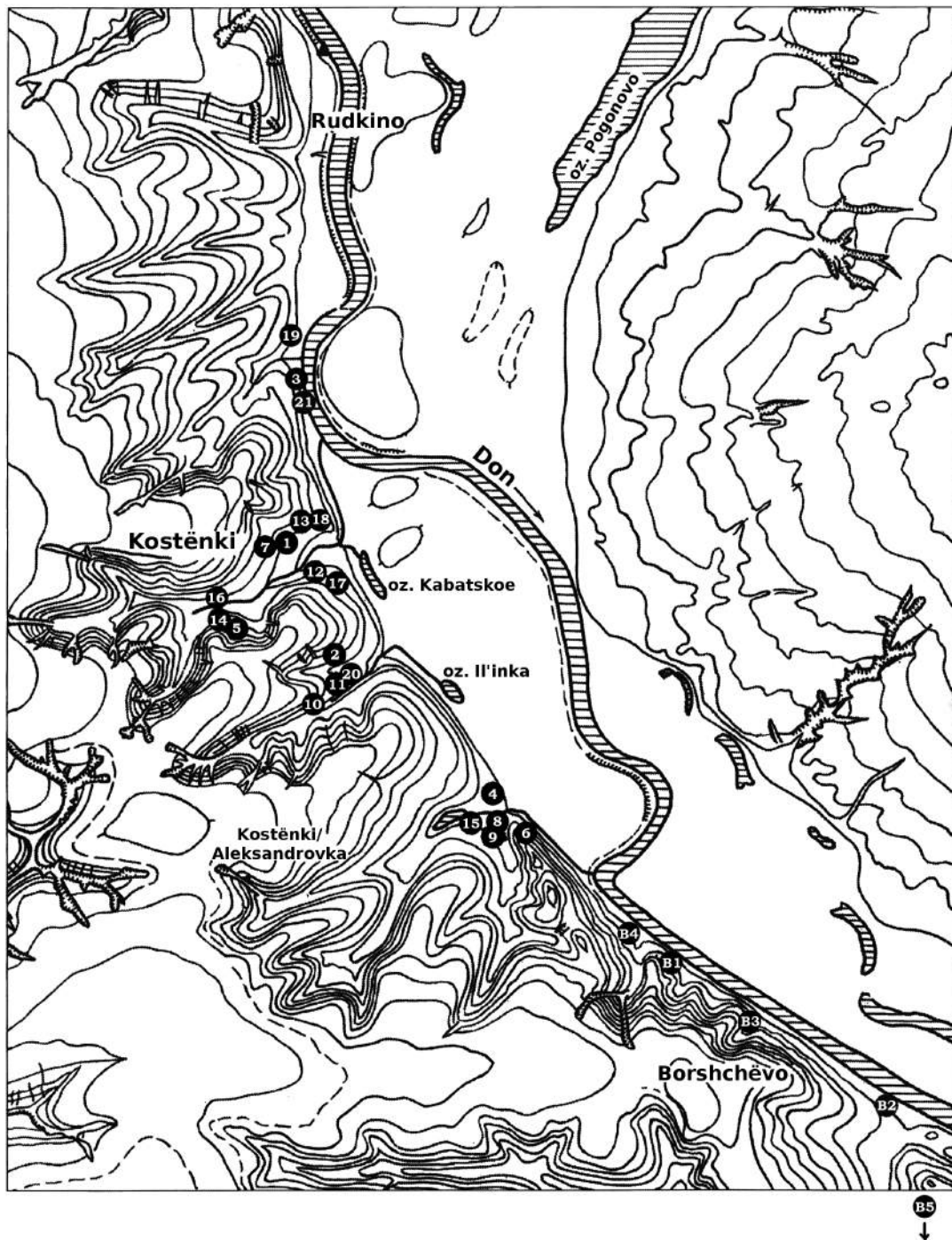


Figure 2.3: Map of sites in the Kostënki and Borshchëvo area (modified from Praslov, 2009). Key: circles containing a number indicate Kostënki sites; circles containing B followed by a number indicate Borshchëvo sites.



Figure 2.4: A diorama of the geography of the Kostënki area in the Kostënki museum, August 2013. Length of bank shown is from approximately Kostënki 4 to Kostënki 19, approximately 4 km (compare Fig. 2.3). (Photo N. Reynolds).



Figure 2.5: View to the south-east from hill to the north of Pokrovskii Log (location of sites 14, 7, 1, etc.), Kostënki, August 2012. Visible are the south side of the mouth of Pokrovskii Log (right middleground) and the Don floodplain (left background). The Don river itself is just visible at the far left. (Photo N. Reynolds).

2.5 Industries of the MUP in Russia

The MUP of Russia differs notably from that of the rest of Europe, in that several non-Gravettian industries, as well as the Gravettian, have been described as present in Russia during the time period. These non-Gravettian industries are the Streletskayan and the Gorodtsovian. Another important archaeological unit, the “Kostënki-Avdeevo Culture” is a grouping of several Gravettian sites. There are numerous problems in the absolute and relative chronologies of all these industries; previously proposed culture histories will be summarized in Section 2.6 and a re-assessment of the dating of the sites will be given in Chapter 4. The following pages summarize the different industries, cultures and technocomplexes described for MUP Russia.

2.5.1 The Eastern Gravettian

The term “the Eastern Gravettian”³ is often encountered in the literature, both in Russian and in other languages including English, but has various definitions.

Kozłowski (1986, p. 131) defines the Eastern Gravettian in an influential paper as “industries with backed points, blades, and bladelets that fall in the middle and late phases of the Upper Paleolithic” east of the Rhine and north of the Alps, Balkans and Black Sea. Within this are included sites both with and without shouldered points. Nuzhnyi (2009) also uses the term to refer to all Gravettian assemblages of Eastern Europe.

Gamble (1986, pp. 181–185) includes the Pavlovian and shouldered point sites in his definition of the Eastern Gravettian, but also includes the Streletskayan (as represented at Sungir’ and the Streletskayan sites at Kostënki, further discussed below). Assemblages of the latter industry do not include backed bladelets or points in any significant quantities and are generally regarded as distinct from Gravettian assemblages.

Grigor’ev (1993) places his “Willendorf–Pavlov–Kostënki–Avdeevo Cultural Unity” (very similar to the “shouldered-point horizon”; see below) *within* the Eastern Gravet-

³“восточный граветт”

tian. He does not define the latter, but refers to it as “a chronological or stadial term.”

In contrast, Hoffecker (2002, pp. 219–221) suggests that the three most important tool-types in the Eastern Gravettian are the shouldered point, the Kostënki knife and the burin (various types), with backed bladelets and points making up most of the remainder of these assemblages. In this, he presents the most important aspect of the Eastern Gravettian as near-synonymous with the Kostënki-Avdevo Culture as defined below. Shouldered points do not occur at all in the Early Gravettian site of Kostënki 8 Layer 2, nor in several other major Russian Gravettian sites (e.g. Kostënki 4).

Sinitsyn (2007) avoids the term “Eastern Gravettian” in favour of “Gravettian” alone, as do Otte & Noiret (2003). Because there is such a lack of consensus on the definition of the term “Eastern Gravettian”, and because there does not seem to be any strong *a priori* reason for defining an “Eastern Gravettian” without a corresponding “Western Gravettian,” I do not use the term in this research.

2.5.2 The Streletskayan

The Streletskayan (sometimes known as the Sungirian) is a non-Gravettian industry found only in Russia, including at Kostënki and at several sites in the Urals. Many Streletskayan sites clearly date to the EUP, before 30,000 ^{14}C BP (Chabai, 2003; Sinitsyn, 2007), but a few have been dated to the MUP: Sungir’, Biriuch’ia Balka 2, Garchi, Kostënki 12 Layer 1a and Kostënki 11 Layer 3 (see Chapter 4). The index fossil for this industry is the Streletskayan point, a triangular bifacially-worked point with a straight or concave base, which is frequently found in combination with other bifacially-worked pieces (Vishnyatsky & Nehoroshev, 2004) (Fig. 2.6). Backed lithics are not present. Links are sometimes drawn with “transitional industries” such as the Micoquian and with the Middle Palaeolithic (Anikovich, 2005; Bradley et al., 1995).

2.5.3 The Gorodtsovian

This industry, like the Streletskayan, is treated as entirely distinct from the Gravettian. It is not defined by the presence of a particular lithic index fossil, but by a combination

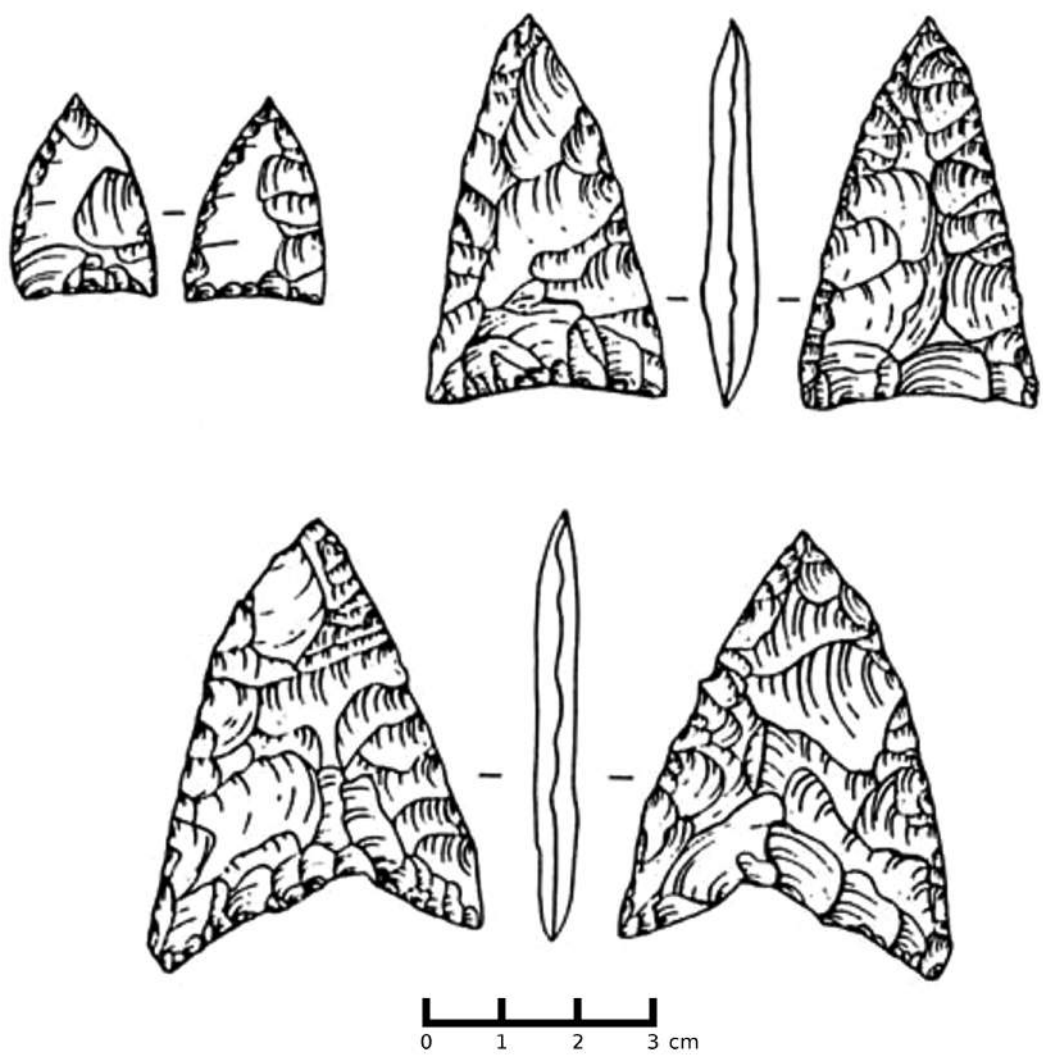


Figure 2.6: Streletskayan points from Kostënki 1 Layer 5 (modified after Chabai, 2003, Fig. 4)

of lithic types and, when most restrictedly defined, by the presence of bone “shovels” (Figs. 2.7 and 2.8). These latter artefacts are found at the industry’s type-site of Kostënki 15 (Gorodtsovskaja stoianka) as well as in Layer 2 of Kostënki 14 (a possible fragment of one was found at Kostënki 12 Layer 1) (Sinitsyn, 2010). The function of the “shovels” is obscure. They are rather large, perhaps too large to have served as, for example, marrow scoops. They could conceivably have been used as wipers for snow from tents and other equipment. The lithic industry found at Gorodtsovian sites is heavily flake-based and includes a high proportion of pieces which have been described as “Mousterian” or “Middle Palaeolithic,” such as side-scrapers, points and limaces, as well as abundant splintered pieces (Djindjian et al., 1999; Sinitsyn, 2010; Vishnyatsky & Nehoroshev, 2004).

Researchers vary in which sites they include in the Gorodtsovian apart from those which have yielded the bone “shovels.” Kostënki 16 is frequently included, while during the mid-twentieth century numerous other Kostënki sites were attributed to the industry, and it has been suggested that the site of Talitsky in the Urals should be included (Sinitsyn, 2010). More recently, Layer 1 of the site of Mira in Ukraine has been described as Gorodtsovian; it is the only possible Gorodtsovian site known beyond Russia (Stepanchuk, 2005; Stepanchuk et al., 1998, 2009). The raw materials used at Mira have been argued to derive from the East Carpathians (Stepanchuk, 2010; Stepanchuk & Petrougne, 2005): if Mira Layer I is regarded as Gorodtsovian then this perhaps implies that the geographical distribution of the Gorodtsovian extended further west than is demonstrated by the locations of the known sites alone.

There is one interpretation of the Gorodtsovian that should be mentioned here. Hoffecker (2011) suggests that the Gorodtsovian industry is simply a functional variant of an “Eastern Aurignacian”, representing “locations where long-term open-air camps were established following kill-butchery events” (p. 28). This idea is important because it does remind us that the specific nature of the Gorodtsovian sites may be in large part a reflection of particular functions that were carried out there. However, it is hard to see why, if the sites represent long-term Aurignacian settlements, more typical Aurignacian

lithics were not found there. The possibility that they were *only* kill-butchery sites appears to be contradicted by the presence of sophisticated osseous artefacts.

2.5.4 The Gravettian

Definitions of the Gravettian in Russia are strongly influenced by, but not identical to, those used in the rest of Europe. Sinitsyn (2010) defines Gravettian assemblages by the presence of backed bladelets and “Gravettian” points. It is not clear, however, that the definition of “Gravettian points” used in Russia matches, or is as strict as, the definition of *pointes de la Gravette* given by de Sonneville Bordes & Perrot (1956b, p. 547) or Demars & Laurent (1992, p. 100). For example, Anikovich (2005, p. 80) describes only “points with backed edges”. Grigor’ev (1993, p. 52) mentions “Gravettian points” of which “Gravette points from France” are just an example. In general, the morphology of the blanks and retouched blades is regarded as different from that seen for the Aurignacian (Sinitsyn, 2010). Blanks derive from “parallel cores” and the production of “narrow regular microblades” and burin spalls is common (Anikovich, 2005). Anikovich also mentions a high prevalence of “side burins with straight and oblique retouch” as part of his definition of the Gravettian in Russia.

The principal Russian sites usually or frequently described as Gravettian (excluding those mentioned below in relation to the Kostënki-Avdeevo Culture) are Kostënki 8 Layer 2, Kostënki 4 (both layers), Khotylëvo 2, Gagarino, Kostënki 9, Borshchëvo 5, Kostënki 11 Layer 2, and Kostënki 21 Layer 3.

2.5.5 The Kostënki-Avdeevo Culture

As discussed above, the construction of archaeological taxonomic units differs in Russia from Western Europe. The Kostënki-Avdeevo Culture (sometimes called the Kostenkian) is an important example of this.

Part of the reason that the Kostënki-Avdeevo Culture has received such emphasis in studies of the Russian Gravettian is that it is the only Gravettian archaeological culture (in the Russian sense) to enjoy universal agreement on its existence. There

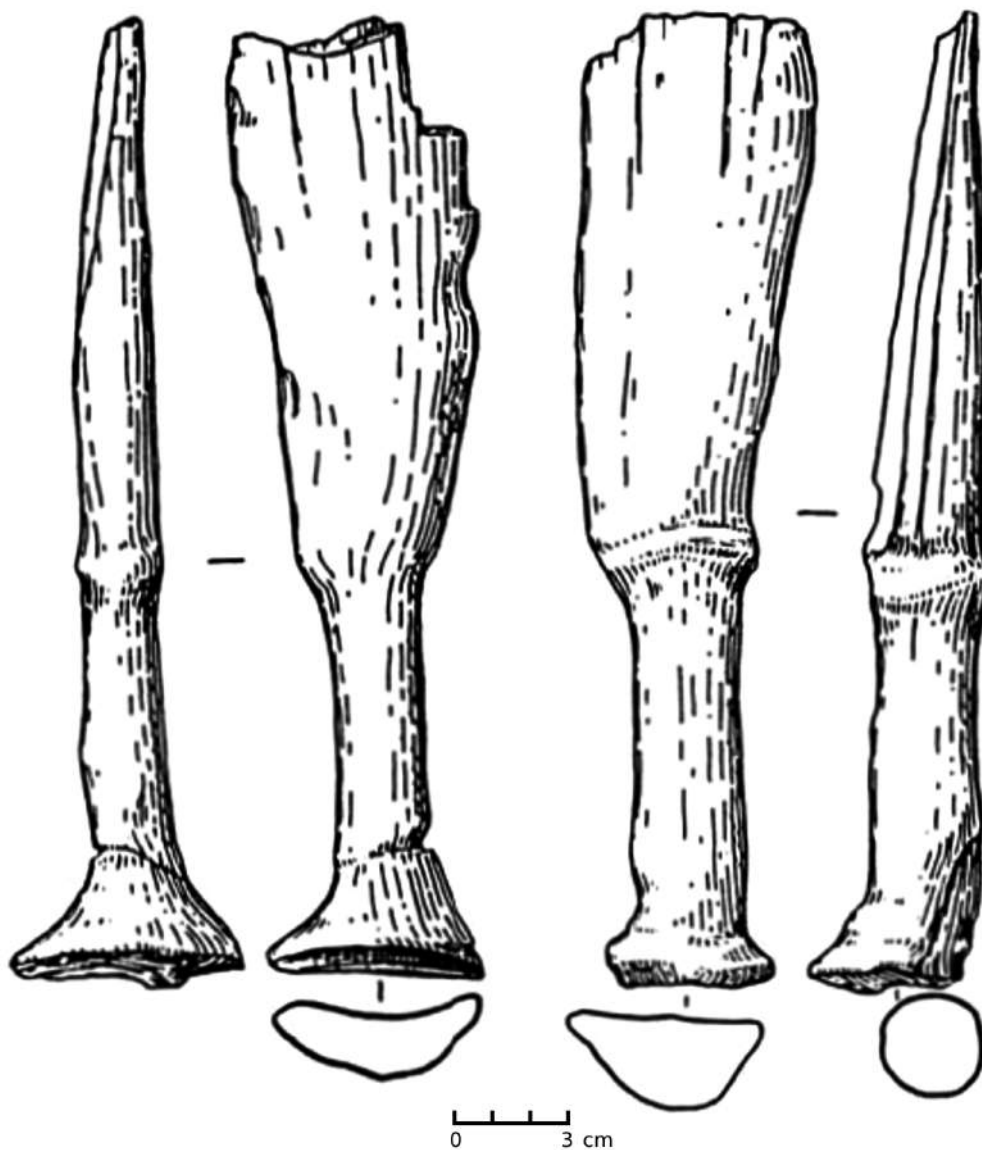


Figure 2.7: Gorodtsovian bone “shovel” from Kostënki 15 (modified after Chabai, 2003, Fig. 7)

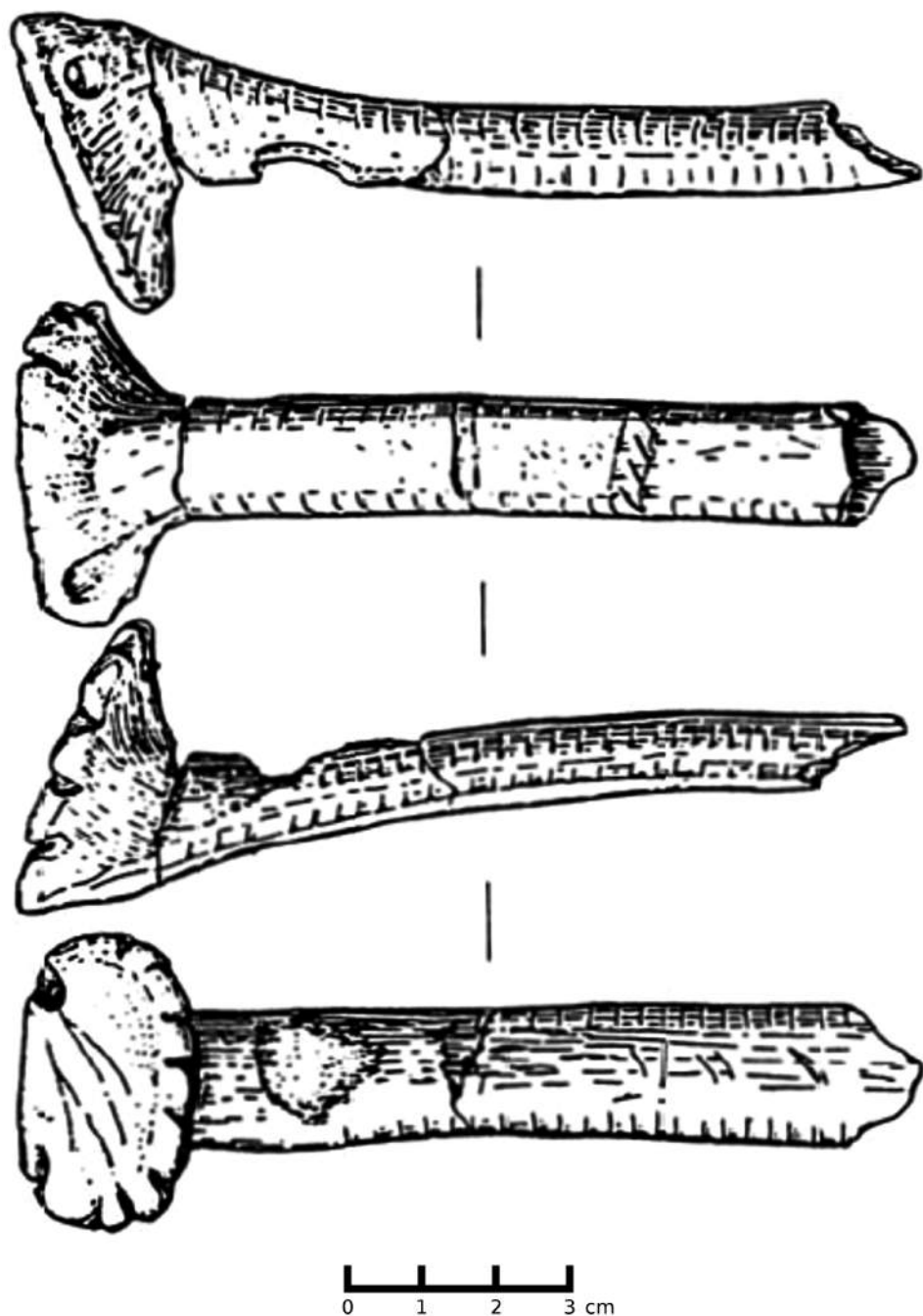


Figure 2.8: Fragment of Gorodtsovian bone “shovel” from Kostënki 14 Layer 2 (modified after Chabai, 2003, Fig. 7)

is also a relatively high level of agreement between authors on which sites should be included in this grouping and on how it should be defined. The culture is named for the sites of Kostënki 1 Layer 1 and Avdeevo. Kostënki 1 Layer 1 was, as the numbering suggests, the very first site formally investigated at Kostënki (Rogachëv et al., 1982a). Although sites with similar assemblages were already known in Central Europe, it was only with the discovery and excavation of Avdeevo in the 1940s that an analogous site within Russia was found, and this had great importance: “heretofore no two sites in European USSR [sic] could be securely assigned to the same archaeological culture” (Grigor’ev, 1993, p. 52). The inclusion of some assemblages from Kostënki (13 Layer 1, 14 Layer 1, and 18) and the site of Berdyzh (Belarus), and the major site of Zaisk, excavated from the 1990s on, complete the current list of candidate Kostënki-Avdeevo Culture sites (Amirkhanov, 2009; Djindjian et al., 1999; Sinitsyn, 2007). Khotylëvo 2 and Gagarino are also sometimes included in this grouping, but their differences from the other sites are always noted (e.g. Sinitsyn, 2007). The culture is dated to the latter half of the MUP (Djindjian et al., 1999; Sinitsyn, 2007).

The universally agreed lithic index fossils for the Kostënki-Avdeevo Culture are shouldered points (Fig. 2.9) and Kostënki knives (Lev, 2011; Sinitsyn, 2007). It has been acknowledged that “the existing typology of these tools is not very convincing” (Gvozdozer, 1995, p. 47). Occasionally, *pointes à face plane* with thinning retouch are also cited as an index fossil (Djindjian et al., 1999; Gvozdozer, 1995). The final, non-lithic, index fossils for the culture are female (“Venus”) figurines (Sinitsyn, 2007) (Fig. 2.10).

Shouldered points are also called Kostënki points or Kostënki shouldered points. Authors seem to vary in the restrictiveness of the definitions they use for these pieces and for identifications of fragments thereof. In their strictest definition, as given by M. D. Gvozdozer, they are typified as being made on regular broad blades 12–14 cm long, with a shoulder extending for approximately two-thirds of the entire length of the piece and with bifacial flat retouch to both ends (Belyaeva & Moiseyev, 2007). However, in practice the definition of these index fossils is often rather loose. The most

basic definition requires simply the presence of a point at one end and backing forming a shoulder on one edge. However, lithic fragments have frequently been classified as shouldered points based just on the presence of backing forming a shoulder, even where other aspects of the morphology contradict this identification (see e.g. the assemblage from Khotylëvo 2, Chapter 8). Shouldered points from Kostënki 1 Layer 1 were studied traceologically by Semënov (1940), who found that the artefacts were used as knives. This interpretation remains accepted today for at least some shouldered points (Belyaeva & Moiseyev, 2007). Kostënki knives are characteristically retouched blades, which have recently been the subject of a focused techno-typological study (Lev et al., 2011).

Apart from this, the importance of the presence of large linear spatial arrangements, as found at Kostënki 1, Zarsk and Avdevo, is stressed in the characterisation of the culture (Amirkhanov, 2009; Sinitsyn, 2007). These spatial features are usually described as dwelling structures and consist of single lines of hearths surrounded by pits of various sizes (Fig. 2.11). At Kostënki 1 the structure is ca. 36 m by 15 m in dimensions; that at Avdevo is described as ca. 45 m by 20 m (Gvozdozer, 1995; Rogachëv et al., 1982a).

All of the described index fossils for the Kostënki-Avdevo Culture in fact occur much more widely than just within the few relevant sites. Shouldered points are found throughout Eastern and Central Europe at approximately the same time as the Kostënki-Avdevo Culture (see below). Kostënki knives are a very widespread tool type, found across Europe during various stages of the Upper Palaeolithic (Klaric, 2000; Noiret, 2013). Female figurines are, of course, found across Europe and in Siberia (Mussi et al., 2000). This means that the “Kostënki-Avdevo Culture” should not be treated as a unit akin to a *faciès* of the Western European Gravettian. There clearly are very close similarities between the sites included in the grouping. However, there are also definite similarities with sites further afield. The reification of this “archaeological culture” has strongly shaped interpretations of the Russian MUP; the question of its status will be returned to in the final chapters of this thesis.

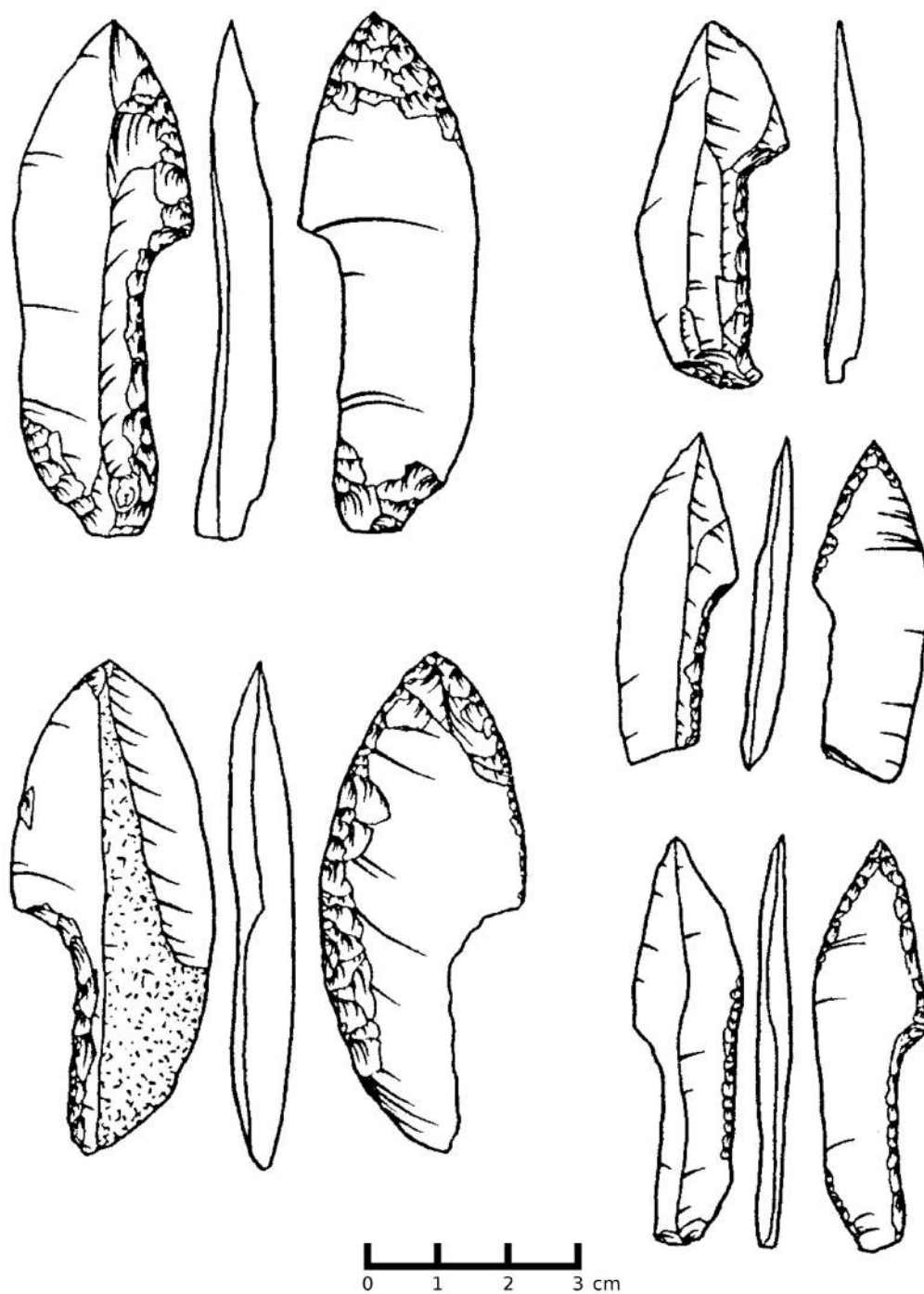


Figure 2.9: Shouldered points from Avdeevo (modified after Gvozdover, 1995, Fig. 5)



Figure 2.10: Female figurine from Kostënki 1 Layer 1 (modified after Soffer et al., 2000, Fig. 8)

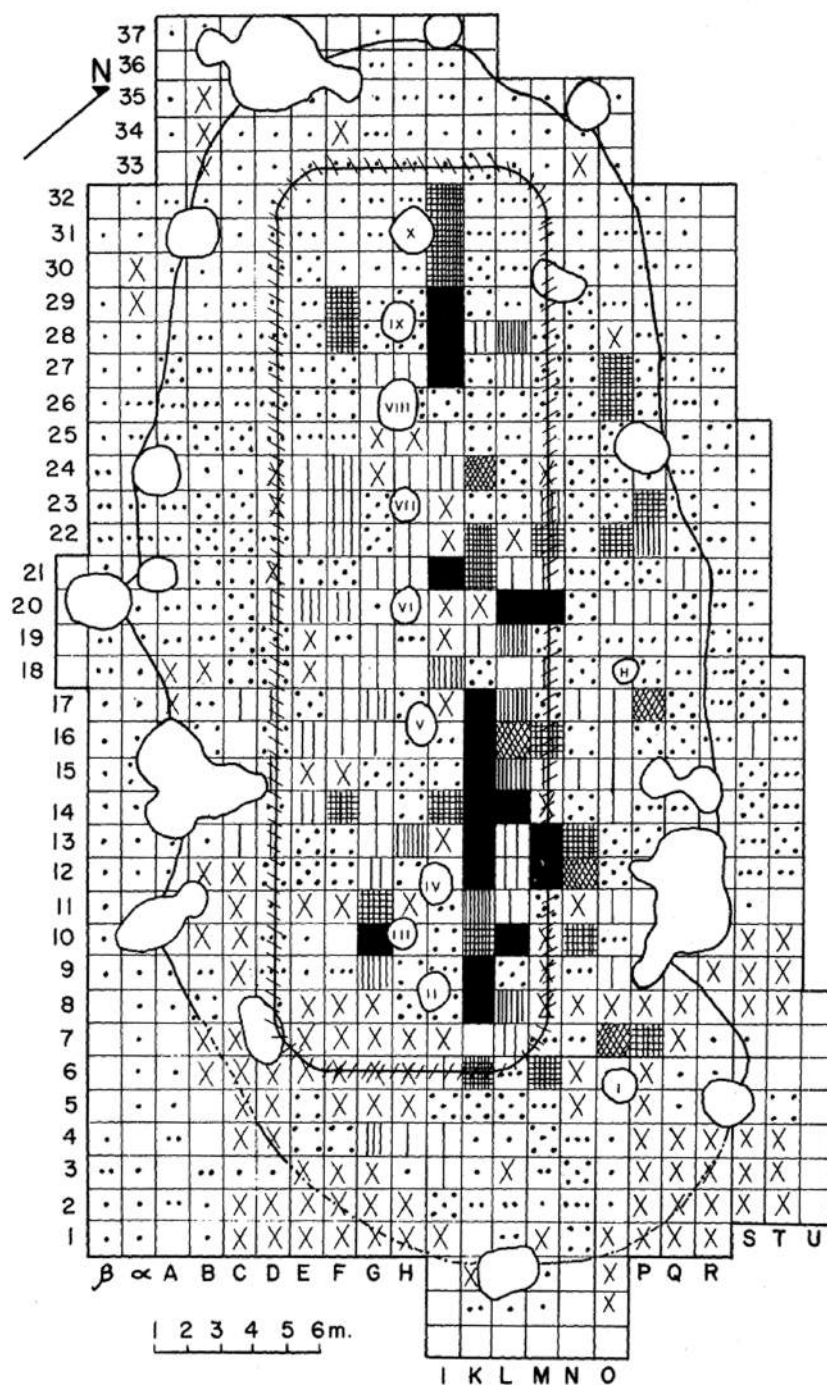


Figure 2.11: "Dwelling structure" from Kostënki 1 Layer 1 (modified after Klein, 1969, Fig. 34). Partial key: Roman numerals: hearths; white areas: pits or dug-outs; density of colouring of squares indicates numbers of flints found.

2.5.6 Shouldered point horizon

Shouldered points are widespread across Central and Eastern Europe in the latter part of the MUP (Otte et al., 2007a; Svoboda, 2007). The “shouldered point horizon” closely matches the “Willendorf–Pavlov–Kostenki–Avdeev Cultural Unity” of (Grigor’ev, 1993) and the “Kostenki-Willendorf Culture” or “Willendorfan-Kostenkian”/“Willendorf-Kostenkian” of some authors (e.g. Gvozdozer, 1995; Svoboda, 2007; Svoboda et al., 2000; Tarasov, 1979). The Kostënki-Avdeev Culture is often considered as a sub-unit of this industry (Grigor’ev, 1993; Lev, 2009). The shouldered point horizon/Kostenki-Willendorf Culture is minimally defined by the presence of shouldered points, but female figurines and Kostënki knives are also very often mentioned as index fossils; leaf-points/*pointes à face plane* are sometimes said to characterise the assemblages (Gvozdozer, 1995; Kozłowski, 1998, 2007; Kozłowski, 2008b; Svoboda et al., 2000). The shouldered point horizon in Central Europe is typically dated to within ca. 25–20 ¹⁴C BP (Kozłowski, 1998; Svoboda, 2007; Svoboda et al., 2000); the usual dates for the Kostënki-Avdeev Culture also fall within this range.

It has recently been claimed that a late MUP assemblage from the southwestern French site of Brassempouy could be linked with this industry, as shouldered points are also found there in association with female figurines (Simonet, 2012). However, the shouldered points from this site are few and differ technologically from those found further east.

Of the Russian sites, Khotylëvo 2 and Gagarino, which are not usually included in the Kostënki-Avdeev Culture, may be included in the Kostënki-Willendorf Culture (Tarasov, 1979).

2.5.7 The Epigravettian

In Russia, sites believed to date to the Last Glacial Maximum and later are usually described as Epigravettian. This includes a number of sites at Kostënki, which are included in the Epigravettian “Zamyatnin culture”: sites 2, 11 Level 1a, 19 and 3 (Djindjian

et al., 1999, p. 244). They are dated to after 20,000 ^{14}C years BP (d’Errico et al., 2011; Djindjian et al., 1999) and therefore fall outside the scope of the present research. The Epigravettian is also described at many sites beyond Russia in Eastern and Central Europe (Montet-White, 1994; Otte & Noiret, 2003).

2.5.8 Gravettoid and Aurignacoid industries and assemblages

The final terms to be introduced here are “Gravettoid” and “Aurignacoid,” which are used by some authors. Anikovich (2005) describes a “Gravettoid technocomplex” to which he assigns the sites of Kostënki 8 Layer 2 and some sites at Kostënki overlying the Upper Humic Bed (presumably including Kostënki 1 Layer 1). He assigns Kostënki 4 Layer 1 to the “Aurignacoid technocomplex” and describes Kostënki 9 as having features of both the Gravettoid and Aurignacoid technocomplexes. The usage of the word “technocomplex” here has a rather different meaning than in Western parlance, as discussed above (Section 2.3, p. 16). It is used to refer to a system of technological adaptations, which can occur within diverse and otherwise unrelated ethnic/cultural groups. This is not, however, the only sense in which the terms “Gravettoid” and “Aurignacoid” have been used. In other cases, they may describe assemblages which for some reason the authors do not wish to describe as unambiguously “Gravettian” or “Aurignacian”, or in an undefined sense (e.g. Stiner & Munro, 2011; Svoboda, 2006; Vishnyatsky & Nehoroshev, 2004).

2.6 Previous culture histories

There have been numerous published studies of the Russian MUP incorporating attempts at culture history building. The major schemes proposed since the decline of stadial theory in the 1950s are described here.

The schema constructed by Efimenko (1953) retains some of the stadialist tendencies of his earlier work, but also admits the possibility of synchronic variability. He writes that the earliest part of the Upper Palaeolithic was not present on the Eastern Euro-

pean Plain, but suggests a series of named periods for the time after that. These include the “Early Tel’manskoe period”, the “Mezinskoe period”, and the “Gontsovskaja stadial” (Efimenko, 1953; Rogachëv, 1957). Part of his work includes a critique of Western “bourgeois archaeology”: he rejects the idea of the succession of Aurignacian, Solutrean and Magdalenian cultures, established especially based on French evidence. Rather, he writes that in Russia, “at this time Palaeolithic societies, which due to the high conservatism of primitive technology preserved various methods and forms of working and using flint as part of their way of life, existed in often very close proximity to one another”⁴ (Efimenko, 1953, p. 314) Lacking radiocarbon dates and without a comprehensive stratigraphic basis, Efimenko’s chronology has been unquestionably superseded by subsequent work. However, it is important because it demonstrates some of the roots of an idea that remains current in Russian archaeology: that societies with very different material cultures could live side by side without influencing each other, often for very long periods.

Rogachëv (1957), in a review of the Kostënki-Borshchëvo sites, put forward a four-part chronological division of the sites, based on their stratigraphical position with relation to the geological deposits found in the area; later he combined the final two stages to create a simpler, tripartite chronology (Klein, 1969), which the rest of this section discusses. (The stratigraphic basis is laid out in Section 4.4). The chronology he sets out has proven to be robust and has formed the foundation of much work that followed. It is now apparent that the MUP as defined in this thesis spans the latter part of his second chronological group and all of the final chronological group. The Streletskayan is found in the first and second chronological group, while the principal Gorodtsovian sites are found in the second chronological group. Kostënki 8 Layer 2 belongs to the second chronological group, while all other Gravettian sites, including sites of the Kostënki-Avdeev Culture, belong to the third group. However, an important

⁴“часто в самом близком соседстве друг с другом существовали в указанное время палеолитические общины, сохранявшие в своем обиходе, в силу большой консервативности первобытной техники и устойчивости её традиций, различные приёмы и формы обработки и использования кремня”

part of Rogachëv's work was his claim of synchronic variation at Kostënki-Avdeevo. This now seems to have been based in part on misidentification of industries and/or a lack of recognition of the problems with the stratigraphy at Kostënki. For example, he believed that a Magdalenian layer lay below a Mousterian layer at Kostënki 8 (Rogachëv, 1957). Based on this and other examples, he "called for the recognition of local synchronic archaeological cultures" (Soffer, 1985, p. 12).

In a major review of the "Eastern Gravettian," Kozłowski (1986) lists several different types of assemblages but does not set out a full culture history for them. The chronological relationships he does set out are mainly based on radiocarbon dates. He cites Kostënki 17 Layer 2 (a Spitsynian assemblage which is not usually described as Gravettian; Boriskovskii, 1963; Boriskovskii et al., 1982) as one of the earliest Eastern Gravettian assemblages at ca. 32,000 ^{14}C BP. He follows this with the assemblage of Kostënki 8 Layer 2, with "microgravettes and geometric microliths," citing the usual date of $27,700 \pm 750$ ^{14}C BP (GrN-10509) for this assemblage. He includes Kostënki 8 Layer 2 along with several other sites, not united by any particular typological features, in his "middle phase of the Gravettian" (Kozłowski, 1986, p. 165). These other sites are Khotylëvo 2, Pushkari I, Kostënki 9 and perhaps Kostënki 4 Layer 2 and Kostënki 11 Layer 2, although he considers the latter two sites to be somewhat younger, and attributes them to a group of "sites with typical slender backed pieces" (ibid., p. 149). After this come "leaf points associated with backed pieces" at Kostënki 4 Layer 1 but "their chronological relationship to assemblages with shouldered points is not known" (p. 149). In the shouldered point group he includes sites of the "Kostënki-Avdeevo industry" (Kostënki 1 Layer 1, Kostënki 18, Kostënki 14 Layer 1, Avdeevo and perhaps Berdyzh) as well as sites that he does not include in that industry (Kostënki 21 Layer 3, Gagarino) (ibid., p. 166). He mentions the example of Kostënki 21 Layer 3 for providing evidence of great synchronic variability (ibid., p. 149).

The approach taken by Anikovich in his 2005 paper involves a distinction between "archaeological cultures" (which relate to actual human groups) and "technocomplexes," (which relate to similar technologies that may appear among unrelated human groups),

as already discussed (p. 16) (Anikovich, 2005). In his schema, the Gravettoid technocomplex appears in Eastern Europe ca. 30,000 ^{14}C BP, although the earliest dates he cites for this technocomplex are of ca. 27,000 ^{14}C BP (at Kostënki 8 Layer 2) and ca. 29–28,000 ^{14}C BP (at Molodova V Layers 10–8, Ukraine). He describes the “maximal development” of the Gravettoid technocomplex as appearing later (presumably in connection with the sites usually described as belonging to the Kostënki-Avdeevo Culture) (Anikovich, 2005, pp. 88–89). Concurrently with this Gravettoid technocomplex, Anikovich describes an Aurignacoid technocomplex from 26–22,000 ^{14}C BP, although it is not explicit in his article whether the two technocomplexes are supposed to have coexisted in close proximity. He assigns the sites of Kostënki 1 Layers 3 and 4, Kostënki 4 Layer 1, Kostënki 8 Layer 1 and Kostënki 11 Layer 3 to this Aurignacian technocomplex (of these, Kostënki 4 Layer 1 is treated in the present study as Gravettian) (Anikovich, 2005, p. 88).

The chronology put forward by Sinitsyn (2007) is heavily based on Rogachëv’s earlier work. He follows Rogachëv in suggesting three chronological groups, which he dates to 36–32 kyr BP, 32–28 kyr BP and 27–20 kyr BP (uncalibrated radiocarbon ages). For Sinitsyn,

“La composition du groupe moyen (32–28 ka) avait été définie par la coexistence d’Aurignacien, de Streletskien, de Gorodcovien . . . et de Gravettien. Sur la base de datations absolues, ce groupe peut être maintenant divisé en deux sous-groupes chronologiques ; le plus ancien s’inscrivant dans la continuité des premières unités culturelles (Aurignacien et Streletskien) le plus récent, correspondant à l’apparition de Gravettien et de Gorodcovien.

La structure du group récent de la séquence locale (24–20 ka) est définie par la coexistence de quatre faciès de Gravettien, en association avec des assemblages originaux dont la dénomination fait encore débat.” (Sinitsyn, 2007, p. 183)⁵

⁵“The composition of the middle group (32–28 ka) had been defined by the coexistence of the Aurignacian, the Streletskayan, the Gorodtsovian . . . and the Gravettian. On the basis of absolute

Like Rogachëv, the only Gravettian site he attributes to the middle group of the tripartite Kostënki chronology is Kostënki 8 Layer 2, making it the earliest Gravettian site. The early Gravettian (as represented at Kostënki 8 Layer 2) is included in the same chronological phase as the Gorodtsovian. All other Gravettian sites, including all sites of the Kostënki-Avdeev Culture, are included in the third and latest Kostënki chronological group. Apart from the Kostënki-Avdeev Culture, he defines four *faciès* for the later part of the Gravettian. These are: the Kostënki 4-II *faciès*, the Kostënki 11-II variety, the Kostënki 21-III variety and the Kostënki 9–Borshchëvo 5 variety (Sinitsyn, 2007). The sites attributed to each *faciès* are restricted to the sites mentioned in their titles, but he sees the *faciès* they define, as well as the Kostënki-Avdeev Culture, as having co-existed for several thousand years.

Despite the diversity of approaches and differences in available data, there are a few notable similarities among the culture histories outlined here. First, there is general agreement that Kostënki 8 Layer 2 is the earliest Gravettian site. The sites of the Kostënki-Avdeev Culture are seen as certainly later and approximately contemporary with one another. However, apart from this, there are numerous sites and small groupings whose chronology, both relative and absolute, is uncertain. Their chronological relationships with the Kostënki-Avdeev Culture are also unclear.

2.7 Aims

The principal objective of this research is to propose a new culture history for the Russian MUP and to contextualise it by comparisons with the contemporary European record. In order to achieve this, three major aims can be defined.

First, to improve the chronology of the sites. This was a *sine qua non* for this study. The critical examination of published radiocarbon dates was an obvious first

dating, this group may now be divided into two chronological sub-groups: the earliest is the continuation of the first cultural units (Aurignacian and Streletskayan); the latest corresponds to the appearance of the Gravettian and the Gorodtsovian.

The structure of the later group of the local sequence (24–20 ka) is defined by the coexistence of four *faciès* of the Gravettian in association with untypical assemblages whose categorization is still the cause of debate.”

step; however, having already attempted this during a previous MSc study (Reynolds, 2011), it was clear that such an approach would not be sufficient. Recently published radiocarbon dating projects have shown that new dates produced using strict protocols can ameliorate many problems with chronologies (e.g. Higham et al., 2009, 2011; Jacobi et al., 2010). Obtaining new radiocarbon dates therefore became an aim of this study.

Second, to study variation among lithic assemblages from the Russian Gravettian. It was decided early on not to directly study Streletskayan and Gorodtsovian lithic assemblages even though they may date to the MUP, as it was felt that a project limited to Gravettian assemblages would be more coherent and have a greater chance of success. Due to the huge amount of Gravettian material that has been excavated in Russia, it was necessary to be selective in what was included in the study. Furthermore, a balance had to be struck between the number of sites studied and the amount of material examined from each collection.

When undertaking lithic analysis, the principal aim was to describe and understand variation between the lithic assemblages of sites, rather than the function, length of occupation, spatial organisation, etc. of each site. It was felt that it would be best to study a restricted category in detail, rather than attempting a full assessment of the (often very large) assemblages. No such formal comparative work had previously been published and so it was hoped that it could evince some interesting results. Since the general aim of the research is comparative, it seemed better to make detailed—and hopefully robust—comparisons between restricted but well-understood aspects of the assemblages than to make more generalised, and heavily caveated, comparisons between less well-studied entire assemblages. As a result, study was confined to backed lithics: backed bladelets and backed points including Gravette points and shouldered points. The details of the approach taken, the reasons for choosing backed lithics, and the rationale for the selection of sites, are given in Chapter 3.

The third main aim was to compare the Russian record with the rest of the European MUP record. Within the scope of this project these comparisons could never be exhaustive, but it was important to take some steps towards integration of the Russian

and European MUP. This was not only in order to aid interpretation of the Russian record, but also to expand our knowledge of variation among all European MUP lithic assemblages. In order to do this, theoretical aspects of previous study of the material had to be deconstructed somewhat in order to allow clear comparisons. This particularly included the various notions of “archaeological culture”, the relative importance of index fossils and different ideas of cultural processes, as already discussed. These issues will be returned to in the final chapters of this thesis.

Chapter 3

Lithic analysis methods

This chapter outlines the rationale for the selection of assemblages, the lithic analysis methods employed and the theoretical approach to interpretation.

3.1 Selection of assemblages for study

Selection of sites for study was driven by the desire to examine the widest possible range of variation given the need for a coherent project and constraints on time and resources.

Although the entire MUP is of interest to this project, detailed study was restricted to Gravettian assemblages. Their obvious similarities to assemblages from across Europe provides plenty of context and opportunities for wider comparisons. All Gorodtsovian and Streletskayan assemblages were excluded from analysis. They are inarguably vital elements of the Russian MUP, but they are clearly very different from Gravettian assemblages (see Section 2.5), making the design of a coherent study difficult. The dating of the Streletskayan is also in doubt: it *may* in fact date only to the very beginning of the MUP (Chapter 4). Furthermore, as no Gorodtsovian or Streletskayan sites are currently known outside Russia and Ukraine, opportunities for contextualising the material are limited.

It was necessary to select a limited number of Russian Gravettian assemblages for study. Among the Gravettian sites, the sites of the Kostënki-Avdeevo Culture (Kostënki

1 Layer 1, Avdeevo and Zaraisk) have previously received the greatest amount of research and publication (albeit far from exhaustive). These sites also appear to date to a very restricted period of the MUP. A focus on less-studied sites from a wider time period offered the best opportunity to expand our knowledge of the Russian Gravettian. The five sites chosen for study were selected for their apparent importance, their attribution to a range of previously constructed cultural groupings and/or their accessibility. Sinitsyn (2007) provided the most coherent and comprehensive summary of the Russian Gravettian and was a major influence on the formulation of this project. He lists four “Evolved Gravettian” *faciés* not belonging to the Kostënki-Avdeevo Culture (Section 2.6): of these, three are represented in the present study (as is his Early Gravettian). He includes Khotylëvo 2, which I also studied, in the Kostënki-Avdeevo Culture but describes this attribution as “*fortement problématique*”¹.

The following sites were selected for lithic assemblage study:

Kostënki 8 Layer 2 was of clear importance, being very widely described as the only Early Gravettian site in Russia (e.g. Djindjian et al., 1999; Moreau, 2010; Sinitsyn, 2007).

Kostënki 9 was included as a representative of the “Kostënki 9–Borshchëvo 5” *faciés* of Sinitsyn (2007), where according to the literature an unusual backed bladelet assemblage was found.

Kostënki 4 yielded a huge lithic assemblage, including Gravette points, but very little information was previously available on the backed bladelet assemblage from the site.

Kostënki 21 Layer 3 was interesting because it contains a large proportion of backed lithics, including shouldered points, but is not usually included in the Kostënki-Avdeevo Culture.

Khotylëvo 2 was studied because a fortuitous first-hand examination of the assem-

¹“very problematic”

blage at an early stage of this research found an interesting Gravettian assemblage that demanded further study.

The following sites, also candidates for study, were excluded from examination:

Borshchëvo 5, Gagarino, and Kostënki 11 Layer 2 all appear to have strong similarities in terms of their backed assemblages with particular studied sites (Kostënki 9, Khotylëvo 2 and Kostënki 21 Layer 3 respectively). As a result, their inclusion would not have added much to the study in terms of coverage of lithic variation. For various reasons, (e.g. size of assemblages or accessibility) the latter sites were preferred for examination.

Borshchëvo 1, Borshchëvo 2, Kostënki 2, Kostënki 3 and Kostënki 19 are occasionally connected with the Gravettian or the MUP but they contain backed bladelets in very small numbers or not at all and therefore were excluded from this study.

Talitsky may contain Gravettian material but this is far from clear and the dating of the site is also in doubt (Pavlov & Indrelid, 2000).

3.2 Lithic analysis

Lithic analysis was the primary method used in this project. Material was studied during a number of trips to Saint Petersburg and Bryansk between July 2012 and December 2013.

3.2.1 Backed lithics

The lithic analysis undertaken focused exclusively on backed bladelets and points. A rather wide definition of “backed bladelet” was used. Any blade (defined as a flake at least twice as long as it is wide) shorter than 10 cm was accepted as a bladelet. All bladelets with backing along a lateral edge were accepted for study, including pieces with only partially backed edges (in these cases the backing had to be substantial; artefacts

with, for example, just a backed notch were not included). Backing was defined after Inizan et al. (1999) as semi-abrupt or abrupt retouch which is blunting rather than sharpening, and which forms a back—a “surface that extends along the length of a blank, and is more or less perpendicular to the two faces” (ibid., p. 130). Retouched bladelets with a cortical or unretouched back were also included, if they otherwise belonged to a particular typological category of backed lithics found in the assemblage. All backed points—Gravette points, shouldered points, and other backed points—were accepted for inclusion regardless of their size. The only backed lithics to be excluded from study were large backed blades: in practice, these were absent or rare in all assemblages.

Backed bladelets are found in abundance in Gravettian sites across Europe, including the sites studied here, where they often dominate lithic assemblages. The group of artefacts studied includes pieces of diverse probable functions. Some, but not all, are likely to have been hafted. Some were very likely used as projectile tips (Harrold, 1993; Hays & Surmely, 2005); as has been argued by Wiessner (1983), such artefacts may be particularly useful as indicators of cultural affiliation. Others may have been laterally hafted onto projectiles. The category also includes pieces which could have been used for cutting, scraping, piercing, etc.

A focus on a single aspect of the collections enabled a greater number of sites to be studied than would otherwise have been possible. Furthermore, a great deal of excellent recent work on the MUP in Western Europe has been based around studies of backed lithics (e.g. Borgia, 2009; Klaric et al., 2009; Pesesse, 2006) and so their usefulness to lithic studies had already been proven. The focus on backed lithics provides a manageable but meaningful perspective on lithic variation during the Russian Gravettian.

3.2.2 Aims of lithic analysis

The overall aim of this analysis was to characterize variation between backed lithic assemblages with a view to identifying cultural and functional difference and similarity.

The objective was a completely new picture of variation between assemblages, rather than the testing of previous interpretations or the inclusion of new information into an

existing framework. When this project was begun, no culture history for the MUP of Russia enjoyed wide consensus, and there were major disagreements between authors on very basic aspects of their construction. All available culture histories had some problems with incompleteness or uncertainty, and derived from an intellectual tradition which has frequently been at odds with mainstream Western European archaeological thought (see Section 2.3). Furthermore, it could not be assumed that pre-existing classifications of lithic assemblages were the same as those used in this study (this was borne out in practice: for example, several Gravette points from Kostënki 4 had previously been classified as awls). These issues necessitated a return to first principles in examining the collections.

The results of this lithic analysis had to contribute to the ultimate aims of this project. These were the building of a culture history for MUP Russia, in conjunction with dating evidence (much of which would only become available *after* the completion of lithic analysis) and an expansion of our understanding of variation among European MUP lithic assemblages.

3.2.3 Theoretical background to classifying and explaining variation

It was hoped from the beginning that the picture of variation built up as part of this study would shed light on cultural processes during the MUP in Russia. These are, of course, theoretically complex to study. As an introduction to the general approach taken to lithic analysis, further elaborated below, the following factors are assumed to have affected the nature of the backed lithic assemblages under study.

Function. The activities carried out at a particular place in the past determined patterns of tool creation and usage.

Culture and style. The activities and patterns of activities undertaken varied between groups of people in the past. Furthermore, the choices made between functionally equivalent technological options—what Sackett (1982) calls “isochrestic variation”—also varied between groups of people in the past, and temporally, lin-

guistically and/or ethnically similar groups of people tended towards similarity in their material culture. This does not, of course, exclude the possibility of convergence towards similarity in material culture among distant groups.

Raw material. The raw material economy placed certain constraints on the usage of flint. In particular, in areas remote from high-quality lithic raw material sources (e.g. Kostënki-Borshchëvo), the efficient usage of imported flint may well have been an important factor influencing some technological choices.

Discard patterns and taphonomy. Patterns of discard of material and past taphonomic processes have shaped archaeological assemblages.

Excavation and museum curation. The collections under study have been affected by incomplete recovery of material at the time of excavation and loss of material during curation.

All of these factors contributed in some way to the creation of the collections as they exist today. My interpretations have been shaped by the need to take them into account.

It will be seen that there are many very obvious and profound differences between the assemblages, as well as similar features. The task of explaining these differences will be explored further below, but it is first necessary to set out the approach taken to data collection.

3.2.4 Backed bladelet recording

The dearth of previous detailed work on Russian backed assemblages posed challenges. It was obvious from the outset that the recording methodology would have to be broad and flexible enough to catch many different types of variation. In other words, few assumptions were made at the beginning of the project about what kind of variation would be present or meaningful; rather, open-ended, exploratory analyses were expected from the start. Therefore, lithic recording methodology was oriented towards the collec-

tion of a large amount of data on each artefact, to provide for flexibility in subsequent analysis.

Recording of information and terminology used is based to a large extent on Inizan et al. (1999). Typological characterisations were made with reference to Demars & Laurent (1992) and de Sonneville Bordes & Perrot (1956b) as well as more specialized publications where appropriate. A general techno-typological approach was taken to artefact recording. Attention was first paid to basic technological indicators (blank type, presence of bipolar scars, nature of ventral surface, etc.). The overall morphology and dimensions of the piece were then described. Detailed attention was paid to how retouch was used to create the morphology of the piece. Finally, damage was described in terms of extent, removal size, invasiveness, regularity, etc. All descriptions were made using the naked eye and a 5x hand lens. All artefacts were photographed and a selection were also drawn.

Measurements were made to the nearest millimetre (except at Khotylëvo 2, where they were made to the nearest 0.5 mm). This was because at the outset of this project it was thought that this degree of resolution would be sufficient for the purposes of the research and in order to speed up recording. Unfortunately, it has caused some problems for the statistical analysis of the lithic assemblages and for the representation of data in this thesis (e.g. it necessitated the use of sunflower plots instead of conventional scatter plots). Measurements would have been better taken to a finer degree of resolution.

A full list of the information collected on each backed bladelet recorded is provided in Appendix A.

Sampling

In cases where the backed assemblage was very large ($n > 400$), sampling of material was necessary. This entailed counting the total number of backed lithics of interest to this study and deciding what proportion to study. Then material was selected using an appropriate list of randomly generated numbers. For assemblages where sampling was necessary, a more complete (50–100%) sample of Gravette, shouldered and other

backed points was studied in addition to the random sample. This was because, as known index fossils for various stages of the Gravettian, they are important to the aims of this study.

As a result of the differential sampling of various parts of the assemblage for certain sites, weighted datasets were sometimes used for analyses. These datasets compensated for the fact that some parts of the assemblage were sampled at different rates to others, by, for example, giving a quadruple weighting to categories that had been sampled at 25%. When these datasets were used, the results presented here are usually given in terms of percentages rather than raw counts.

3.2.5 Core recording

Bladelet cores were studied from four assemblages: Kostënki 8 Layer 2, Kostënki 9, Kostënki 21 Layer 3 and Khotylëvo 2. (It was not possible to study the collection from Kostënki 4 due to time constraints.) Where possible, all available cores were studied; for Kostënki 21 Layer 3 a 50% sample was studied.

The dimensions, weight, raw material, and presence or absence of cortex were recorded for each core. Where apparent, the blank type (flake/blade/cortical flake) was noted, as was the presence of any retouch or modification on the blank which was seemingly unrelated to its use as a core. Platforms were described when present, or, if obliterated, their locations were inferred from subsequent removals where possible. The direction and dimensions of bladelet and other removal scars were recorded. All cores were photographed and some were drawn.

3.2.6 Typology and morphology

The typology of artefacts was considered when selecting material for study and during and after recording material. Basic typological categorization certainly has its uses, but does not provide nearly enough detail to answer the questions posed in this project. Only a handful of standard typological categories were studied as part of this project. Typological categories often subsume a huge amount of technological, morphological

and functional variation, and authors often disagree on the usage of terms.

Furthermore, it is not clear that the typological terms currently used for Russian assemblages are fully suited to the material they seek to describe. Considering lithic typology in general, most categories are based on French terms, and do not necessarily map well to the Russian record. Certain typological categories, e.g. Kostënki knives and shouldered points, have been established based on Russian material, but this has been done in a piecemeal rather than systematic fashion. This importation of terminology probably explains some of the problems found during this project with the possible misapplication of terms to Russian material. The reification of certain typological categories, particularly shouldered points, in connection with cultural groupings, has also caused difficulties. All of these problems are exacerbated by the crossing of historical intellectual borders that is necessary to this project. Tomášková (2005) has demonstrated the difficulties in comparing assemblages from Willendorf (Austria) and Pavlov (Czech Republic), given the differences in the histories of their typological classification: there are certainly similar problems when comparing Russian and Western material. In response to all these issues, a reassessment of typology has been an important part of this study.

Study of the morphology of lithics, particularly microliths, to a greater degree of detail than that necessary for basic typological assignment has been a frequent topic of Western European research and publication. Often this manifests itself as the proposal of schematic categories or groups in descriptions of individual assemblages (e.g. Borgia, 2006). Particular attention was paid to backed lithic morphology in this project. The morphology of Gravette points and microgravettes certainly varied greatly both temporally and geographically during the MUP in Europe. Morphology can be informative about function, as well as expressing stylistic choices which may be indicative of cultural affiliations.

In fact, morphology may be a better aspect of lithic assemblages than technology for the definition of index fossils (Simonet, 2011). There are obvious good reasons for believing that stone tool morphology was very important to Upper Palaeolithic flint

knappers. This may especially be the case for artefacts which formed part of composite tools, as there could have been strong constraints on their shapes and dimensions, which were less controlled for non-hafted artefacts. Also, although the argument for the importance of technological traditions in uncovering cultural links is not disputed here, it is worth noting that there is usually more than one method of achieving a given morphology. I do not believe there is any a priori reason why uniformity in technological practice should be considered more reflective of cultural unity than uniformity in morphologies. The study of technology has been prioritised, particularly in the French school of lithic analysis, for many decades; one of its advantages for scholars is the fact that it is easy to create standardised categorical data for comparison. It is rather difficult to produce standardised data on morphology beyond the kind of descriptions used in typological categories. One of the challenges for this project was the production of morphological descriptions that are useful for comparative purposes but that do not obscure the inevitable internal variation.

Data collection methodology was oriented towards the identification of typological categories for each collection studied. The approach taken is more “splitting” than “lumping”. There is a substantial history of debate about categorization of artefacts in archaeology (e.g. Adams, 1988; Dunnell, 1971, 1986; Read, 2007). The position taken here is that categorization is provisional, subjective and arbitrary, but nonetheless invaluable.

Various questions were asked of individual lithics in order to establish typological groups. For example: What is its overall shape in plan: e.g., rectilinear, lunate, triangular? Are the ends pointed, and if so, is the point located centrally or offset to one side? Is the piece symmetrical in any way? Is it backed on the left or right edge? If both ends are pointed, is the angle of one point more acute than the other? Where is the widest part of the piece? Separation of pieces based on these kinds of criteria has been the main approach used for forming the categories used in this research. In establishing these groups, variation within them had to be characterised, sometimes using basic statistical methods. The relative homogeneity or heterogeneity of each defined

morphological group is discussed as part of their descriptions.

3.2.7 Technology

Detailed attention to technology has been a hallmark of Western European study of the Upper Palaeolithic for decades (it has received less attention in Russia; see Section 2.3). With direct relevance to this project, studies of bladelet production methodology have been very illuminating about the nature of diversity among Gravettian assemblages in Western Europe (e.g. Borgia et al., 2011; Klaric et al., 2002, 2009; Wierer, 2013).

In this study technology has been treated as a secondary line of inquiry to typology, but it is still very important for interpretation. Technological habits intersect with morphological choices and so would be difficult to ignore in any case - for example, the creation of flat, rectilinear bladelets on bipolar cores provides for a certain type of bladelet morphology; use of burin spalls as blanks is associated with a completely different final morphology.

When studying assemblages, attention was paid to the kinds of blanks used, their likely production methods, and retouch habits. In some cases it was possible to determine that burin spall-type blanks were used; in others, that true prismatic blade technology was preferred. This was complemented by the examination of available cores. As shall be seen, even the relatively modest approach taken in this project to studying technologies of production has successfully found strong differences between and within assemblages. In terms of retouch technologies, the usage of e.g. crossed-abrupt retouch was noted.

Fuller study of *débitage* or a *chaîne opératoire* approach was not carried out. Such a study would have been very time-consuming, meaning that fewer sites could have been studied. It seemed most productive to get a basic overview of technology for several sites, which would give a better idea of the kind of questions that could be answered by more detailed, targeted study in the future. As it turns out, given various issues concerning recovery of material during excavation and subsequent curation, such an approach to these sites would be subject to significant limitations.

One final factor is important here. The Kostënki-Borshchëvo area is remote from any known source of high-quality flint (Khotylëvo 2, on the other hand, has abundant good flint available in the immediate vicinity) (Boriskovskii, 1961; Gavrilov, 2008). The local unavailability of high-quality raw material may well have influenced the choice of blank production technology used: for example, it might be unsurprising to see more ad hoc production or the use of less-than-ideal blanks for tool creation. Many European sites are much closer to flint sources than Kostënki-Borshchëvo. Direct comparisons in terms of bladelet production technology with such sites would have to take this into account and would be restricted in their conclusions as a result.

3.2.8 Use-wear

Evidence for damage was recorded in conjunction with other retouch: this was carried out only at a macroscopic level (i.e. damage visible to the naked eye). Detailed study of breaks, in order to attempt to infer function (and particularly to attempt to link pieces to use in projectiles), was not carried out. Criticism of the validity of such methods as currently employed is not encouraging (Rots & Plisson, 2014). Breaks similar to those often described as “diagnostic impact fractures” were encountered during data collection; if a sound method for their identification can be formulated, there is certainly scope for future study.

3.2.9 Other methodological and interpretive considerations

Raw materials

As already noted, evidence about raw material availability must be considered in the study of the lithic assemblages. Surprisingly little is known about raw material sources for the Kostënki assemblages. The limited flint-sourcing studies that have been carried out have concentrated on the Kostënki 1 Layer 1 assemblages (Boriskovskii, 1961; Yurgenson et al., 2012). The nearest known sources of high-quality flint are over a hundred kilometres away, although flint cobbles are found in the Don river. In contrast, flint is

found in abundance at Khotylëvo and is believed to have provided the raw material for the lithics found there (Gavrilov, 2008).

However, for the sake of being able to note any obvious differences in raw material usage, basic information (e.g. colour, texture and inclusions) was recorded, as well as the presence and type of patination and cortex.

Site formation processes and taphonomy

The integrity of assemblages also demands assessment as part of the overall methodology of their study. As shall be seen, there are often questions surrounding the reliability of stratigraphic information from the sites under study. In certain cases, it was noted during excavation that material from more than one archaeological layer may have been mixed. The difficulties of excavating open-air sites, and the movement of material due to redeposition, geological processes, bioturbation, etc, mean that it is very difficult to be certain that the collections derive from intact, unmixed cultural layers.

The question of site formation processes was largely neglected in twentieth century Russian excavations. Basic questions on the accumulation of fauna, the movement of material, etc, have not been addressed in a systematic way. Unfortunately, a full examination of all the excavation documentation from the sites under study is beyond the scope of this project, and it is not even clear that the documentation would be sufficiently comprehensive and reliable to make much useful progress on such issues.

Methodologically, the only way forward here is to assume that there is a risk that *all* the studied collections may be mixed to some extent. In the studies of the lithic collections, this poses problems for interpretation when single artefacts seem particularly important (e.g. the Gravette point from Kostënki 9). The association of large idiosyncratic groups of artefacts with a cultural layer is less problematic (e.g. the microgravettes from Kostënki 8 Layer 2 or rectangular backed bladelets from Kostënki 9).

Excavation and curatorial practices

Considerable issues exist surrounding the probable incomplete recovery of lithic material during excavations, due to the absence of sieving, and the known loss of material in museum collections. Smaller artefacts are likely to be under-represented in all collections. It is also plausible that entire categories of lithics may be missing or under-represented (this is particularly the case for Khotylëvo 2, where material was sorted, albeit incompletely, and subsequently partially lost, and may also be a factor at Kostënki 21 Layer 3). As with the possible mixing of material, the approach taken in this study is simply to note the problems, where known, and to attach the necessary caveats to interpretations.

3.2.10 Interpreting function and style

Having discussed the aims of the lithic analysis and the objectives for data collection, it now seems appropriate to describe some of the theoretical background and methodology of interpreting the lithic data.

One essential problem for this study is the difficulty of untangling functional difference from cultural variation. This problem may be particularly acute for European Russia because open-air sites may have hosted a greater range of activities than the cave sites on which most of the Western European Upper Palaeolithic sequence is constructed (Hoffecker, 2011). In short, it is difficult to establish the reason for variation among lithic assemblages. Are we looking at the archaeological remains of culturally different groups of people, or different functions carried out by culturally similar groups of people? And if we are looking at culturally different groups of people, were they separated in time or were they in existence simultaneously? These questions, debated most famously for the French Mousterian during the twentieth century, are fundamental to constructing a culture history and have great relevance to the present study.

It should be emphasized that the differences between the studied assemblages were very clear from the start; there was no difficulty in finding major features unique to

each of them. Obvious differences were found in the typological/morphological make-up of the backed lithic collections. For example: microgravettes were abundant at one collection and nearly absent at others; Khotylëvo 2 yielded a type of point that was unique to it among the assemblages studied; the Kostënki 9 rectangular backed bladelets were not found elsewhere. Beyond the typological level, differences also quickly became apparent in the technology of bladelet production. It was not necessary to look for subtle differences in the dimensions or retouching of artefacts in order to discern difference.

The problem of interpreting this difference is a very real one for the success of this project. One of the main risks is over-interpretation of difference: to see differences in assemblages as indicative of contrasting cultural traditions, when they could reflect different activities carried out by people of broadly similar culture and age. A detailed consideration of the possible functions of each assemblage can make a good contribution to addressing this problem.

Consideration of the functions of backed bladelets

As noted above, a detailed study of use-wear was beyond the scope of this project. However, even without that, some tentative inferences about the functions of the backed bladelets under study are possible. It has been argued that the morphology of lithics is not a reliable indicator of function (Odell, 1981). Use-wear studies have often yielded very unexpected results, which serve as cautions when trying to infer artefact functions. However, it remains valid and useful to discuss the possible functions of the bladelets studied, for example, whether their forms are consistent or not with use for puncturing or cutting, or for axial or lateral hafting. In this study it has been extremely useful to consider whether I am comparing, e.g., projectiles with projectiles, or, conversely, knives with projectiles. Furthermore, it is widely believed that certain lithic groups, namely microgravettes and Gravette points, often, although not always, relate to use as projectiles (Hays & Surmely, 2005), and it seems acceptable to extend this attribution to some of the Gravette points under study here.

Intra/inter-assemblage comparisons of “style” of backed bladelet categories

The distinction made between style and function in stone tools is an old one and based on a fundamental archaeological concept. Sackett’s idea of “isochrestic form” is very useful: “the seemingly equally valid and feasible options we may regard as functional equivalents with respect to a given end constitute a spectrum of what I choose to term *isochrestic* form” Sackett (1982, pp. 72–73). The debate on the causes of this kind of variation in material culture, and whether it is intentional or stochastic (Dunnell, 1978; Sackett, 1985; Wiessner, 1983, 1985), is not particularly relevant to this study: the point here is that I am working with the assumption that variation among stone tool assemblages has some relation to cultural variation among past human groups.

A major point of interest for this study has been the definition of artefact typologies in such a way that meaningful comparisons can be carried out among them—i.e. aiming to compare like with like wherever possible. Backed lithics are a category which certainly contains artefacts with different functions; we cannot expect to be able to straightforwardly compare them all in search of meaningful difference. Typological groups, as defined by previous researchers, may be misleading in how they combine material. For example, at Khotylëvo 2 there is a group of artefacts which have traditionally been described as “shouldered points.” However, I would argue that they are far more similar morphologically and technologically to Gravette points also found at the site, and that Gravette points in general serve as a better point of comparison for these pieces than shouldered points do. The main aim of lithic analysis has been to achieve accurate characterisations of assemblages and typological categories, which can form the basis of robust comparisons. As shall be seen, the methods used in this research have found abundant points of interest for discussion.

Chapter 4

Chronology and palaeoclimates

4.1 Introduction

Chronology is inarguably crucial to the study of the Upper Palaeolithic. It is necessary not only for understanding change through time and building culture histories within a specific region, but also for examining synchronic variation between areas. A principal aim of this thesis is to improve the dating of Russian MUP sites. There are a number of problems which need to be addressed or worked around in order to achieve this.

The first problem concerns an inherent feature of the Russian archaeological record: the absence of long archaeological sequences either within caves or open-air sedimentary deposits. These kinds of sequences, found in Europe at Abri Pataud, Grotta Paglicci, Willendorf, Mitoc-Malu Galben and elsewhere (Haesaerts, 2007; Haesaerts et al., 2010a; Higham et al., 2011; Palma di Cesnola, 2006), have been essential to the construction of relative chronologies for the European Upper Palaeolithic.

In Russia, however, there are no significant cave sites west of the Urals. Furthermore, while stratified open-air Upper Palaeolithic sites are certainly found in Russia, their sequences are sometimes complicated and redeposition is a frequent concern. Kostënki, where the vast majority of European Russian Upper Palaeolithic sites are found, is outside the main area of Late Pleistocene loess deposition (Haase et al., 2007). Although loessic deposits are found there, they are not as thick as elsewhere, and the location of

the deposits on slopes and within ravines means that there was substantial redeposition and reworking of these sediments (Holliday et al., 2007; Lazukov, 1982). The multiple partial sequences found in the Kostënki-Borshchëvo area can certainly be used to construct long chronologies, but need extra study and interpretation compared with sites with more complete stratigraphies.

Beyond Kostënki, there are numerous open-air sites with a single cultural layer. They have the advantage of possibly being easier to date reliably than stratified sites. At sites such as Khotylëvo 2, where the single cultural layer is found within a metres-deep sequence of apparently archaeologically sterile loess, we can be relatively confident that any humanly modified material deriving from the cultural layer is indeed related to the human activity we are trying to date, rather than from earlier or later times. Animal burrowing has been prevalent at most Russian Upper Palaeolithic sites, creating the *krotovinas* (mole tunnels) that are widely found during excavation. This is probably responsible for the presence of Holocene faunal elements in a few of the studied collections, but also raises the possibility of the movement of Pleistocene material into and out of cultural layers.

The next major problem concerns radiocarbon dates. As radiocarbon dating techniques and protocols have improved, it has become apparent that many Upper Palaeolithic dates from all over Europe are inaccurate, and often underestimate true ages (Higham, 2011). Dealing with the legacy of these data, and re-evaluating the interpretations that have been constructed using them, is an important task in Russia as elsewhere. The Russian Early Upper Palaeolithic has received some attention in recent years, with excellent results (Douka et al., 2010; Wood et al., 2012); to date, the MUP has lagged behind somewhat in this respect.

A large number of radiocarbon dates for Russian sites have been published, which vary widely in the techniques used, the laboratory protocols, and the sample types chosen. As shall be seen, for most sites there are wide ranges of published dates, not all of which can be accurate. Some laboratories in particular seem to have frequently obtained dates which are rather later than other laboratories working on material from

the same cultural level. There are wide discrepancies between laboratories even on results for samples taken from the same bone or piece of charcoal, which raise serious questions about the reliability of other results. Often, samples such as burnt bone or mammoth tusks were dated. These are now known to be problematic either for problems with the radiocarbon measurement itself or, in the case of mammoth tusks, due to the possibility that old material could have been collected and brought to the site (Higham et al., 2011, pp. 551–552; Soffer, 1985, p. 231). There are protocols available for evaluating the reliability of radiocarbon dates based on criteria such as sample type, which have been applied to Upper Palaeolithic dates in Siberia (Graf, 2009; Pettitt et al., 2003). However, the information necessary for applying such a protocol is not generally available for the radiocarbon dates of interest here. Furthermore, the use of such criteria cannot, unfortunately, be expected to remove all ambiguities. Given all these issues, the best way to deal with equivocally dated sites is to obtain new dates where possible, using the most reliable procedures available.

The excavation techniques used introduce another source of uncertainty, concerning the reliability of the association between radiocarbon samples and lithic assemblages. Many or most Russian excavations were and are conducted to extremely high standards, with meticulous recovery and recording of artefacts. However, it must be remembered that most Russian excavations, both in the twentieth century and more recently, have not used the sort of 3D recording of cultural remains to millimetre-scale accuracy that is now common for Palaeolithic excavations elsewhere in Europe (Section 2.3). There remain questions over the stratigraphy of several important sites (e.g. Kostënki 4) which introduce complications into their dating.

In some cases there may also be uncertainty over the associations between cultural layers and geological units, as for example at Kostënki 8 Layer 2. The basic geological units described at Kostënki have been important for building relative chronologies, and this usage is continued and extended in the present research. However, in the absence of taphonomic and micromorphological studies, the chronological relationship between a scatter of cultural remains and a particular geological unit is not always clear.

Furthermore, the cultural layer may be described as being found within or at the top or base of a particular unit: the chronological significance of these positions is not obvious.

There is one problem with Russian archaeological chronology building which currently represents a serious stumbling block but could be productively addressed with some concentrated effort. This is the problem of the lack of integration into a Europe-wide palaeoclimatic framework. The Greenland ice core sequence, which has become an extremely useful point of reference for archaeologists (and all other Late Quaternary researchers) in most of Europe, is actually relatively little known in Russia and has received extremely limited use in the study of the Upper Palaeolithic. Rather, the palaeoclimatic framework is based around a number of named interstadials which are correlated with various palaeosol markers (e.g., the Bryansk soil) (Velichko et al., 1984). Disagreement remains around the dating of these interstadials and stadials and the correlation of palaeosol markers, and to my knowledge they have not been correlated with the Greenland ice core record. This is a major problem, especially for comparative work.

4.2 Climate during the Mid Upper Palaeolithic: the Greenland ice core chronology

During the period from 30,000 to 20,000 ^{14}C years BP, or ca. 34,000 to 24,000 calendrical years BP, the climate in Europe, as elsewhere, was unstable, with numerous stadial and interstadial phases known. In recent years, the chronology of these phases has been greatly improved thanks to data from Greenland ice cores, which provide a continuous and well-dated record of climate change for the Late Pleistocene (Andersen et al., 2006; Svensson et al., 2006, 2008). A series of numbered interstadials and stadials have been defined based on this record, known as Greenland Interstadials (GI) and Greenland Stadials (GS). Each interstadial is followed by a stadial of the same number (e.g., GI 5 is followed by GS 5). This stadial/interstadial sequence has been correlated with other proxy records (loess-paleosol sequences, pollen records, etc.) from Europe and

elsewhere, indicating linkage of past climate change on a continental scale (e.g. Haesaerts et al., 2009; Harrison & Sanchez Goñi, 2010; Rousseau et al., 2002; Wohlfarth et al., 2008). Large projects such as INTIMATE and RESET have been crucial in refining our knowledge of the timing and synchronicity of past climate change in Europe (Blockley et al., 2012), but unfortunately have not addressed European Russia during the MUP to any substantial degree. The nature of the synchronicity of the timing and amplitude of climate change on various scales, from regional to global, is a question of fundamental importance to palaeoclimatologists and a matter of intensive current research.

There are some caveats which need to be borne in mind when using the Greenland chronology as a framework for European palaeoclimates and when making comparisons with archaeological chronologies. First, there are some uncertainties in the dating of GICC05, to do with the counting of the annual ice layers, which are up to ca. ± 600 years for the time period studied here (Andersen et al., 2006). Second, there are multiple unresolved complexities inherent in the comparison of climate proxy archives and archaeological sequences which have been dated and calibrated using differing methods and calibration curves (Muscheler et al., 2014; Weninger & Jöris, 2008). Finally, it is possible that the onset of stadial and interstadial conditions was not perfectly synchronous across Europe, and indeed the necessity of accurate and precise independent dating of proxy archives is well-recognised (Blaauw et al., 2010; Lowe et al., 2001). Some of the most detailed and high-resolution recent work has shown that the timing of changes in conditions was indeed not always identical across Europe, but also that in the studied case the time lags involved were rather small, in the order of centuries rather than millennia (Lane et al., in press). These uncertainties are not fatal to efforts to build palaeoclimatic frameworks with reference to the Greenland sequence but they are certainly complicating factors.

Figure 4.1 shows the NGRIP $\delta^{18}\text{O}$ and annual layer thickness profiles according to the GICC05 chronology, with Greenland Interstadials (GI) indicated (Svensson et al., 2008). It shows that the time period of relevance to this research (ca. 30,000 to 20,000 ^{14}C years BP, or ca. 34,000 to 24,000 calendrical years BP) covers the period from GS 7

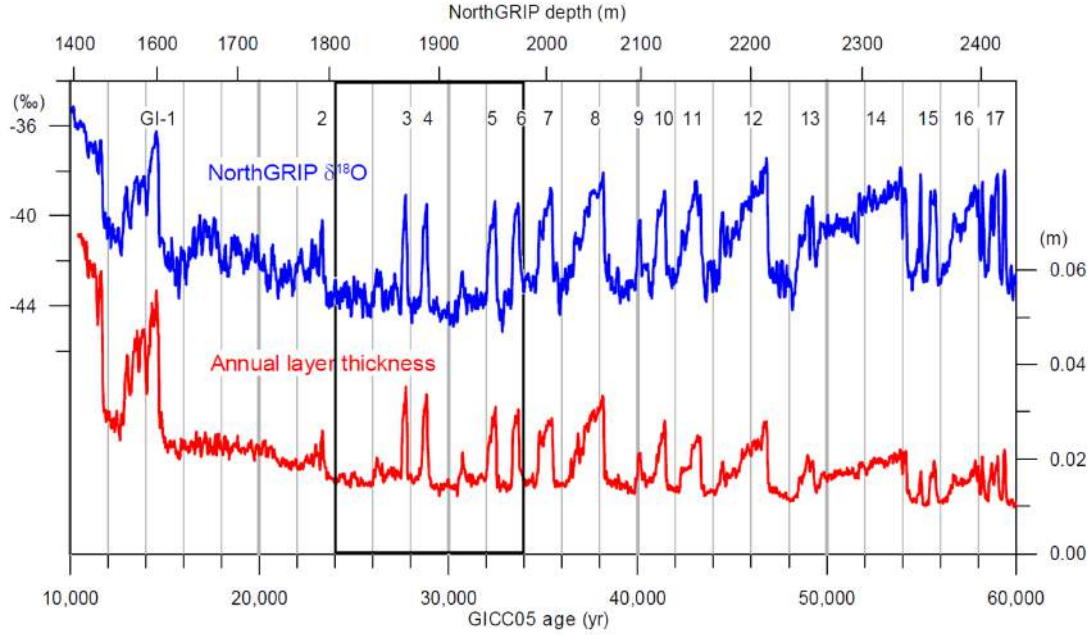


Figure 4.1: NGRIP $\delta^{18}\text{O}$ and annual layer thickness profiles according to GICC05 (from 60,000 to 10,000 years b2k), with numbered Greenland Interstadials (GI). Approximate study period (34,000–24,000 cal. years BP) highlighted. After Svensson et al., 2008, Fig. 3.

to the end of GS 3¹.

The beginning of the period under study includes GI 6 and GI 5, both warm intervals, separated by the relatively short GS 6 stadial period. This is followed by the long cold stadial of GS 5, which lasts for close to 3,000 years, and which includes the time of Heinrich Event 3 (HE 3) (Sanchez Goñi & Harrison, 2010). Although cold stadial conditions were of course already in force, HE 3 was probably associated with an even colder downturn in Russia. At sedimentary sequences in the Carpathians and Siberia, HE 3 has been correlated with the formation of ice wedges (Haesaerts et al., 2010b).

After GS 5 come two very short interstadials in quick succession: GI 4 and GI 3. These last for much less time than preceding interstadials: just several hundred years each. It has been suggested that the Last Glacial Maximum (LGM), which has historically been surprisingly ill-defined chronologically, should be regarded as coeval with GS 3 (Hughes & Gibbard, in press). This definition, if accepted, places the last several

¹The GICC05 chronology for the Greenland ice cores uses b2k, or years before 2000 CE (Andersen et al., 2006), while radiocarbon ages are conventionally stated in years BP, or years before 1950 CE.

thousand years of the MUP timeframe (from ca. 27,500 calendrical years BP on) during the LGM itself.

4.3 Russian palaeoclimates and correlation with the Greenland ice core chronology

As noted above, the Russian Late Pleistocene palaeoclimatic chronology has not been integrated with the Greenland chronology, posing significant problems for cross-continental comparisons. Rather, descriptions of palaeoclimates in European Russia use chronological stages based mostly on sedimentological units. One example, of direct relevance to this research, is the “Middle Valdai megainterstadial,” dated to ca. 50–25,000 ^{14}C years BP, and which is itself subdivided: the final stage is often called the “Bryansk interstadial,” “Leningrad interstadial” or “Dunaevo interstadial” and dated to between ca. 33–32,000 and ca. 25–24,000 ^{14}C years BP (Gribchenko & Kurenkova, 1997; Markova et al., 2002; Simakova, 2006; Velichko et al., 2009; Vishnyatsky & Nehoroshev, 2004). It has been correlated with the Denekamp, Stillfried B, or Arcy period (Vishnyatsky & Nehoroshev, 2004), but those terms are now outdated in most of Europe. In fact, according to the Greenland ice core chronology and to high-resolution proxy archives from across Europe and as outlined above, the time period of the Bryansk interstadial from ca. 33,000 to 24,000 ^{14}C years BP (i.e., from ca. GS 7 to GS 3) was a period of major climatic fluctuations and of extended cold and warm periods, rather than being a continuous or near-continuous interstadial.

Although the amplitude and synchronicity of climatic change in different areas remain matters for investigation, it does seem extremely unlikely to me that European Russia was not subject to the same general climatic regime as nearby regions. Loess-palaeosol sequences in Eastern Europe (including Ukraine) and Central Siberia have been correlated with the Greenland record (Haesaerts et al., 2009; Rousseau et al., 2011); European Russia is geographically situated between the two regions. The fact that the European Russian palaeoclimate has not been integrated with the Greenland

ice core chronology is not because the latter is irrelevant to palaeoclimates in this area: it is for other reasons. First, the Western understanding of Late Quaternary palaeoclimates has been revolutionised in recent years by studies of the Greenland ice cores, but this approach has generally received very little attention in Russia. This situation does not just apply to archaeology, but earth sciences more widely, and the reasons for it are not clear but may concern communication problems or differing intellectual traditions. Second, while high-resolution terrestrial records are relatively abundant in most of Europe (and many other regions), the very few proxy records we have for European Russia are unfortunately less than ideal for making detailed comparisons (Fletcher et al., 2010; Voelker et al., 2002). The reason for this shortage of well-dated and high-resolution proxy records must relate to research history, as there is certainly no lack of Late Pleistocene deposits available for study. The situation is regrettable, but tractable: focused research effort could greatly improve our knowledge of the region. However, at present much work remains to be done to study the Russian record with reference to the Greenland chronologies and to fit it into a robust European/Eurasian palaeoclimatic framework.

As already mentioned, sedimentary sequences (especially loess-palaeosol sections) from various parts of the Northern Hemisphere have been correlated with the Greenland Ice Core chronology. The very useful work done to compare sequences from the East Carpathians and Central Siberia with the Greenland chronology (Haesaerts et al., 2010b) forms the basis of analogies made below for some Russian archaeological sites. As seen in Fig. 4.2, a series of palaeosols and loess deposits from these regions can be matched with Greenland interstadials and stadials, supported by radiocarbon dating and inter-site comparisons. The similarities between this loess-palaeosol record and the Kostënki sedimentary sequence, backed up by radiocarbon and tephra dating evidence, are set out below.

4.4 Chronostratigraphy at Kostënki and other Russian sites

The majority of the sites included in this research are found in the Kostënki-Borshchëvo region. A similar geological stratigraphy has been found at many of the Kostënki-Borshchëvo sites, which has formed the basis of a chronological schema that has been in use for over half a century (Section 2.6).

At Kostënki, the archaeology is found within deposits located on top of three terraces of chalky (Cretaceous) bedrock, found within a series of wide ravines which are roughly perpendicular to the course of the Don river, as well as close to the floodplain itself (Fig. 2.3). The full sequence of geological deposits which contain Upper Palaeolithic archaeology has only been identified at sites on the second (middle) terrace, and it is not always represented in full. The stratigraphy of deposits can vary markedly even within a single site. The schematized sequence is as follows, starting at the base of the archaeology-bearing sediments (Fig. 4.3) (this summary and that in the rest of this section is based on Haesaerts et al., 2004a; Holliday et al., 2007; Lazukov, 1982; Rogachëv, 1957 and Sedov et al., 2010). A “Lower Humic Bed” (LHB) is overlain by unhumified loamy deposits and a tephra layer. Above this is the “Upper Humic Bed” (UHB), in turn overlain by a loessic layer, then the weakly developed Gmelin soil, and then further loessic deposits. The Lower and Upper Humic Beds are complex geological units, each containing multiple palaeosols. On the first (lowest) terrace, close to the floodplain, the Lower and Upper Humic Beds are not found but the sequence of deposits here has been correlated with the uppermost part of the sequence found on the second terrace.

Rogachëv (1957) set out a four-part chronology for the Kostënki sites based on this geological sequence. Since its publication this very basic, but apparently robust, chronology has formed the fundamental framework for all work on the Kostënki chronology (Sinitsyn, 2007). There are four chronological groups in the original schema, as follows (from earliest to latest):

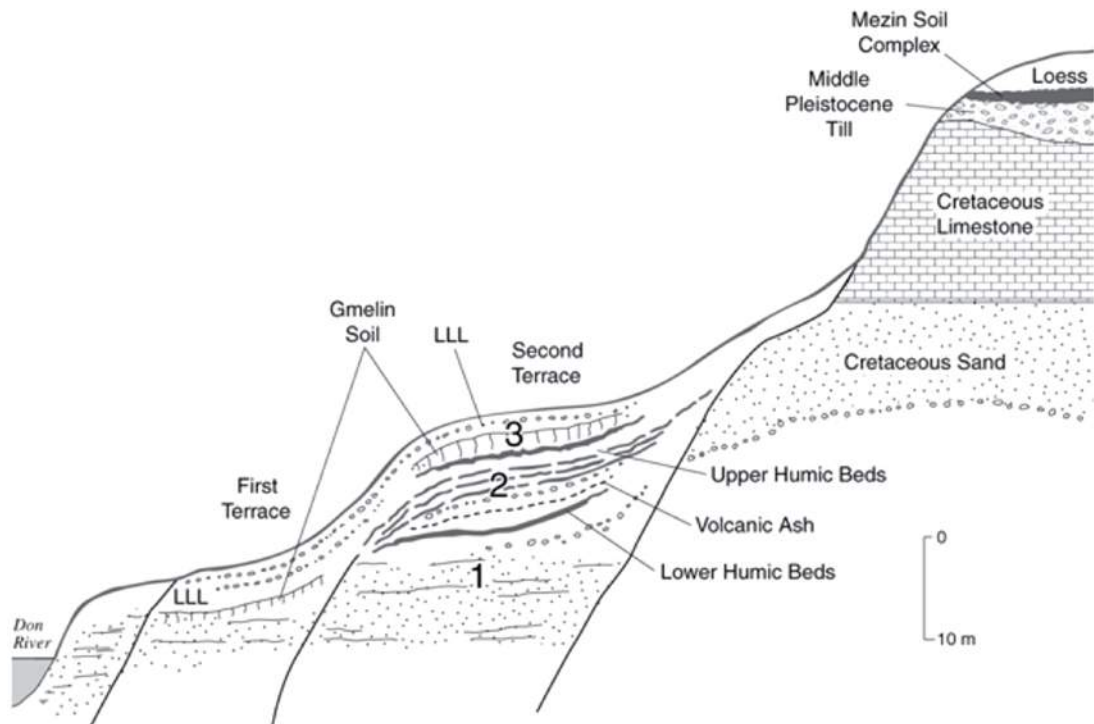


Figure 4.3: Schematized geological stratigraphy of the Kostënki–Borshchëvo area. Key: LLL: loess-like loam. After Holliday et al., 2007, Fig. 2.

1. sites of the Lower Humic Bed
2. sites of the Upper Humic Bed
3. sites above the Upper Humic Bed
4. sites found on the first, lowermost, terrace

In later publications (Praslov & Rogachëv, 1982; Rogachëv & Anikovich, 1984) he combined the final two groups, making just a tripartite scheme as follows:

1. sites of the Lower Humic Bed
2. sites of the Upper Humic Bed
3. sites above the Upper Humic Bed and sites found on the first, lowermost, terrace

In a previous MSc dissertation study I attempted to loosely correlate the Kostënki stratigraphical sequence (and the wider Russian palaeosol record) with the Greenland ice

core chronology, based in particular on comparisons with the work published by Paul Haesaerts and colleagues elsewhere in Eastern Europe and Siberia (Reynolds, 2011). Although it is no substitute for direct geological study and dating of the stratigraphy of each site, I believe the attempt has merit in its broad outlines. It is offered here as a working hypothesis. In the following sections examining the dating of each site, this model is provisionally applied and the evidence for and against it is explored.

The model is based on evidence from various sources. The tephra layer found between the Upper and Lower Humic Beds at many Kostënki-Borshchëvo sites has received significant attention over the past few years and has been firmly identified as the Y5 tephra, deriving from the Campanian Ignimbrite (CI) eruption, dated to ca. 40,000 cal. years BP (Fedele et al., 2008; Giaccio et al., 2008; Hoffecker et al., 2008; Pyle et al., 2006; Sinitsyn, 2003). This places it just after the end of GI 9 and at the beginning of the relatively long GS 9 (Andersen et al., 2006). In other words, the deposits below the tephra layer at Kostënki—the LHB and below—should date to GS 9 and earlier. Those above should date to GS 9 and later. It would seem likely that the unhumified loam in which the tephra layer was found dates to GS 9 itself.

Above the tephra layer and unhumified loam, the Upper Humic Bed is found (Fig. 4.4). This layer is not homogeneous; rather, it is made up of multiple palaeosol horizons and other deposits and was created by phases of erosion and deposition (Holliday et al., 2007; Sedov et al., 2010). It has previously been correlated with the interstadials Huneborg II and Denekamp I and II from the Dinkel Valley (Netherlands) Late Pleistocene sequence (Haesaerts et al., 2004a), while Hoffecker (2011) has made a tentative correlation with “one or more of the warm intervals following Heinrich Event 4”, suggesting GI 8–7. I correlate the Upper Humic Bed with GI 8 to GI 5, based on analogy with the Carpathian record (Fig. 4.2) and because the majority of the accepted radiocarbon dates for the UHB are in agreement with this (Haesaerts et al., 2004a; Holliday et al., 2007). A full sequence of palaeosols relating to each interstadial is probably not present at all sites: soils may not have developed in all areas during each interstadial, or they may have been eroded. For example, at Kostënki 14, only

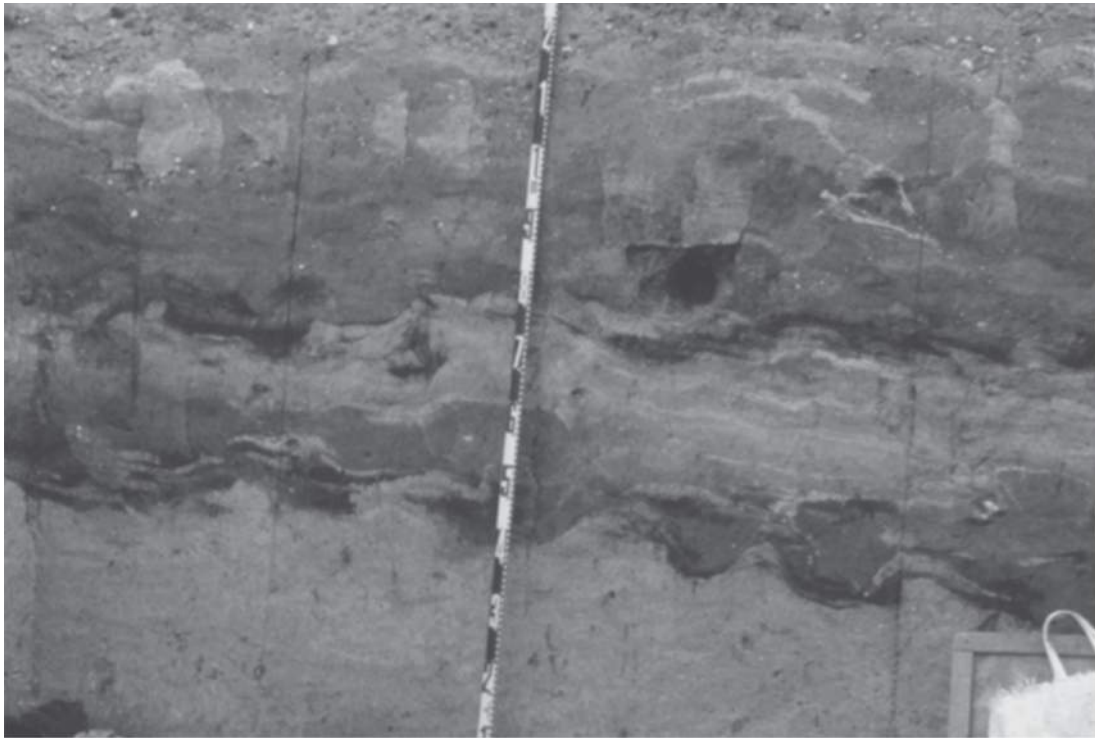


Figure 4.4: The Upper Humic Bed visible in a section at Kostënki 14 in 2001. After Holliday et al., 2007, Fig. 11.

three palaeosols (one described as possibly eroded) have been found within the Upper Humic Bed (Sedov et al., 2010): in the proposed scheme, they may relate to any of the interstadials between GI 8 and GI 5.

The Upper Humic Bed has previously been correlated with the “Bryansk soil” described at sites across Russia and correlated with the “Bryansk interstadial” (Hoffecker, 1987; Sedov et al., 2010). The dating and description of this humic layer varies between authors (Jary, 2009; Timireva & Velichko, 2006): it is not certain that all humified layers described as the “Bryansk soil” are in fact analogous to one another. However, it would not be surprising if the Bryansk soil is best correlated with multiple GIs up to and including GI 5.

The top of the Upper Humic Bed is often marked by an erosional disconformity, covered by chalk gravel; at Kostënki 14 Haesaerts et al. (2004a) link this to “deep frost processes”. Above this is a layer of loessic sediments in which the Gmelin soil is found. By comparison with the Greenland chronology and analogy with the palaeosol

sequences from the Carpathians and elsewhere, and because it is consistent with much of the radiocarbon dating for this layer, I would correlate the Gmelin soil with one or both of GI 4 and GI 3. At Russian sites beyond Kostënki, such as Khotylëvo 2, a layer of loess often containing one or more palaeosols has been found above the Bryansk soil (Gavrilov, 2008): again, these palaeosols could be linked with GI 4–3. Finally, above the Gmelin soil at Kostënki (and above the palaeosols at Khotylëvo 2) there are often quite substantial loessic sediments: these have previously been correlated with the Last Glacial Maximum.

In summary, the following correlations between the Kostënki stratigraphy and the Greenland ice core chronology are suggested:

- Lower Humic Bed: up to GI 9
- Upper Humic Bed: GI 8 to GI 5
- Chalk gravel and loessic deposits above the UHB: GS 5
- Gmelin soil: GI 4 and/or GI 3
- Loessic deposits above the Gmelin soil: GS 3/Last Glacial Maximum

A few caveats must be emphasised. There may be discrepancies in the identification of these geological units (perhaps especially the Gmelin soil) between sites. Furthermore, as already stated, this model is presented as a working hypothesis only, which requires further data and testing. However, in the absence of any published empirical work on correlations between the Russian sedimentary sequence and the Greenland chronology, the model presented here offers an opportunity for exploring the connections between the Russian archaeological record and past climate change.

4.5 New radiocarbon dates

Eight new AMS radiocarbon dates on samples of bone were obtained during this research. The samples were selected and drilled in collaboration with Russian colleagues

(S. Lisitsyn, M. Sablin and M. Zheltova). The samples were selected for the presence of human modifications: cutmarks or, where cutmarked bones were not available, signs of deliberate breakage. The determinations were produced using current methods at the Oxford Radiocarbon Accelerator Unit, including ultrafiltration, and calibrated against the IntCal13 curve with OxCal version 4.2.4 (Brock et al., 2010; Bronk Ramsey, 2009; Reimer et al., 2013). The results are given in Table 4.1: they are discussed in the sections below on the relevant sites.

Lab code	OxA-30198	OxA-30197	OxA-30194	OxA-30193	OxA-30196	OxA-30195	OxA-30200	OxA-30199
Site Layer	Kostënki 8 2	Kostënki 8 2	Kostënki 4 unknown	Kostënki 4 1	Kostënki 4 2	Kostënki 4 unknown	Borshchëvo 5 1a	Borshchëvo 5 1a
	Conventional radiocarbon age (years BP)							
CRA Error	27 670 270	27 620 270	25 290 210	24 790 190	24 710 200	14 210 70	25 110 200	24 720 190
	Calibrated age range (68.2% probability)							
from to	31 679 31 194	31 622 31 172	29 596 29 057	29 035 28 615	28 965 28 531	17 430 17 185	29 389 28 911	28 965 28 550
	Calibrated age range (95.4% probability)							
from to	32 245 31 050	32 149 31 020	29 955 28 806	29 321 28 426	29 260 28 310	17 531 17 072	29 625 28 702	29 245 28 342
%C	41.2	41.8	41.9	41.6	41.6	40.6	42.3	41.8
$\delta^{13}\text{C}$ (‰)	-19.63	-19.53	-19.48	-19.93	-19.68	-19.91	-19.62	-20.01
C:N ratio	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Species	<i>Equus sp.</i>	<i>Equus sp.</i>	<i>Equus sp.</i>	<i>Equus sp.</i>	<i>Coeladonta antiquitatis</i>	<i>Equus sp.</i>	Unknown	Unknown
Labels (on bones)	28419 TH Ж-53	28419 TH В-49	20525 (3) 180 а-19	20525 (2) 172 р-16	KIV 4183 (1)	KIV 205 20525 (1)	2008 Excav. 4 Ia 220/51	2008 ?. 4 I/1 221/50; z 120,97

Table 4.1: New radiocarbon dates obtained as part of this research

4.6 The dating of Russian MUP sites

The aim of the next few sections is to examine the dating of relevant sites individually, and to both offer a suggestion of the most likely age for each site and to attempt to link this with palaeoclimatic stages. This is done in the proposed chronological order.

A number of sources of information were available for this task. First were the large number of radiocarbon and thermoluminescence dates which have been previously published for the Russian MUP. Second were the new radiocarbon dates obtained as part of this project. Third, information was available on some new radiocarbon dates for relevant sites determined as part of the AHOB (Ancient Human Occupation of Britain) project by K. Douka, R. Dinnis and T. Higham, although the exact details of these dates are not given here. Fourth, for most sites some pedostratigraphic information was available, which is considered in the light of the discussion above concerning the connection between palaeosol formation and interstadial conditions.

Radiocarbon dates were calibrated using OxCal version 4.2.4 using the IntCal13 curve, and compared with data from the NGRIP GICC05 chronology (Andersen et al., 2006; Bronk Ramsey, 2009; Reimer et al., 2013; Svensson et al., 2006, 2008).

The conclusions set out here regarding the dating of each site determine the chronological framework used for the presentation of results from each site in the next few chapters. They will also be returned to in Chapter 10, where the culture history of the Russian MUP will be discussed in further detail.

4.7 The Streletskayan

The dating of five Streletskayan sites is discussed here: Sungir', Biriuch'ia Balka 2, Garchi, Kostënki 12 Layer 1a and Kostënki 11 Layer 3.

Sungir' is an excellent first site to examine, because it offers an illustration of the difficulties of radiocarbon dating the Upper Palaeolithic, and the scale of the potential errors. It also shows how problems with ambiguous dates, as seen with the wide range of dates obtained in the past for this site, can be resolved by the application of new

Layer	Material	Lab code	^{14}C BP	Ref.
Sungir' 2 burial	Bone (human)	OxX-2395-6	$30\,100 \pm 550$	1
Cultural layer	Bone (mammoth)	OxX-2395-8	$30\,100 \pm 400$	1
Sungir' 3 burial	Bone (human)	OxX-2395-7	$30\,000 \pm 550$	1
Sungir' 4 burial	Bone (human)	OxX-2462-52	$29\,820 \pm 280$	2
Sungir' 1 burial	Bone (human)	OxX-2464-12	$28\,890 \pm 430$	2
Sungir' 1 burial	Bone (human)	KIA-27006	$27\,050 \pm 210$	3
Sungir' 3 burial	Bone (human)	KIA-27007	$26\,000 \pm 410$	3
Sungir' 3 burial	Bone (human)	OxA-9038	$24\,100 \pm 240$	4
Sungir' 2 burial	Bone (human)	OxA-9037	$23\,830 \pm 220$	4
Sungir' 1 burial	Bone (human)	OxA-9036	$22\,930 \pm 200$	4

Table 4.2: Radiocarbon dates for Sungir'. References: 1: Marom et al., 2012; 2: Nalawade-Chavan et al., 2014; 3: Dobrovolskaya et al., 2012; 4: Pettitt & Bader, 2000.

methods.

Table 4.2 shows radiocarbon dates published for Sungir': there is a wide range, with some as young as ca. 23,000 ^{14}C years BP. The dates given here were all obtained on material deriving directly from the burials: either human or mammoth bone. The most recently obtained dates, which were produced using the single amino acid radiocarbon dating technique, put the burials close to 30,000 ^{14}C years BP in age. The first publication of dates obtained using this technique gave a very tight distribution of results, which are also the oldest to have been produced for the burials (Marom et al., 2012). The data from the second paper perhaps adds some ambiguity to the dating of the site, by extending the range of dates obtained for it using the same dating method, but the dates do not contradict one another statistically (Nalawade-Chavan et al., 2014). If we believe that all the burials are contemporary then it seems most likely that the site dates to ca. 30,000 ^{14}C BP, but it certainly dates to before 28,000 ^{14}C BP.

The dates for the Streletskayan site of Biriuch'ia Balka 2 are given in Table 4.3: they range between 32,000 and 26,000 ^{14}C years BP. The earlier of these dates are preferred by the excavators; those of ca. 26–27,000 ^{14}C years BP are rejected by them (Matiukhin, 2007; Matiukhin & Sapelko, 2009). The cultural layers 3 and 3a are found within a palaeosol which has been correlated with the Bryansk soil, discussed above

Layer	Material	Lab code	^{14}C BP	Ref.
3	Bone	Beta-183589	$31\,480 \pm 200$	1
3	Bone	Ly-17243	$28\,930 \pm 340$	2
3	Bone	Beta-177776	$26\,300 \pm 200$	1
3a	Bone	Ly-17242	$31\,610 \pm 460$	2
3a	Charcoal	Beta-183588	$26\,650 \pm 230$	1

Table 4.3: Radiocarbon dates for Biriuch'ia Balka. References: 1: Otte et al., 2006; 2: Matiukhin & Sapelko, 2009.

Material	Lab code	^{14}C BP	Ref.
Charcoal	GrN-7758	$32\,700 \pm 700$	1
Tooth (mammoth)	LE-1428g	$31\,900 \pm 200$	1
Tooth (mammoth)	LE-1428v	$31\,150 \pm 150$	1
Bone	LE-1428b	$30\,240 \pm 400$	1
Bone	LE-1428a	$28\,700 \pm 400$	1
Charcoal	GrA-5552	$28\,500 \pm 140$	1

Table 4.4: Radiocarbon dates for Kostënki 12 Layer 1a. References: 1: Chabai, 2003.

(p. 73) (ibid.). The three older dates all fall within the timescale of GI8–5; this is consistent with the supposition that the Bryansk soil coincides with those interstadials. In my opinion the oldest dates, of $>31,000$ ^{14}C years BP, are most likely to reflect the true age of the layers. This is because both cultural layers, 3 and 3a, have yielded dates of this age: 3 underlies 3a, and so should be at least as old as 3a.

Only a single radiocarbon date is available for the assemblage from Garchi in the Urals: $28,750 \pm 795$ (TUa-941) (Svendsen et al., 2010). There are six radiocarbon dates for Kostënki 12 Layer 1a, which range between ca. 33,000 and 28,000 ^{14}C BP (Table 4.4). The dates for Kostënki 11 Layer 3 are very late (after 23,000 ^{14}C BP) (Table 4.5), do not agree with each other and are not considered reliable (Rogachëv & Popov, 1982). At present, this site is probably best considered undated.

All the Streletskayan sites discussed here appear to date to before 28,000 ^{14}C BP. However, it cannot be ruled out that the true ages of the sites are around or earlier than 30,000 ^{14}C BP. The single radiocarbon date for Garchi is not strong evidence of its age. Kostënki 12 Layer 1a has yielded a range of dates, which cannot all be accurate (or, if

Material	Lab code	^{14}C BP	Ref.
Bone*	LE-1638b	22 760 $\pm$ 340	1
Bone*	LE-1638a	16 040 $\pm$ 120	1

Table 4.5: Radiocarbon dates for Kostënki 11 Layer 3. **Measurements taken from the same sample*. References: 1: Rogachëv & Popov, 1982.

accurate, they indicate an extremely disturbed stratigraphy). If the earlier dates are more reflective of its actual age, then it likely dates to significantly before 30,000 ^{14}C BP. Figure 4.5 shows the calibrated ages of the Streletskayan radiocarbon dates that are considered most likely to be accurate. They show that, even if the youngest dates are accurate, these sites date to before the end of GI 5. Hence, it seems that the Streletskayan was over by this time, and quite possibly significantly before that.

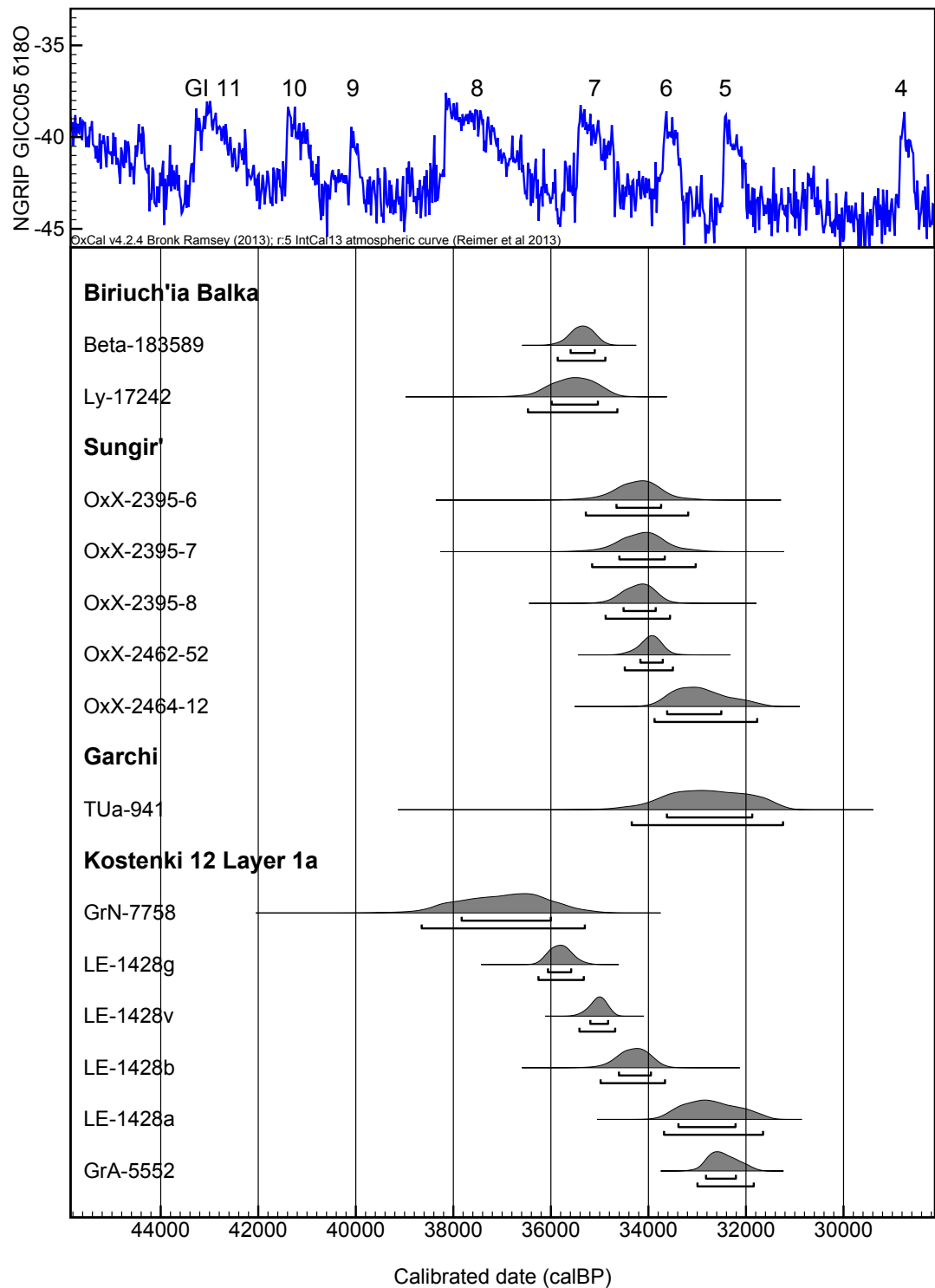


Figure 4.5: Selected calibrated radiocarbon dates for late Streletskayan sites with GICC05 NGRIP $\delta^{18}O$ data. Black bars indicate 68.2% and 95.4% probability ranges.

4.8 The Gorodtsovian

There is much disagreement on which sites should be assigned to the Gorodtsovian (Section 2.5.3). However, most or all authors include the sites of Kostënki 15 (the type site), and Kostënki 14 Layer 2.

Only two published radiocarbon dates are available for Kostënki 15, both later than 26,000 ^{14}C BP (Table 4.6). There are good reasons to be cautious of these dates for the layer. First, they do not agree with each other, and both originate from laboratories which have frequently produced dates that are much later than those measured elsewhere (see for example the dates for Kostënki 14, discussed next). Second, the cultural layer at Kostënki 15 was found in the loam underlying the Upper Humic Bed and occasionally in the lower part of the UHB (Rogachëv & Sinitsyn, 1982a). These radiocarbon dates do not agree with the consensus on the age of the UHB (or, indeed, with the age of GI 8–5 which I suggest for the UHB). If the Upper Humic Bed was deposited during GI8–5, then both radiocarbon dates must be erroneously late. As a result, the radiocarbon dates should not be considered representative of the true age of the site. It is more likely that it dates to before GI 8 or GI 8/7, depending on the taphonomic processes that have affected the layer: more radiocarbon dates are necessary to resolve this.

The available dates for Kostënki 14 (Table 4.7) include some that are more consistent with geological data on the site. Layer 2 (the Gorodtsovian layer) and the underlying Layer 3 were both found within the Upper Humic Bed (Rogachëv & Sinitsyn, 1982b). The later two dates, of later than 20,000 ^{14}C BP, are very likely erroneous. The earlier three dates, however, are consistent with each other stratigraphically and with a date for the UHB of GI8–5 (Fig. 4.6).

Material	Lab code	^{14}C BP	Ref.
Bone (bison)	GIN-8020	25 700 $\pm$ 250	1
Bone	LE-1430	21 720 $\pm$ 570	2

Table 4.6: Radiocarbon dates for Kostënki 15. References: 1: Chabai, 2003; 2: Damblon et al., 1996.

Layer	Material	Lab code	^{14}C BP	Ref.
3	Charcoal	GrN-21802	$30\,080 \pm 590$	1
3	Bone	GIN-79	$14\,300 \pm 460$	2
2	Charcoal	GrN-12598	$28\,380 \pm 220$	1
2	Bone	LU-59b	$28\,200 \pm 700$	1
2	Bone	LE-1400	$19\,300 \pm 200$	2

Table 4.7: Radiocarbon dates for Kostënki 14. References: 1: Chabai, 2003; 2: Damblon et al., 1996.

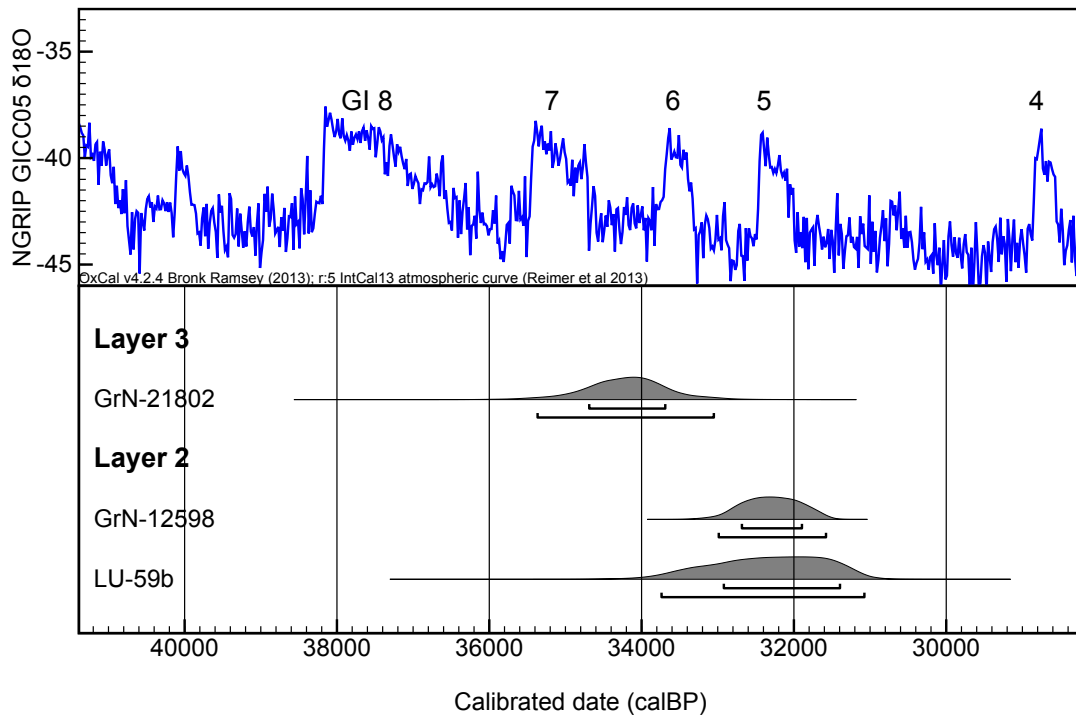


Figure 4.6: Selected calibrated radiocarbon dates for Layers 3 and 2 (Gorodtsovian) of Kostënki 14 with GICC05 NGRIP $\delta^{18}\text{O}$ data. Black bars indicate 68.2% and 95.4% probability ranges.

The possible identification of the Gorodtsovian at Mira Layer I (Ukraine) (Stepanchuk, 2005; Stepanchuk et al., 1998, 2009) represents the only potentially Gorodtsovian site currently known beyond Russia. Radiocarbon dates for the layer range between 28,500 and 26,500 ^{14}C BP: if we take the dates at the older end of the range as indicating the true (or, more radically, a minimum) age for the site then the assemblage was contemporary with the Gorodtsovian found at Kostënki.

The Gorodtsovian is an enigmatic industry: the relevant lithic assemblages would benefit from further study and comparison. At the moment, the only well-dated assemblage which enjoys general agreement on its inclusion is Kostënki 14 Layer 2. Kostënki 15, though the radiocarbon dates appear problematic, is probably older than Kostënki 14 Layer 2 on stratigraphic grounds. Both these layers date, most likely, to before 28,000 ^{14}C years BP and to before the end of GI 5; Kostënki 15 may be considerably older than this.

4.9 The Gravettian

4.9.1 Kostënki 8 Layer 2

There is some disagreement over whether Layer 2 of Kostënki 8 was deposited within the Upper Humic Bed. According to Rogachëv, the site's main excavator, the layer was found in the UHB (Fig. 4.7), but more recent excavations have failed to confirm this (Anikovich et al., in press; Rogachëv et al., 1982b) (see Section 5.1 for further information). This question has some important ramifications for the layer's age: if it was found within the Upper Humic Bed, as long believed, then it belongs to Rogachëv's middle chronological group; if not, then it should belong to the final group.

One date on charcoal of $27,700 \pm 700$ ^{14}C BP (GrN-10509) (Praslov & Rogachëv, 1982, p. 108) remains universally cited for this assemblage. Three later dates for the layer (Table 4.8) have been argued to be erroneous as they disagree with the dating of the Upper Humic Bed (Sinitsyn, 1999 cited in Moreau, 2010). Two new radiocarbon dates were obtained for this layer as part of this research. They are $27,670 \pm 270$ ^{14}C

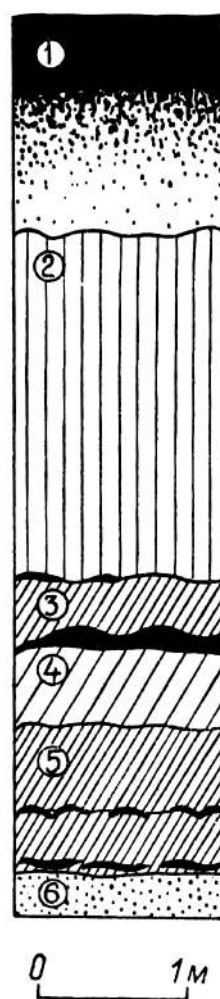


Figure 4.7: Section drawing of Kostënki 8 (from Rogachëv et al. (1982b, Fig. 30)). Key: 1: modern soil; 2: loess-like loam; 3: upper humified layer; 4: whiteish calcareous loam; 5: lower humified layer; 6: Cenomanian sand. According to Rogachëv, Layer 2 lay within the upper humified layer (3).

Layer	Material	Lab code	^{14}C BP	Ref.
2	Charcoal	GrN-10509	$27\,700 \pm 750$	1
2	Bone (Equus sp.)	OxA-30198	$27\,670 \pm 270$	2
2	Bone (Equus sp.)	OxA-30197	$27\,620 \pm 270$	2
2	Bone	GIN-7999	$24\,500 \pm 450$	3
2	Burnt human bone	OxA-7109	$23\,020 \pm 320$	3
2	Bone	GrA-9283	$21\,900 \pm 450$	4
1	Tooth	GIN-7997	$22\,900 \pm 120$	3
1	Bone	GIN-7988	$22\,000 \pm 160$	3

Table 4.8: Radiocarbon dates for Kostënki 8. References: 1: Rogachëv et al., 1982b; 2: This research; 3: Djindjian et al., 1999; 4: Sinitsyn, 2004.

BP (OxA-30198) and $27,620 \pm 270$ ^{14}C BP (OxA-30197). They coincide almost exactly with each other and with the previously published date of $27,700 \pm 700$.

The three earliest dates for Kostënki 8 Layer 2 have been calibrated as shown in Figure 4.8. Here we can clearly see the close agreement between the three earliest dates. We can also see that they appear to fall in early GS 5. If the model used in this research is correct and the UHB relates to all or some of GI 8–5, then the date of GS 5 supports the possibility, raised by the recent excavators of the site, that the layer was not deposited within the UHB. In any case, the close agreement between the three oldest dates is rather convincing evidence for the age of the layer.

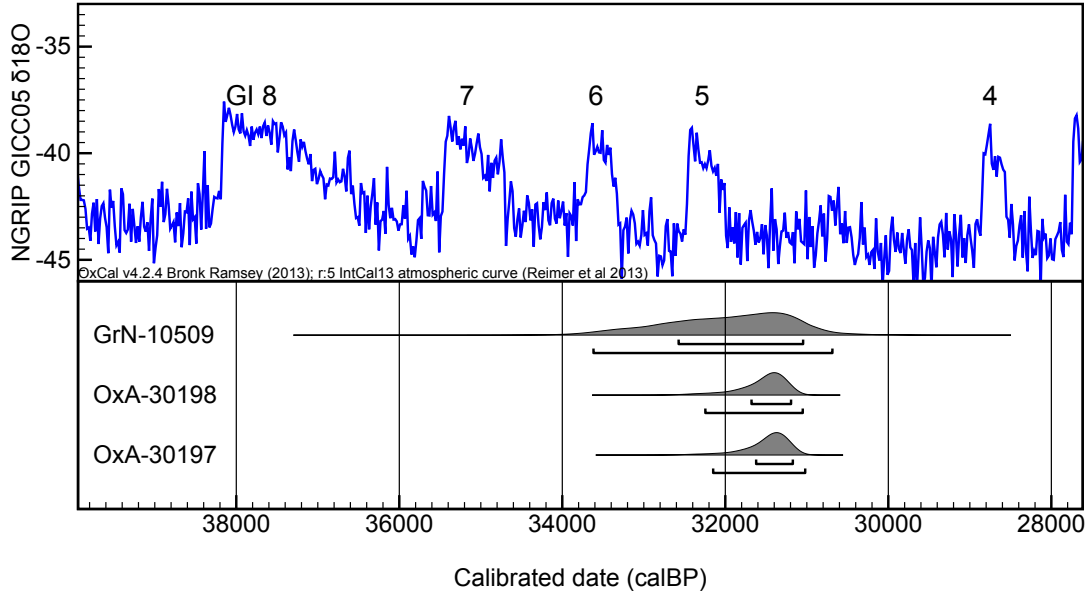


Figure 4.8: Selected calibrated radiocarbon dates for Kostënki 8 (Layers 2 and 1) with GICC05 NGRIP $\delta^{18}\text{O}$ data. Black bars indicate 68.2% and 95.4% probability ranges.

4.9.2 Kostënki 4

Kostënki 4 is the first of two sites whose age must be quite radically revised in the light of the new radiocarbon dates obtained during this research. The site is located on the first (lowest) terrace and therefore is regarded as stratigraphically above the UHB. Table 4.9 shows the new dates and the previously published dates for this site. Before this project, the oldest date obtained was 23,000 ^{14}C BP; the new measurements are ca. 2,000 radiocarbon years older than this. They indicate that the site is considerably earlier than the Kostënki-Avdeevo Culture sites, discussed below, with which it previously appeared to be contemporary.

The dating of the site is complicated by the fact that two cultural layers have been identified at the site, which were indistinguishable over much of their area during excavation (see Chapter 6 for more information). The oldest new date obtained, of $25,290 \pm 210$ ^{14}C BP (OxA-30194), was from a bone which was labelled as having derived from near the southern dwelling structure, but actually *outside* the main excavation area (square A-19), so the association with the cultural layer(s) is questionable. Inter-

Layer	Material	Lab code	^{14}C BP	Ref.
N/A	Bone (Equus sp.)	OxA-30194	25 290 $\pm$ 210	1
1	Bone (Equus sp.)	OxA-30193	24 790 $\pm$ 190	1
1/2	Bone (Coeladonta antiquitatis)	OxA-30196	24 710 $\pm$ 200	1
1	Bone	GIN-7994	23 000 $\pm$ 300	2
1	Bone	GIN-7995	22 800 $\pm$ 120	2
Not stated	Bone	OxA-8310	20 290 $\pm$ 150	3
Unknown	Bone (Equus sp.)	OxA-30195	14 210 $\pm$ 70	1

Table 4.9: Radiocarbon dates for Kostënki 4. References: 1: This project; 2: Djindjian et al., 1999; 3: Bronk Ramsey et al., 2002.

estingly, of the two dates of ca. 24,700 ^{14}C BP, one came from an area where the upper layer is supposed to have been present (OxA-30196) and one did not (OxA-30193). The former sample was taken from a woolly rhinoceros bone found beside the hearth in the eastern “round dwelling” in the northern dwelling complex (square III-39). The latter was taken from a horse bone excavated in the southern dwelling complex (square P-16). These very similar dates do not offer any support for the existence of two chronologically separated cultural layers at the site, although neither do they disprove the possibility.

The very young date of 14,210 $\pm$ 70 (OxA-30195) derives from a sample on a horse bone from an unknown part of the site. It is clearly from a much later event and can be ignored.

The two dates with the best association with the cultural layer(s) suggest that the site was occupied during GI 4. However, the question of the existence of two cultural layers at the site and their temporal separation remains unresolved.

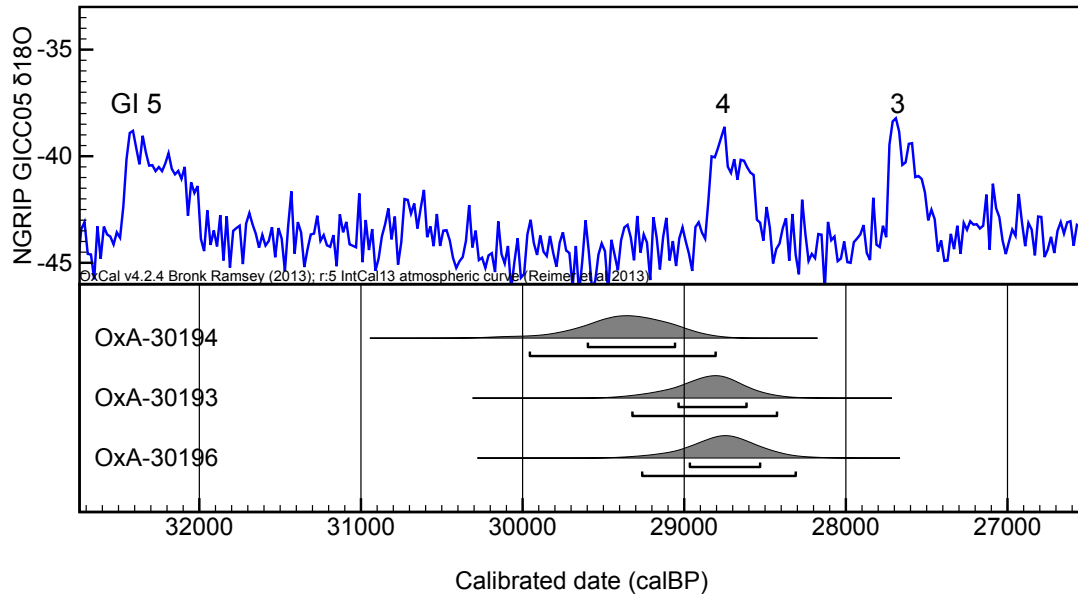


Figure 4.9: Selected calibrated radiocarbon dates for Kostënki 4 with GICC05 NGRIP $\delta^{18}O$ data. Black bars indicate 68.2% and 95.4% probability ranges.

4.9.3 Borshchëvo 5

The age of Borshchëvo 5 must be reconsidered in the light of new radiocarbon dates obtained during this research. The cultural layer of interest, Layer 1, is actually made up of two sub-layers: 1a (upper) and 1b (lower). Layer 1a and 1b are each found in association with weakly humified palaeosol horizons, separated by a layer of loess-like loam. These horizons are associated with the Gmelin soil. A seam of similar loess-like loam underlies the lower palaeosol horizon in some areas. Below this is found the Upper Humic Bed (Fig. 4.11) (Lisitsyn, 2011).

The assemblages from the two sub-layers are typologically almost indistinguishable, and the site's excavator has suggested that Layer 1a could be redeposited from part of Layer 1b which was originally located upslope from the excavation. The artefacts in Layer 1b were more often found in horizontal position than those those in 1a, which were frequently found semi-vertically. The only traces of a hearth were found in Layer 1b, while the weakly humified horizon associated with Layer 1a is found in disturbed lenses rather than the more intact horizon of Layer 1b (Lisitsyn, 2011). Previous dates

Layer	Material	Lab code	^{14}C BP	Ref.
1a	Bone (unknown)	OxA-30200	$25\,110 \pm 200$	1
1a	Bone (unknown)	OxA-30199	$24\,720 \pm 190$	1
1	Rib (mammoth)	GIN-10239	$22\,500 \pm 700$	2
1	Tooth (mammoth)	LE-6947	$20\,000 \pm 300$	2
1	Bone (mammoth)	LE-5571	$17\,400 \pm 2000$	2
1	Bone (horse)	LE-6809	$14\,060 \pm 110$	2

Table 4.10: Radiocarbon dates for Borshchëvo 5. References: 1: This project; 2: Lisitsyn, 2011.

all indicated an age of less than 23,000 ^{14}C BP for Layer 1: the new dates, which were obtained on inarguably humanly modified material, are several thousand years older: $25,110 \pm 200$ ^{14}C BP (OxA-30200) and $24,720 \pm 190$ ^{14}C BP (OxA-30199) (Table 4.10).

The lithic assemblages from Borshchëvo 5 and Kostënki 9 are extremely similar: they both contain large numbers of Late Gravettian rectangles, as well as Gravette points (see Chapter 7). There are no radiocarbon dates available for Kostënki 9, and no material suitable for dating could be found in the collection from the site held at IIMK. We cannot be certain that the two sites are exactly contemporary, but it does seem likely that Borshchëvo 5 is of a similar age to Kostënki 9.

The two new dates for Layer 1a, when calibrated, indicate an age of very late GS 5 or GI 4 (Fig. 4.10). These dates are very similar to those obtained for Kostënki 4 (above). Two possibilities can be suggested for the direct correlation of the weakly humified horizons to interstadial events. The first possibility, that the two horizons where Layers 1a and 1b were found relate to GI 3 and GI 4 respectively, is contradicted by the radiocarbon evidence. The second possibility is that the upper layer is indeed redeposited and that both horizons relate to GI 4, as is consistent with the new dates. This implies that any palaeosol relating to GI 3 is not present (or has not been recognised) in the sequence due to subsequent erosion or re-working.

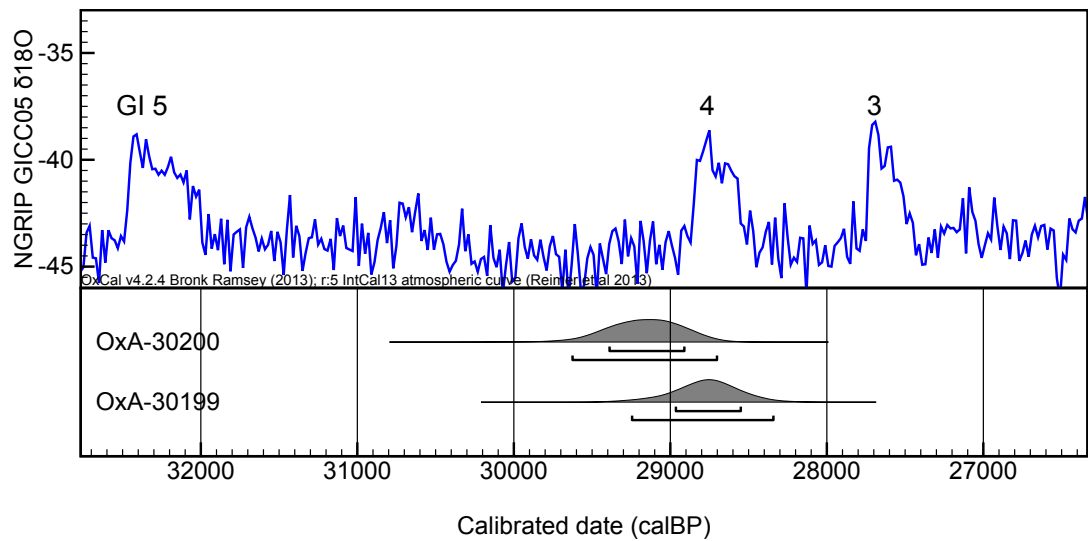


Figure 4.10: Selected calibrated radiocarbon dates for Borshchëvo 5 with GICC05 NGRIP $\delta^{18}\text{O}$ data. Black bars indicate 68.2% and 95.4% probability ranges.

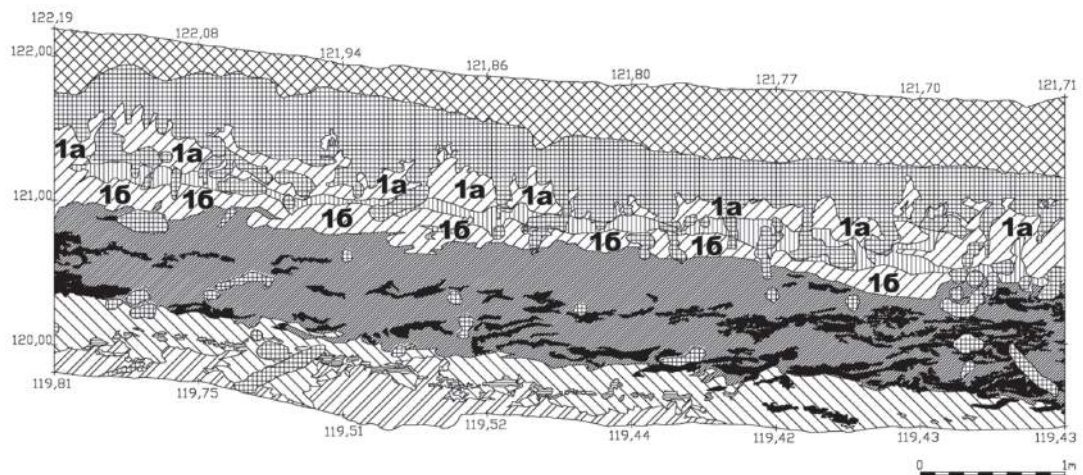


Figure 4.11: Borshchëvo 5 section drawing with locations of cultural layers 1a and 1b indicated (after Lisitsyn, 2011, Fig. 3). Partial key: small squares: loess-like loam; diagonal lines in area of Layers 1a and 1b: lightly humified palaeosol; black: humic layers.

4.9.4 Khotylëvo 2

Khotylëvo 2, with its single cultural layer, has yielded a series of radiocarbon dates from ca. 25,000 to 21,000 ^{14}C years BP. It is extremely difficult to estimate which of these dates is likely to be reflective of the true age of the layer. The cultural remains were found in association with a lightly humified layer, the uppermost of two similar layers, within a thick loess sequence. A thicker series of humified deposits was found somewhat deeper than these two layers (Fig. 4.12). *If* there is a close to one-to-one correlation between the formation of these lightly humified layers and Greenland interstadials, and the age of the cultural layer and associated lightly humified sediment do fall within the range of the radiocarbon dates for this site, then it is likely that the humified layer where the cultural layer was found dates to GI 3.

An earlier date than the Kostënki-Avdeevo Culture has been suggested for Khotylëvo 2 on the basis of geological and radiocarbon data (Velichko et al., 1977 cited in Gavrilov, 2004). The unpublished dates obtained for Khotylëvo 2 as part of the AHOB project are between ca. 23,500 and 22,750 ^{14}C BP (K. Douka, pers. comm.). When calibrated they fall (at 95.4% probability) between ca. 28,000 and 26,500 years BP, during and directly after GI 3, which supports an association between the humified layer and that interstadial. The cultural remains themselves may date to this interstadial or else to the beginning of the following stadial period.

Material	Lab code	^{14}C BP	Ref.
Tooth (mammoth)	IGAN-73	24 960 $\pm$ 400	1
Bone*	GrN-21899	24 220 $\pm$ 110	1
Bone*	GrN-22216	23 870 $\pm$ 160	1
Bone	LU-359	23 660 $\pm$ 270	1
Tooth (mammoth)	GIN-8497a	23 300 $\pm$ 300	1
Tooth (mammoth)	GIN-8406	22 700 $\pm$ 200	1
Tooth (mammoth)	GIN-8496	22 660 $\pm$ 170	1
Burnt bone	GIN-8886	21 850 $\pm$ 170	1
Tooth (mammoth)	GIN-8495	21 720 $\pm$ 170	1
Tooth (mammoth)	GIN-8497	21 170 $\pm$ 260	1

Table 4.11: Radiocarbon dates for Khotylëvo 2. *Samples taken from the same bone. References: 1: Gavrilov, 2008.

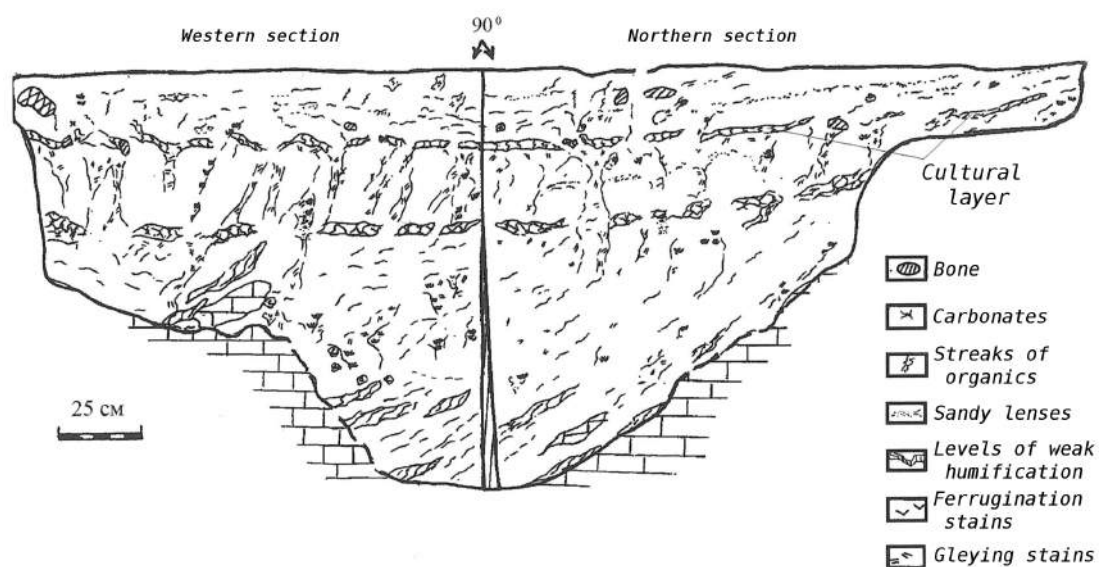


Figure 4.12: Section drawing from Khotylëvo 2 showing position of cultural layer in weakly humified layer. Modified after Gavrilov, 2008, Fig. 39

4.9.5 Gagarino

Few radiocarbon dates are available for Gagarino, and their accuracy is questionable (Table 4.12). The sample materials used are sub-optimal, and the dates are probably best regarded as indicating a minimum age for the site. The geological stratigraphy of the site is unclear and unsuitable for making comparisons with the Kostënki and other sequences. Although there are descriptions of the geology of the site available (Tarasov, 1965, 1979) and they do mention the presence of different layers in the excavations and testpits, including humified layers and palaeosols, it was not possible to correlate any of these with other sites. This is particularly because the available section drawings are very limited in their scope. I am not aware of any study identifying, for example, the Bryansk soil at Gagarino.

At present the dating of Gagarino is best described as uncertain but the site is most likely at least 22,000 ^{14}C years old, or at least 24,000 calendrical years old.

Material	Lab code	^{14}C BP	Ref.
Burned bone	GIN-1872	21 800 $\pm$ 300	1
Mammoth tusk	GIN-7989	21 600 $\pm$ 140	2
Tooth (mammoth)	LE-1432v	20 820 $\pm$ 300	1
Tooth (mammoth)	LE-1432b	20 150 $\pm$ 300	1
Tooth (mammoth)	LE-1432a	17 930 $\pm$ 100	1

Table 4.12: Radiocarbon dates for Gagarino. References: 1: Svezhentsev & Popov, 1993; 2: Sinitsyn, 2007.

4.9.6 Kostënki 1 Layer 1, Avdeevo and Zaraisk

These three sites are the principal constituents of the “Kostënki-Avdeevo Culture” (Section 2.5.5). A large number of radiocarbon dates have been published for Kostënki 1 Layer 1 and Avdeevo, of ca. 23,500 ^{14}C years BP and later (Tables 4.13 and 4.14). The range of dates is very wide for both sites, and the samples were almost all taken from burnt bone or mammoth tooth/tusk, which are less than ideal dating materials. There are a small number of recently obtained unpublished dates for Kostënki 1 Layer 1: these indicate an age of ca. 23,500–23,250 ^{14}C BP, in line with the earliest of the published dates (K. Douka pers. comm.). Given that inaccuracies in radiocarbon dates usually produce results which are younger, rather than older, than the true age of the samples, it would not be surprising if Avdeevo also dates to approximately the same period.

The information available on the geology of the single-layer site of Avdeevo does not indicate any stratigraphic relationship between the cultural layer and palaeosol/humic horizons which can be correlated to those found elsewhere (Gvozdozer, 1995; Moskvitin, 1950; Voevodskii & Alikhova-Voevodskaia, 1950). At Kostënki 1, Layer 1 is described as being found above the Upper Humic Bed in a “grey-brown loess-like loam”² which overlay a “dark-brown loam, perhaps humified”³ in which the second cultural layer was found; there are no further described humified layers below the latter and above the Upper Humic Bed (Rogachëv et al., 1982a). However, this “dark-brown loam” has not, to my knowledge, been correlated with the Gmelin soil; furthermore, the stratigraphy at Kostënki 1 is acknowledged as being rather complicated, with substantial redeposition (Lazukov, 1982).

It is unfortunately rather difficult to find published radiocarbon dates for Zaraisk, but Sinitsyn (2007) writes that there are more than twenty dates between 23,000 $\pm$ 400 ^{14}C BP (GIN-8397a) and 15,600 $\pm$ 300 ^{14}C BP (GIN-3700). According to the excavators there were four cultural layers at the site, all of which contained very similar lithic assemblages (in terms of typology, technology and raw material) (Amirkhanov,

²“Суглинок серо-коричневый, лёссовидный”

³“Суглинок темно-бурый, возможно гумусированный”

2009). The bottom two layers each had a long row of hearths, and a series of large pits, some of which have been interpreted as semi-subterranean dwelling pits, has been found in association with the lowermost layer. In contrast, there is no obvious spatial patterning to the upper two layers: they simply contain many lithics, scattered both horizontally and vertically. The site has been studied in detail by geologists, who found that ice-wedge casts, believed to relate to the LGM, post-dated the lower two layers and pre-dated the upper two (ibid.). I would suggest that the two upper layers could both be redeposited: the site is located part-way down a slope, and the area upslope of the site has not been excavated. As with Kostënki 1 Layer 1 and Avdeevo, the oldest radiocarbon dates for the site are most likely to be accurate, giving Zarsk an age of ca. 23,000 ^{14}C BP.

Avdeevo and Zarsk both require further dating work to increase our confidence about their age. However, it seems that all three sites probably date to ca. 23,500–23,000 ^{14}C BP, or, when calibrated, to ca. 28,000–27,000 years BP. This makes them chronologically indistinguishable from Khotylëvo 2. The radiocarbon dates indicate a possible correlation with GI 3. There is no useful geological information from the sites which could be used to further explore this correlation except for the data from Kostënki 1 Layer 1, which perhaps disagrees with this possibility.

Material	Lab code	^{14}C BP	Ref.
Mammoth tusk	LE-3283	23 640 $\pm$ 320	1
Burnt bone	GIN-2527	23 500 $\pm$ 200	1
Burnt bone	LE-3286	23 490 $\pm$ 420	1
Tooth (mammoth)	LE-3289	23 260 $\pm$ 680	2
Tooth (mammoth)	LE-3287	23 260 $\pm$ 420	1
Tooth (mammoth)	LE-3276	23 010 $\pm$ 300	1
Burnt bone	GIN-2528	23 000 $\pm$ 500	1
Burnt bone	GIN-2530	22 800 $\pm$ 200	1
Tooth (mammoth)	LE-2800	22 760 $\pm$ 250	1
Tooth (mammoth)	LE-2969	22 700 $\pm$ 250	1
Burnt bone	GIN-1870	22 300 $\pm$ 230	1
Burnt bone	GIN-2533	22 300 $\pm$ 200	1
Burnt bone	LE-3290	22 060 $\pm$ 500	1
Tooth (mammoth)	LE-3282	22 020 $\pm$ 310	1
Not stated	LE-2801	21 800 $\pm$ 200	1
Tooth (mammoth)	LE-3279	21 680 $\pm$ 700	1
Burnt bone	GIN-2534	21 300 $\pm$ 400	1
Burnt bone	AA-4799	20 855 $\pm$ 260	1
Not stated	GIN-4851	20 800 $\pm$ 300	1
Burnt bone	AA-4800	20 315 $\pm$ 200	1
Burnt bone	LE-3277	20 100 $\pm$ 680	1
Tooth (mammoth)	LE-2949	19 860 $\pm$ 200	1
Burnt bone	LE-3281	19 620 $\pm$ 460	1
Burnt bone	LE-3292	19 540 $\pm$ 580	1
Tooth (mammoth)	LE-2950	19 010 $\pm$ 120	1
Burnt bone	LE-3280	18 230 $\pm$ 620	1

Table 4.13: Radiocarbon dates for Kostënki 1 Layer 1. References: 1: Damblon et al., 1996; 2: Svezhentsev & Popov, 1993.

Material	Lab code	^{14}C BP	Ref.
Tooth (mammoth)	GIN-7729	23 400 $\pm$ 700	1
Burned bone	GIN-1571g	22 700 $\pm$ 700	1
Burned bone	GIN-1969	22 400 $\pm$ 500	1
Burned bone	GIN-1970	22 200 $\pm$ 700	1
Burned bone	GIN-4693	21 600 $\pm$ 400	1
Burned bone	GIN-1569	21 200 $\pm$ 200	1
Burned bone	GIN-2535	21 100 $\pm$ 800	1
Burned bone	GIN-1748	21 000 $\pm$ 200	1
Burned bone	GIN-1747	20 800 $\pm$ 200	1
Burned bone	GIN-6594	20 100 $\pm$ 400	1
Burned bone	GIN-6593	20 100 $\pm$ 200	1
Burned bone	GIN-6592	20 100 $\pm$ 300	1
Burned bone	GIN-1746	20 100 $\pm$ 500	1
Charcoal	GIN-1570	19 800 $\pm$ 1200	1
Tooth (mammoth)	GIN-7727	19 500 $\pm$ 500	1
Bone	QC-887	18 500 $\pm$ 2100	1
Burned bone	GIN-1571b	17 200 $\pm$ 1800	1
Bone (mammoth)	QC-621	16 960 $\pm$ 420	1
Bone (mammoth)	QC-886	16 565 $\pm$ 270	1
Tooth (mammoth)	IGAN-78	13 900 $\pm$ 200	1
Tooth (mammoth)	IGAN-151	11 950 $\pm$ 310	1

Table 4.14: Radiocarbon dates for Avdeevo. References: 1: Abramova et al., 2001.

4.9.7 Kostënki 21 Layer 3

Cultural layer 3 from Kostënki 21 was found in association with a buried soil: the Gmelin soil, first defined at this site (Fig. 4.13).

Six published radiocarbon dates are available for the layer (Table 4.15). A single piece of charcoal was divided and dated at two labs, producing the following results: $16,960 \pm 300$ ^{14}C BP (LE-1043) and $22,270 \pm 150$ ^{14}C BP (GrN-7363). Another date on charcoal from a hearth was also obtained: $21,260 \pm 340$ ^{14}C BP (GrN-10513). The Gröningen dates have been taken as most reliable (Praslov & Ivanova, 1982). Unpublished dates are in agreement with these dates: a few results ranging between ca. 22,500 and ca. 21,000 ^{14}C BP were obtained for Layer 3 (K. Douka pers. comm.). When calibrated, the dates fall between ca. 27,300 and 25,200 years BP (with 95.4% confidence). The relatively wide range of dates obtained is interesting: as shall be seen in Chapter 9, this layer may be best treated as two separate sites. A thermoluminescence date of $26,765 \pm 2,000$ was obtained in Tallinn on a sample of burnt loam from the wall of a hearth (Praslov & Ivanova, 1982, p. 209); this date falls within the range of calibrated radiocarbon dates. The dating of the layer puts it as most likely post-dating the three principal sites of the Kostënki-Avdeevo Culture, discussed above. It also places it in a stadial period after GI 3, at the beginning of the Last Glacial Maximum itself.

However, the geological and other information for the site does not agree with this assessment. Other studies, including palaeontological, malacological, palynological and geoarchaeological, suggested that the site was occupied during a short warm period (Praslov & Ivanova, 1982). Above, I suggested a connection between the Gmelin soil and GI 4 and/or GI 3. It is not obvious how to interpret these contradictory results. One possibility is that the radiocarbon and thermoluminescence dating somehow does not reflect the true age of the site but there is no obvious reason to doubt the results. It may be more likely that the stratigraphical and hence chronological association between the Gmelin soil and the cultural layer is faulty: micromorphological study might help in testing this possibility. The faunal assemblage does contain species such as horse

Material	Lab code	^{14}C BP	Ref.
Bone (collagen)	LE-1437V	22 900 $\pm$ 150	1
Charcoal*	GrN-7363	22 270 $\pm$ 150	2
Charcoal	GrN-10513	21 260 $\pm$ 340	2
Bone	LE-1437B	20 250 $\pm$ 100	1
Bone (apatite)	LE-1437A	19 100 $\pm$ 150	1
Charcoal*	LE-1043	16 960 $\pm$ 300	2

Table 4.15: Radiocarbon dates for Kostënki 21 Layer 3. **Samples taken from the same piece of charcoal*. References: 1: Svezhentsev, 1993; 2: Praslov & Ivanova, 1982.

and bison (as well as mammoth and reindeer) (Table 9.1, p. 253), but we lack high-resolution information on change in mammalian assemblages from European Russia during this period. The faunal assemblage from Kostënki 8 Layer 2, which appears to be securely dated to a stadial period, also contains horse and bison (Table 5.1, p. 111). In the absence of further investigation of the association between the palaeosol and the cultural layer there does not seem to be a strong reason to reject the radiocarbon dates for Kostënki 21.

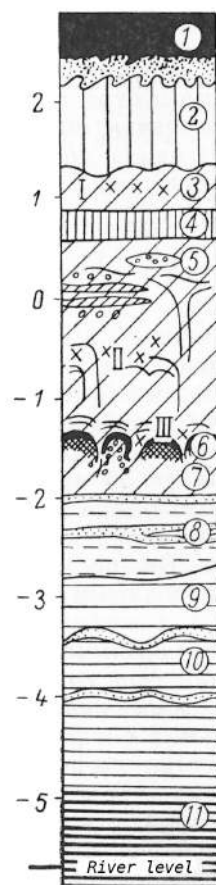


Figure 4.13: Section drawing of Kostënki 21 (after Praslov & Ivanova (1982, Fig. 68)). Roman numerals: cultural layers. Arabic numerals: sedimentological units. Key: 1) modern soil; 2) pale yellow loess-like loam; 3) pale yellow loam; 4) grey-brown loess-like loam; 5) brown loam; 6) palaeosol (Gmelin soil); 7) darkish-brown loam; 8) dark brown loam; 9) greyish-brown clay; 10) grey clay; 11) dark grey clay.

4.9.8 Kostënki 11 Layer 2

Only two radiocarbon dates are available for Layer 2 of Kostënki 11, the younger of which is certainly erroneous (Table 4.16). The earlier date of $21,800 \pm 200$ (GIN-2531), although it is on burnt bone, places the level as approximately contemporary with Kostënki 21 Layer 3, and dates it to approximately GS 3.

Cultural layer 2 of Kostënki 11 was found in association with a buried soil described as the Gmelin soil, as at Kostënki 21 Layer 3 (Fig. 4.14) (Popov & Pustovalov, 2004). The problem of disagreement between geological stratigraphy and radiocarbon dating is exactly the same at both sites (see above). If Kostënki 11 Layer 2 was indeed deposited at the same time as the formation of the palaeosol with which it is apparently associated, then it should date to an interstadial, but the only available radiocarbon date indicates a stadial age. The single radiocarbon date for this site is, however, more questionable than those for Kostënki 21 Layer 3, as it was obtained a long time ago using sub-optimal sample material and unknown laboratory procedures. The true age of the layer could indeed be older than ca. 22,000 ^{14}C BP. Alternatively, as with Kostënki 21 Layer 3, perhaps the stratigraphic association between the cultural layer and a palaeosol does not indicate that the site was inhabited during an interstadial: the cultural remains could have been deposited after the interstadial, or the humified layer could have been misidentified as a true palaeosol. Micromorphological work could address this question.

Material	Lab code	^{14}C BP	Ref.
Burnt bone	GIN-2531	$21\,800 \pm 200$	1
Burnt bone	TA-34	$15\,200 \pm 300$	1

Table 4.16: Radiocarbon dates for Kostënki 11 Layer 2. References: 1: Rogachëv & Popov, 1982.

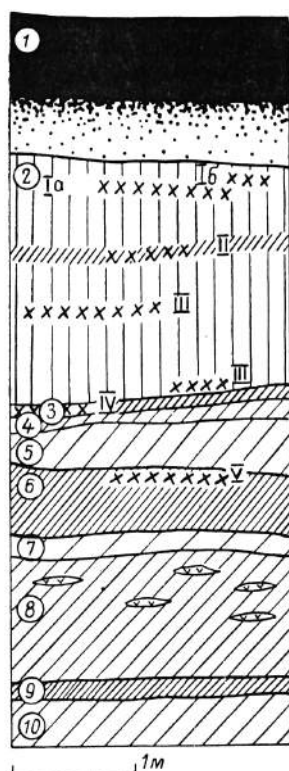


Figure 4.14: Section drawing of Kostënki 11 (after Rogachëv & Popov (1982, Fig. 37)). Roman numerals: cultural layers. Arabic numerals: sedimentological units. Key: 1) modern soil; 2) grey-brown loess-like loam; 3, 6, 9) humified loam; 4) marly loam; 5) whitish loam; 7) brown loam; 8) layered loam with lenses of volcanic ash; 10) layered loam

Chapter 5

Kostënki 8 (Tel'manskaia) Layer 2

5.1 History of excavation and investigation

The site of Kostënki 8 (Tel'manskaia) is located on the side of Aleksandrovskii Log, on the slope formed by the intersection of Aleksandrovskii and Biriuch'ii Logs (Fig. 2.3). Section 2.4.1 describes the Kostënki area in detail.

It was discovered in 1936 by A. N. Rogachëv under the leadership of P. P. Efimenko (Beregovaia, 1960; Rogachëv et al., 1982b) and was the subject of excavations during 1937 (directed by Efimenko), 1949–52, 1958–59, 1962–64, 1976 and 1979 (directed by Rogachëv) (Rogachëv et al., 1982b, p. 92). These excavations were carried out over a total area of 530 m² (Rogachëv et al., 1982b, p. 101). In recent years, a team led by V. V. Popov excavated a sondage at the site with the aims of better clarifying the stratigraphy and searching for tephra, and excavations are continuing (Bessudnov, 2009). The site contains five identified cultural layers, numbered from top to bottom 1, 1a, 2, 3 and 4 (Rogachëv et al., 1982b, p. 92).

The site is well-published, and numerous articles by the excavators are available (e.g. Rogachëv, 1951, 1957; Rogachëv et al., 1982b). A doctoral dissertation was completed on the site—the *avtoreferat* (summary) of the thesis is available (Chelidze, 1968), as is an article dedicated to Layer 2 (Litovchenko, 1969).¹ Apart from this, the site has been

¹L. M. Chelidze, L. M. Litovchenko and L. M. Litouchanka are all the same person.

widely referenced in reviews of the Russian and European MUP (e.g. Anikovich, 2005; Beregovaia, 1960; Djindjian et al., 1999; Kozłowski, 1986; Moreau, 2010; Rogachëv & Anikovich, 1984; Sinitsyn, 2007, 2010).

According to Rogachëv et al. (1982b, p. 101), “Tel’manskaia’s second layer and Gorodtsovskaiia [Kostënki 15] are deposited under the upper brick-red layer of the upper bed of fossil humus, traced across a significant area of this spur in large quarries and in sondages dug between these sites”² (Rogachëv, 1957, p. 123). A later description states that Layer 2 was about 20 cm in average thickness and lay “within the Upper Humic Bed, connected with lenses of intensive humification of the lower level, and also with a greyish-yellow loam, strongly ferruginized and containing limey nodules, which separates the base and upper part of the Upper Humic Bed”³ (Fig. 4.7, p. 85).

The most recent excavations have cast some doubt on the association between the cultural layer and the Upper Humic Bed, as the stratigraphy described by Rogachëv was not found in the sondage dug in the new excavations (Anikovich et al., in press). Layer 2 is significantly disturbed by permafrost formation or other processes, as noted in the literature (Rogachëv, 1957; Rogachëv et al., 1982b) and visible during the 2013 excavations (Figure 5.1). Layer 3 lay only ca. 25–30 cm below Layer 2 and was in some places mixed with it (Beregovaia, 1960, p. 55).

Rogachëv et al. (1982b) describe three accumulations of finds, two of which were circular and ca. 6–7 m in diameter, with single hearths at their centres, and one which was ca. 20 m long and 8–10 m wide, containing three hearths (Figures 5.2 and 5.3). In the opinion of Rogachëv and others, the layout of the hearths and accumulations of cultural remains at the site is evidence for either five small circular or oval structures, or two small circular dwellings and one larger one (Litovchenko, 1969; Rogachëv & Anikovich, 1984; Rogachëv et al., 1982b). The absence of large bones or mammoth

²“Второй слой Тельманской стоянки и Гороцкая стоянка залегают под верхней кирпично-красного цвета прослойкой верхней толщи ископаемого гумуса, прослеженной на значительном пространстве этого мыса в огромных карьерах и в шурфах вырытых между этими стоянками.”

³“Он залегает в верхней гумусированной толще, связан с линзами интенсивной гумусированности нижнего уровня, а также с сизовато-желтым суглинком, сильно ожеженным и включающим известковистые стяжения, разделяющим основание и верхнюю часть верхней гумусированной толщи.”



Figure 5.1: Excavations at Kostënki 8, August 2013, showing the disturbed Layer 2 (Photo N. Reynolds)

tusks and the location of the accumulations in shallow depressions is cited as evidence for the purported dwellings having been above-ground, and built without the use of animal bones as structural supports (Rogachëv et al., 1982b).

Faunal remains included hare and wolf, which predominate, and aurochs, horse, mammoth, reindeer, woolly rhino, red deer, megaloceros, arctic fox, cave bear, birds and fish (Vereshchagin & Kuz'mina, 1977, p. 104) (Table 5.1). The good representation of fur-bearing animals (hare, wolf and arctic fox) is notable, as is the presence of horse, reindeer and aurochs/bison. Due to the mixing between these layers, the faunal assemblage from Layers 2 and 3 was studied in combination. The reported find of a Holocene domesticated sheep bone (and other bones attributed to the Holocene) may relate to movement of remains into the layer by burrowing animals.

Some human remains, in the form of an accumulation of small cranial fragments (partially burned on the internal side) and a few other bones, were also found at the site (Gerasimova et al., 2007; Rogachëv et al., 1982b).

5.2 History of interpretation

The assemblage has been variously described as Early Gravettian/*Gravettien ancien* (Djindjian et al., 1999; Moreau, 2010; Otte & Noiret, 2003; Sinitsyn, 2007), Gravettoid (Anikovich, 2005; Anikovich et al., 2008a) “putatively Gravettoid” (Vishnyatsky & Nehoroshev, 2004), eponymously as “early Tel'manskayan”⁴ (Efimenko, 1953, p. 316), “Kostënki-Tel'manskayan” (Litovchenko, 1969) and “*Thalmannien*” (Djindjian et al., 1999), and as “Grimaldian” or “Mediterranean-type Gravettian” (Efimenko, 1960; Sinitsyn, 2007). Many authors stress the absence in Eastern Europe of similar sites during the period 27–28 thousand radiocarbon years ago (e.g. Anikovich et al., 2008a; Noiret, 2013; Sinitsyn, 2013).

Efimenko (1953, p. 316) makes comparisons with the Perigordian in the Dordogne and with the Grimaldi Caves (Italy); he saw the latter sites as providing the best

⁴“раннетельманского типа”

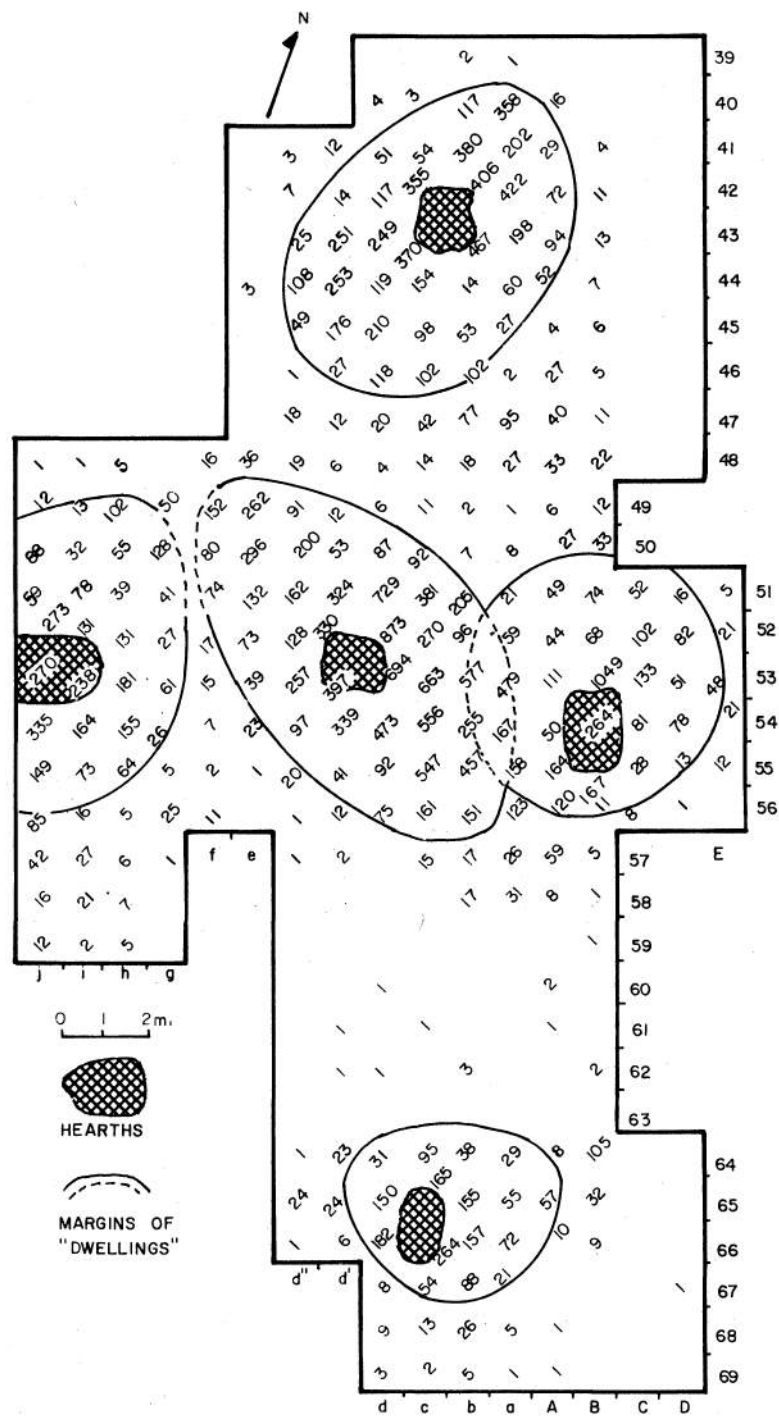


Figure 5.2: Plan of Kostënki 8 Layer 2: numbers of flints per square metre (after Klein (1969) based on Litovchenko (1966))

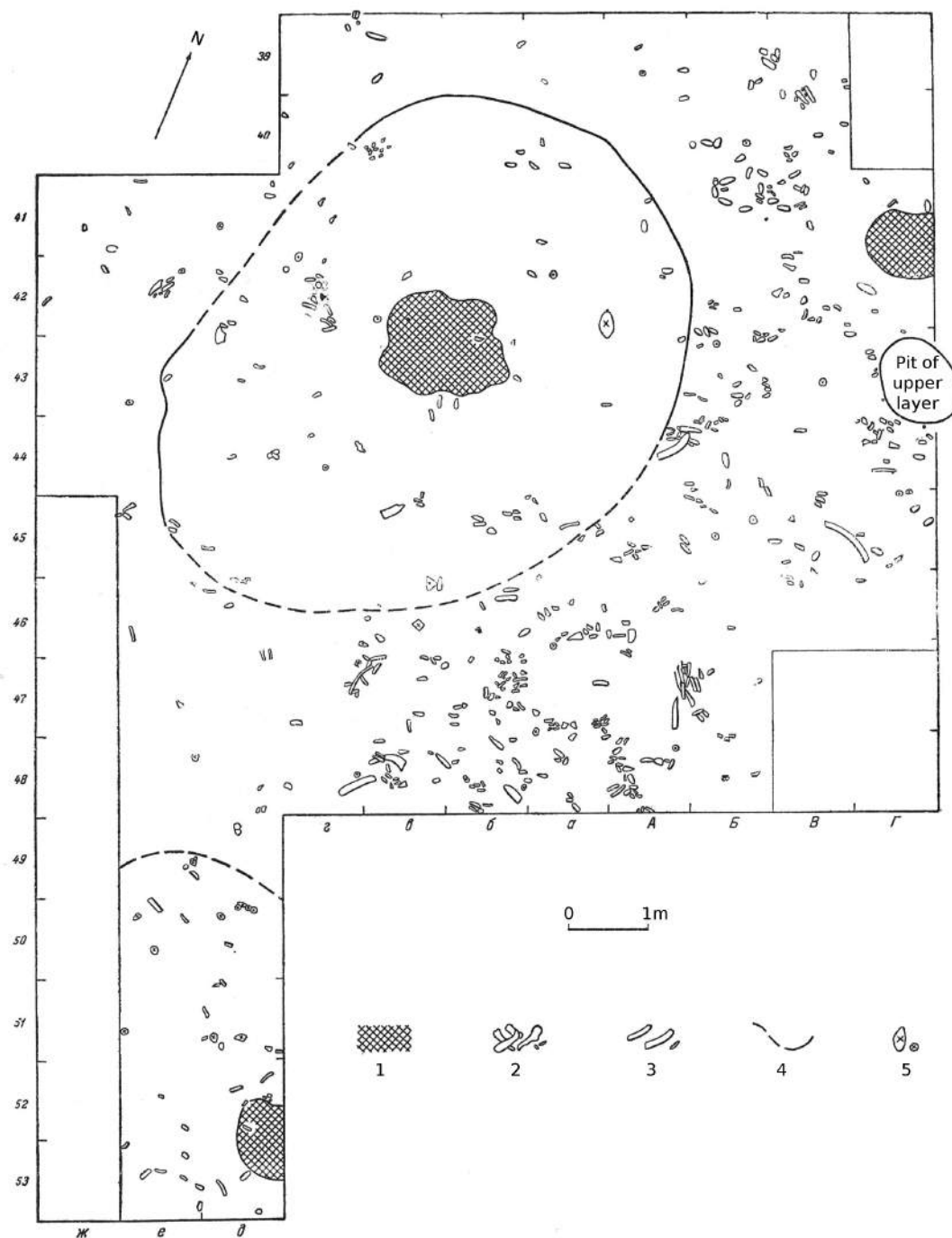


Figure 5.3: Plan of part of Kostënki 8 Layers 2 and 3 (modified from Rogachëv (1957, Fig. 21)). Key: 1: remains of hearths; 2: fragments of animal bones; 3: fragments of mammoth tusks connected with the third cultural layer; 4: border of the dwellings of the second cultural layer; 5: lithics and lithic fragments

Kostënki 8 Layers 2 and 3			
Species		NISP	MNI
Pleistocene			
<i>Mammals</i>			
<i>Mammuthus primigenius</i>	Mammoth	67	3
<i>Coelodonta antiquitatis</i>	Woolly rhinoceros	18	2
<i>Bos primigenius/Bison priscus</i>	Aurochs or bison	11	3
<i>Equus ferus</i>	Horse	62	3
<i>Megaloceros giganteus</i>	Megaloceros	2	1
<i>Cervus elaphus</i>	Red deer	1	1
<i>Rangifer tarandus</i>	Reindeer	9	2
<i>Saiga tatarica</i>	Saiga antelope	7	1
<i>Panthera leo spelaea</i>	Cave lion	3	1
<i>Canis lupus</i>	Wolf	204	8
<i>Alopex lagopus</i>	Arctic fox	56	3
<i>Castor fiber</i>	Beaver	1	1
<i>Lepus sp.</i>	Hare	311	14
<i>Marmota sp.</i>	Marmot	6	2
<i>Lagurus lagurus</i>	Steppe lemming	32	15
<i>Ochotona pusilla</i>	Steppe pika	15	4
<i>Microtus arvalis</i>	Common vole	17	5
<i>Microtus sp.</i>	Vole (indeterminate)	103	31
<i>Birds</i>			
	All	20	No data
<i>Fish</i>			
	All	36	No data
<i>Molluscs</i>			
	All	5	No data
Holocene (Neolithic and Bronze Age)			
<i>Mammals</i>			
<i>Spalax microphthalmus</i>	Greater mole rat	132	13
<i>Cricetus cricetus</i>	European hamster	29	4
<i>Equus ferus</i>	Horse	3	1
<i>Sus scrofa</i>	Wild boar	1	1
<i>Bos primigenius/Bison priscus</i>	Aurochs or bison	1	1
Domesticated			
<i>Mammals</i>			
<i>Ovis aries</i>	Sheep	1	1
Total		1092	121

Table 5.1: Fauna from Kostënki 8 Layers 2 and 3 (from excavations up to 1959) (after Vereshchagin & Kuz'mina, 1977)

analogies for the Kostënki 8 Layer 2 assemblage. The comparisons with the Dordogne and the Grimaldi Caves are based on the “predominance of small regular prismatic bladelets and tools made from them, often geometric forms, especially small points which are obviously arrow heads, including the shouldered type”⁵ (Efimenko, 1953, p. 316). At one stage he describes the assemblage as “early Tel’manskayan”, while later he places the assemblage as the most important element of his “Grimaldian” group of sites at Kostënki Efimenko (1953, 1956). Within the Kostënki-Borshchëvo area, he saw similarities with layers 3 and 4 of Kostënki 8 and, more tentatively, with layers 2 and 3 of Kostënki 1 (Efimenko, 1956, p. 47). He made further comparisons with “the so-called Capsian Upper Palaeolithic culture, found in the entire Mediterranean region”⁶ (Efimenko, 1956, p. 48) (the Capsian is now defined as a Holocene archaeological grouping of the Eastern Maghreb; Rahmani, 2004). In any case, he writes that Kostënki 8 Layer 2 differs from unnamed Capsian sites of the Black Sea coast of the Caucasus, and Bulgaria and Yugoslavia, because of the absence of any “Mousterian elements” at the Kostënki site.

Rogachëv (1957), in his pioneering establishment of a tripartite chronology for the Kostënki sites based on their geological stratigraphy, placed Kostënki 8 Layer 2 in his middle chronological group and described it as one of the later sites of this group. He notes the lack of any similar sites anywhere on the Russian plain and compares the lithic assemblage to that from Krems-Hundssteig (Austria) (ibid., p. 133). According to Rogachëv & Anikovich (1984, p. 186), the “closest analogues” to the backed bladelets from this assemblage are found at Amvrosievka (Ukraine). A comparison to that site is also made by Litovchenko (1969), along with comparisons to the sites of Kostënki 4, Molodova V (Ukraine) and Denis-Khvreli (Georgia), but she concludes that none of these sites provide satisfactory comparisons for Kostënki 8 Layer 2. She also considers the microgravette assemblages from the Perigordian III assemblages of Laugerie Haute Est (layers B and B1) and Laugerie Haute Ouest (Layer B), but considers that

⁵“преобладание небольших правильных призматических пластинок и изготовленных из них орудий, нередко геометризованных форм, особенно небольших наконечников, очевидно наконечников стрел, в том числе типа с боковой выемкой”

⁶“так называемой капсийской позднепалеолитической культуры, распространенной на всей территории Средиземноморья”

the differences in the assemblages mean that they do not constitute analogies for the Kostënki 8 Layer 2 assemblage. As a result, she rejects Efimenko's comparison of the material from Kostënki 8 Layer 2 to the Perigordian, as well as to the Grimaldian.

The presence of “geometric microliths” (a small distinct group of pieces separate from the microgravettes) has also been seen as important. Otte & Noiret (2003) suggest that this assemblage could have been a precursor to the Pavlovian in Moravia, noting the shared presence of these pieces. Kozłowski (1986) describes Kostënki 8 Layer 2 as “very distinct” but also notes parallels between the geometric microliths from Kostënki 8 Layer 2 and the Pavlovian, while he compares the osseous industry to Kostënki 14 Layer 2. Similarities between the Kostënki 8 Layer 2 assemblage, the Pavlovian and the Khotylëvo 2 assemblage have also been proposed (Kozłowski and Otte, 1987 cited in Noiret, 2013).

Anikovich et al. (2008a, pp. 128–132) assigns the site to his “Gravettoid” technocomplex, and agrees with other authors that analogues are to be found in Western Europe and the Mediterranean. In his opinion, it might be possible to establish links with Kostënki 11 Layer 4 and the northern complex of Kostënki 11 based on their lithic assemblages. He writes that the osseous industry is similar to that from Kostënki 14 Layer 2, although the lithics are completely different. He is more sceptical than other authors about the dating of the site to 28–27,000 ^{14}C BP, writing that the disagreement between the various radiocarbon dates for the assemblage mean that it is premature to come to a conclusion on its age.

Sinitsyn (2007, 2013) follows Efimenko in comparing the assemblage with Mediterranean sites, naming Grotta Paglicci (Italy) as providing the closest analogies and citing similar radiocarbon dates for Grotta Paglicci as support for this comparison. In an earlier publication (Sinitsyn, 1997, pp. 61–62 quoted in Anikovich, 2008, p. 130) he made comparisons with “early and middle Epigravettian complexes of northern Italy of the Grotta Paglicci, Romanelli and Arene Candide type, from the time of the Lascaux interstadial”⁷ and to layers 1 and 1a of Corbiac (France), based on the lithic industry,

⁷“комплексы раннего и среднего этапов эпиграветта Северной Италии типа грота Пагличчи,

especially the burins. He has also compared the described dwelling structures (which he interprets as five light above-ground structures with central hearths) with examples from Corbiac (Sinitsyn, 1997, 2013). Sinitsyn (2013) notes that Russian archaeologists have traditionally seen a migration from Italy to Russia as creating the similarity seen in the archaeological record, but that Gambassini (2007) suggests that a migration could have taken place in the other direction, from Eastern Europe to Italy east of the Apennines.

Despite this extensive debate and speculation, no systematic studies have been carried out to compare the assemblage from Kostënki 8 Layer 2 with similar assemblages known from elsewhere in Europe. Moreau (2010) recommends that comparisons be made with the assemblages from Geißenklösterle and Abri Pataud Level 5, both well dated to the Early Gravettian.

The variety of interpretations of the site has much to do with twentieth-century debates in Russia on the validity of basing an entire archaeological culture on a single site, given the absence of obvious nearby analogues for the assemblage. The use of migration and diffusion as explanations for cultural similarities, as opposed to stadialism (see Section 2.3), was also heavily contested. Litovchenko’s position, in rejecting all comparisons with any other site, can be seen as one end of a spectrum of opinion on this matter. Although the term “Tel’manskayan” and its variants are not found in recent primary literature, the contrast between the use of the regional Eastern European term “Gravettoid” and the more generally European term “Gravettian” shows that the debate on the proper contextualisation of the site has not been fully resolved.

5.3 Collections and sampling

The known extant collection from Kostënki 8 Layer 2 is held in the Kunstkamera, Saint Petersburg. This collection contains only the material excavated in 1949 and 1950 by A. N. Rogachëv. Unfortunately, the present location of the remaining material from

Романелли, Арен Кандид времени интерстадиала Ляско”

Rogachëv's excavations is unknown, enquiries having been made at the Kunstkamera and IIMK. All of the available material was studied as part of this research.

In total, around 22–23,000 pieces of worked flint were found during the twentieth-century excavations, of which around 2,100 were retouched. (Rogachëv & Anikovich, 1984; Rogachëv et al., 1982b). 350 pieces previously classified as backed lithics were found; of these, 315 were accepted for inclusion in this project. The 350 lithics seen constitute ca. 39% of the count of 892 backed bladelets made in a previous study of the original assemblage from the 1937–1964 excavations (Litovchenko, 1969, p. 113). In addition, 41 cores and possible cores were recorded. The material from the most recent excavations has not yet been published and was not included in this study. The vast majority of lithics studied were made on fine-grained dark flint, often patinated; further details are given below.

Other principal typological categories of lithics present in the assemblage include burins (found in very high numbers: around 500), retouched blades (also found in high numbers: more than 400), retouched flakes, and end-scrapers (Litovchenko, 1969; Rogachëv & Anikovich, 1982a). About 100 “secondary cores” utilising flake or blade blanks for bladelet production were found, as well as around 20 exhausted prismatic or spherical cores (Rogachëv & Anikovich, 1982a, p. 102). The osseous industry from the site is not extensive and is described as including rods, awls, points, stemmed points, polishers and decorated beads (Chelidze, 1968, p. 13).

5.4 Backed lithic assemblage

5.4.1 Typological categories

Almost all studied lithics from Kostënki 8 Layer 2 belonged to a single typological category: microgravettes. The numbers in each category are as follows:

Microgravettes (n=294). These are small points with a straight backed edge, a modified base narrowing to a point or rounded end, and an unbacked or partially

unbacked second edge.

Sub-microgravettes (n=8). Lithics which met the above criteria, but which had incomplete backing, were designated “sub-microgravettes” and are presumed to be unfinished pieces.

Other backed bladelets and points (n=13). This category includes all studied lithics that did not fit into the first two categories, and forms a miscellaneous group of artefacts.

The following sections describe each of these typological categories. After those descriptions, one further category of backed lithics is discussed. These are the “segments” and “trapezes”, which were not found in the studied collection but which have been important to the interpretation of the site and have been described in the published literature on the site.

5.4.2 Microgravettes and sub-microgravettes

The most typical microgravette form is as follows (Figs. 5.4, 5.5). It is backed on the right edge, with both ends pointed. The distal end is more acutely pointed than the proximal end. The distal and proximal ends are shaped with a combination of direct retouch to the left edge and sometimes flat ventral retouch from the left edge. The platform is fully removed, and the bulb is fully or mostly removed. The proximal and distal points are located on the right edge (i.e. the right edge is straight along its entire length) or are offset slightly towards the central axis (rarely, one point is located on the left edge). The left edge is either curved or straight, with a varying amount of retouch applied to create this shape, depending on the blank morphology. If the left edge is straight, the sides may be rectilinear or taper slightly towards the distal end. If not rectilinear, the widest part of the piece is located towards the proximal end, or less often at the medial part of the piece. If rectilinear, it is usually on a particularly narrow blank, which remains unretouched on much of the unbacked edge.



Figure 5.4: Microgravettes from Kostënki 8 Layer 2: dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph.

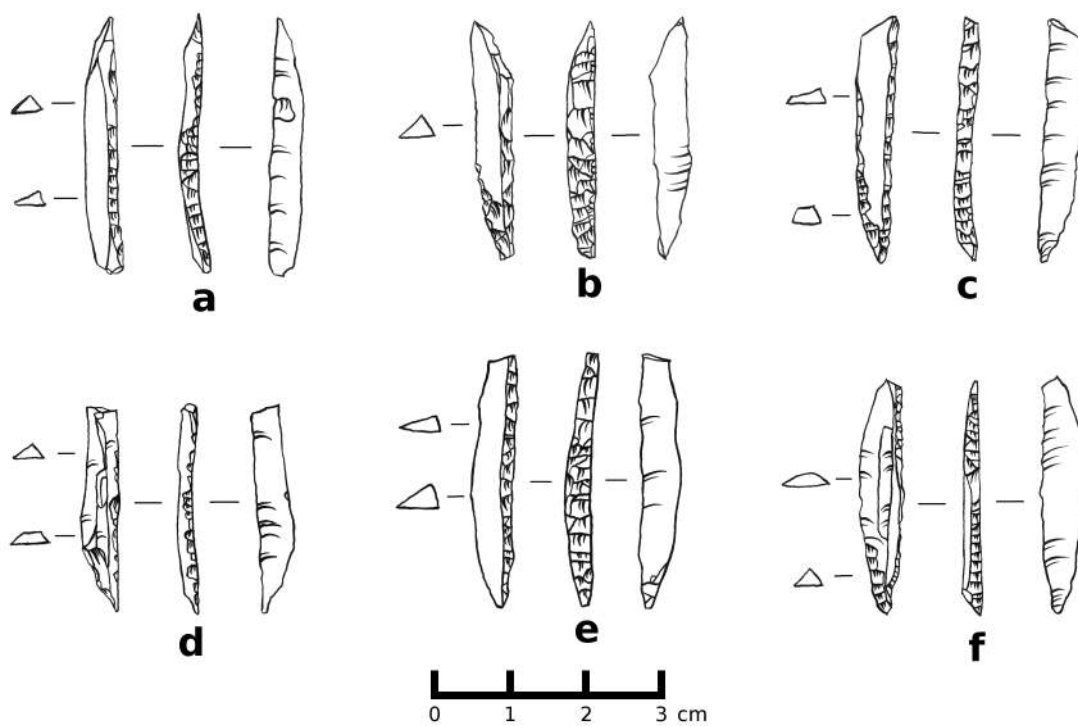


Figure 5.5: Microgravettes from Kostënki 8 Layer 2 (Drawings N. Reynolds)

Element	Count	Percentage
Whole	56	19%
Proximal fragment	106	36%
Medial fragment	35	12%
Distal fragment	55	19%
Indeterminate (prox./dist.) fragment	42	14%
Total	294	100%

Table 5.2: Microgravettes from Kostënki 8 Layer 2: counts of whole examples and fragments

More than 80% of the microgravettes were found as fragments (see Table 5.2 and Figure 5.6). Of these, proximal fragments made up the biggest group.

Histograms of the widths and thicknesses of the microgravettes from Kostënki 8 Layer 2 are given in Figures 5.7 and 5.8. There is a moderate to strong correlation between the widths and thicknesses of the pieces ($r=0.5$). Figure 5.9 shows the lengths of the unbroken microgravettes. These show that the distribution of sizes of microgravettes appears unimodal. In other words, there does not appear to be a significant group of full-sized Gravette points, distinct from the microgravettes. The unbroken microgravettes range in length from 13 mm to 47 mm (mean: 28 mm, median: 27 mm, SD: 8.5). Litovchenko (1969, p. 118), who had access to the entire collection, noted that the largest examples of microgravettes/Gravette points had a length of 58–60 mm, a width of 7–8 mm and a thickness of 4 mm, and were retouched the same way as the smaller points.

The presence of so-called nanogravettes has now been noted at numerous Gravettian and Upper Palaeolithic sites (Bazile, 2011; Bazile & Boccaccio, 2007; Bordes, 1978; Floss & Taller, 2011). At Kostënki 8 Layer 2, nanogravettes do not form an obvious discrete size class based just on the width and thickness of pieces (Figures 5.7 and 5.8). If we take an arbitrary cut-off of less than 2 mm in width for the definition (as measurements were rounded to the nearest millimetre, this actually means a width of less than 2.5 mm), 31 pieces (11% of the microgravettes) fall into this size class (Figure 5.10). As pieces were only measured to the nearest 1 mm, it was not possible to determine whether nanogravettes formed a statistically discrete series when very fine-scale measurements

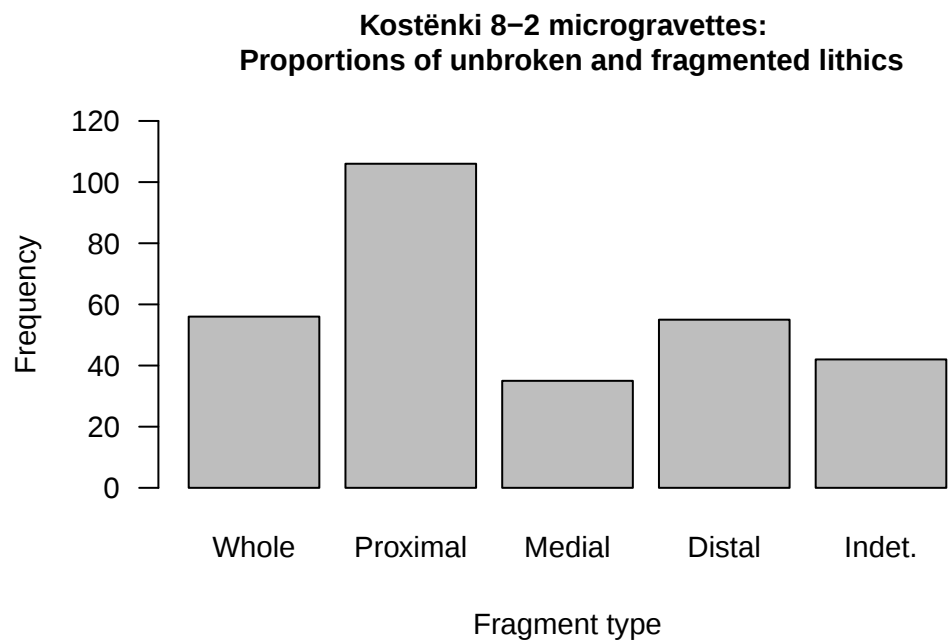


Figure 5.6: Microgravettes from Kostënki 8 Layer 2: counts of whole examples and fragments (n=294)

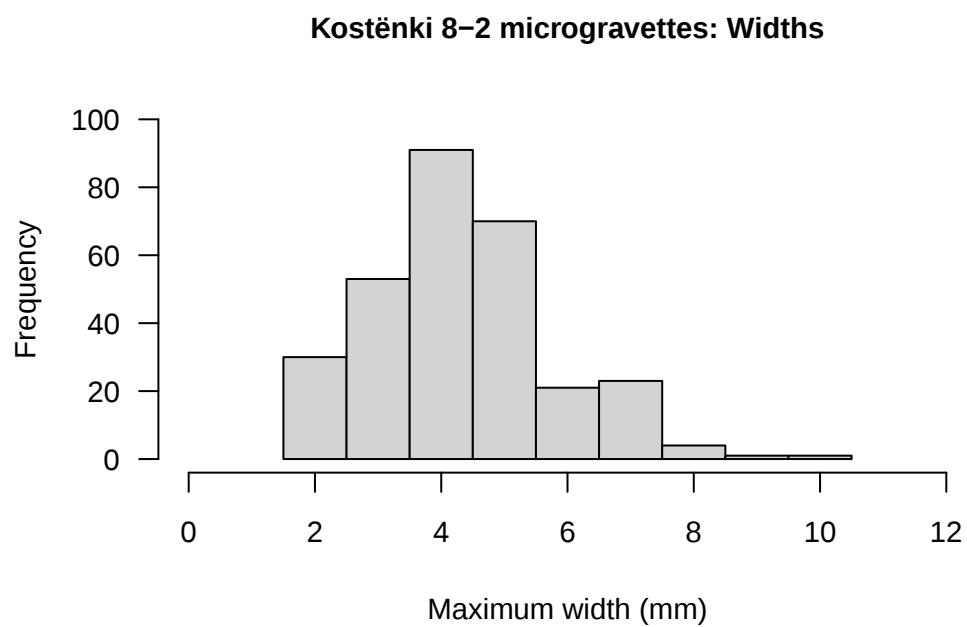


Figure 5.7: Microgravettes from Kostënki 8 Layer 2: histogram of widths (n=294)

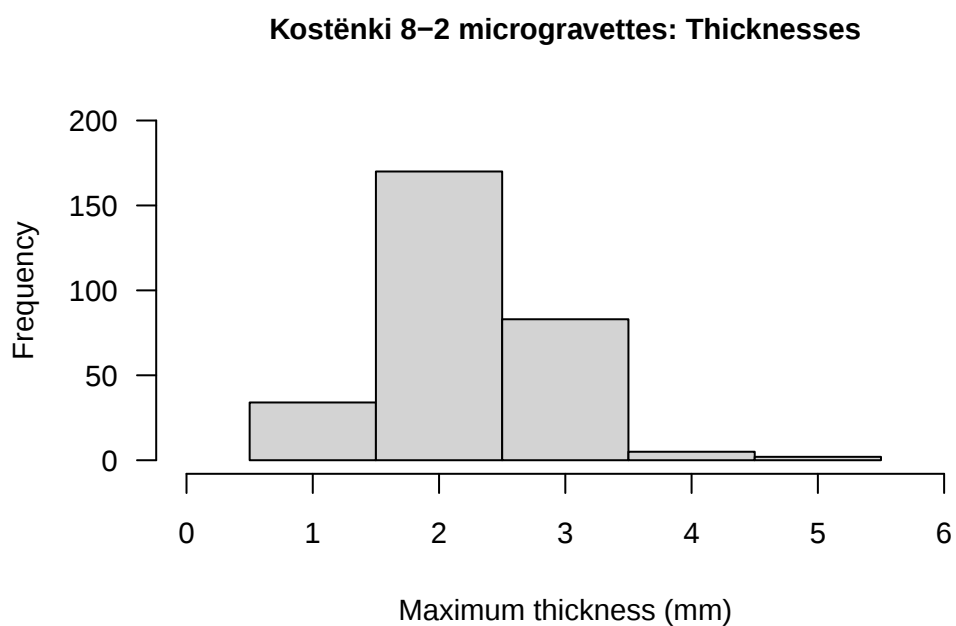


Figure 5.8: Microgravettes from Kostënki 8 Layer 2: histogram of thicknesses (n=294)

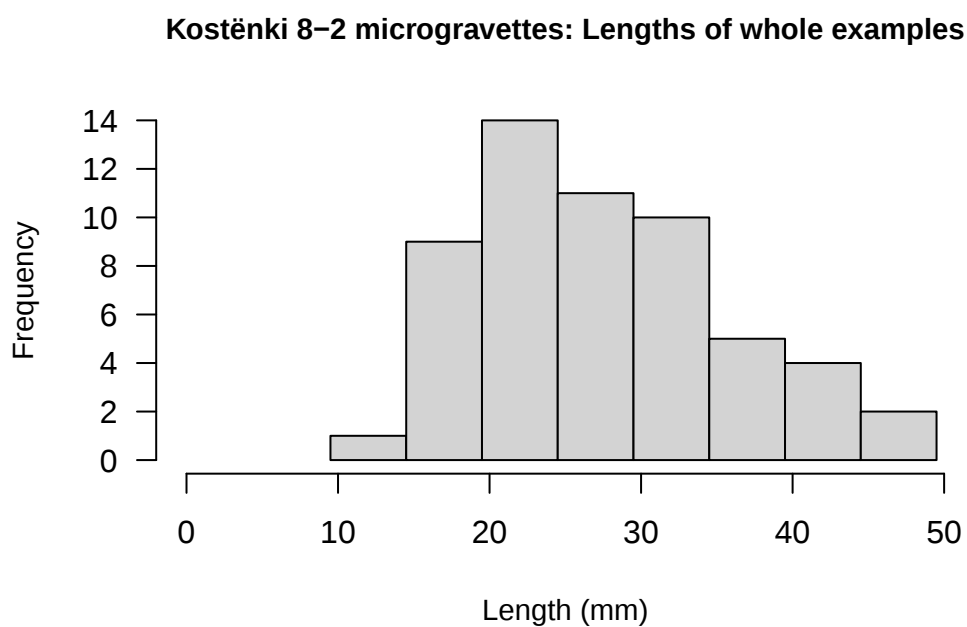


Figure 5.9: Whole microgravettes from Kostënki 8 Layer 2: histogram of lengths (n=56)



Figure 5.10: Nanogravettes from Kostënki 8 Layer 2. Proximal ends oriented towards bottom of photograph.

of thickness and width are plotted, as has been achieved for the site of Azé-Camping (France) (Floss & Taller, 2011).

It has previously been noted that Gravette points in general are typically most often backed on their right edges (Demars & Laurent, 1992; Harrold, 1993). At Kostënki 8 Layer 2 we see this is true when left and right are considered with respect to the *blank* orientation: 82% (n=190) of the microgravettes have their principal backing on the right edge of the blank and 18% (n=43) on the left edge (a further 61 lithics were backed on an indeterminable edge)⁸ (Figure 5.11).

If we examine the unbroken microgravettes backed on the left edge of the blank (all shown in Figure 5.12; compare Figure 5.4), it can be seen that many, and perhaps all, of them could have been rotated through 180° to match the morphology of the right-backed microgravettes. As can be seen, many left-backed lithics are widest at the distal or medial part of the piece (the widest part of the right-backed microgravettes is generally found in the proximal or medial area of the lithic). Furthermore, on the left-backed microgravettes the proximal point is often more acute than the distal, in another reversal from the pattern found on the right-backed lithics. I propose that most, if not all, of the left-backed microgravettes are in fact rotated versions of right-backed microgravettes. This means that in most or all cases, a right-backed morphology

⁸A binomial test indicated that the proportion of right-backed microgravettes (190/233) was higher than expected (1/2) ($p < 0.0001$).

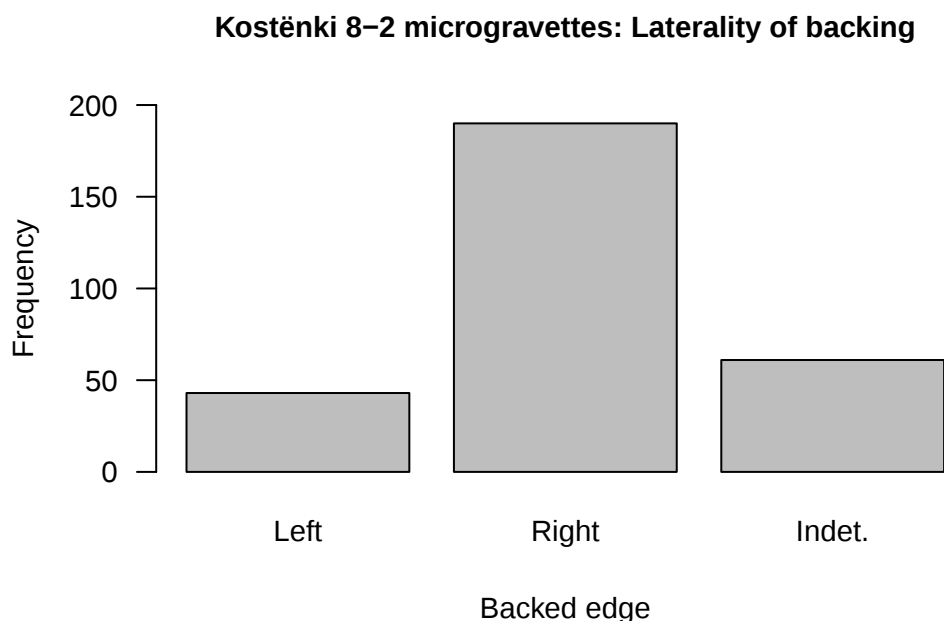


Figure 5.11: Microgravettes from Kostënki 8 Layer 2: backing by edge of blank (n=294)

was desired, with the widest part at the proximal/medial part and the distal end more acutely pointed. Perhaps in some cases the blank was better suited to being retouched in a reversed fashion to the usual method, giving us the pattern we observe.

Strong evidence for opposing positions during usage between left- and right-backed microgravettes is provided by an examination of the representation of different types of lithic fragments in each of these two groups. As seen in Figure 5.6, when the assemblage is considered as a whole, proximal fragments outnumber distal fragments. However, when left- and right-backed microgravettes are considered separately, the distributions are clearly different and mirror each other. In Figure 5.13 we can see that while the right-backed microgravettes follow the usual pattern, this is in fact *reversed* for the left-backed microgravettes (see also Table 5.3). Rather than the proximal fragments outnumbering the distal fragments, the distal fragments outnumber the proximal fragments.

Here, an exploration of the possible reasons for the usual excess representation of proximal fragments is necessary. One obvious suggestion concerns hafting: that the



Figure 5.12: Left-backed microgravettes from Kostënki 8 Layer 2. Proximal ends oriented towards bottom of photograph.

pieces were hafted into composite weapons by the proximal end, and that if broken in the field the distal ends were lost while the proximal ends were brought back to the site still in the hafts. Another is to do with recovery of material during excavation. If the distal ends were thinner, narrower and hence more fragile than the proximal ends, then perhaps if they were trampled or otherwise broken on site, they were fractured into smaller pieces than the proximal ends. They could then have become underrepresented in the collection if recovery and identification of the smallest pieces was imperfect. It should however be noted here that the representation of very small lithics appears excellent for the Rogachëv collection under study.

Although these are just two possible explanations for the relative overrepresentation of proximal pieces in the collection as a whole, and the right-backed fraction in particular, any other explanations would surely also have to hinge on the morphology of the pieces and the difference between the proximal and distal parts of the pieces. As the left-backed fraction of the collection shows exactly the *opposite* pattern of representation of proximal and distal fragments, this suggests that the proximal parts of the pieces were acting as distal parts did on the right-backed microgravettes, and vice versa. In other words, this suggests that many of the left-backed microgravettes were in

Fragment type		Whole	Prox.	Med.	Dist.	Indet.	Total
Left-backed microgravettes	Count	11	12	3	16	1	43
	%	26%	28%	7%	37%	2%	100%
Right-backed microgravettes	Count	42	94	13	39	2	190
	%	22%	50%	7%	21%	1%	100%

Table 5.3: Microgravettes from Kostënki 8 Layer 2: fragment counts and percentages by backed edge

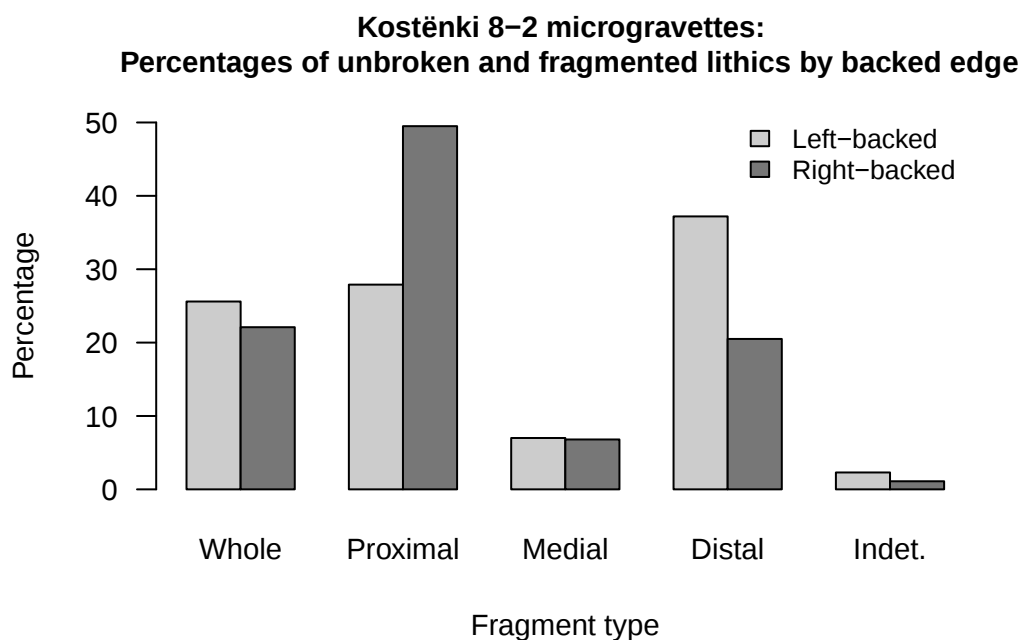


Figure 5.13: Microgravettes from Kostënki 8 Layer 2: fragment percentages by backed edge (Left-backed: n=43; Right-backed: n=190)

fact rotated relative to the orientation of the blank and used identically to right-backed microgravettes. This provides strong support for the observation made above about the “rotated” morphologies of the whole left-backed microgravettes.

In most cases, both proximal and distal ends are shaped into points. The points are usually located on the same edge as the backed edge, but in many cases they are located on the central axis of the microgravette. Figures 5.14–5.17 show this for all identified proximal and distal ends, either on fragments or whole examples. The shaping of the ends is usually achieved, where necessary, with semi-abrupt direct retouch and,

		Distal ends			
		L point	C point	R point	Other
Prox. ends	L point	5	0	0	0
	C point	3	0	0	0
	R point	3	0	0	0
	Other	0	0	0	0

Table 5.4: Left-backed whole microgravettes from Kostënki 8 Layer 2: correspondence between proximal and distal ends. Key: L: left; C: central; R: right.

		Distal ends			
		L point	C point	R point	Other
Prox. ends	L point	0	0	1	0
	C point	3	4	6	0
	R point	2	3	19	0
	Other	0	1	3	0

Table 5.5: Right-backed whole microgravettes from Kostënki 8 Layer 2: correspondence between proximal and distal ends. Key: L: left; C: central; R: right.

sometimes, flat inverse retouch. For the whole examples, when the treatment of the proximal and distal ends are compared, the most frequent combination is of having both proximal and distal points on the same edge as the principal backing (Tables 5.4 and 5.5).

Of 162 whole microgravettes and proximal fragments thereof, 159 were suitable for identifying the presence or absence of platforms and bulbs (the remaining three had broken proximal tips). In the majority of cases the striking platform was removed from the lithic. Only in 14 cases (5% of the total number of microgravettes, or 9% of the identified proximal ends) was a striking platform present. Where present, this platform was always plain in form. In the 145 other cases, the platform had been removed.

Of the 159 proximal ends, for 94 (61%) the bulb had been removed entirely. In one case the bulb was unmodified, in 30 cases it was partly removed (i.e. < 50% removed) and in 34 cases it was mostly (i.e. > 50%) removed. Of the 65 extant or partially extant bulbs, 62 were observed to be diffuse and three were pronounced.

The ventral surfaces of the microgravettes were flat to within 1 mm in the majority

Ventral surface morphology	Count	Percentage
Flat	204	69%
Concave	48	16%
Concave twisted	4	1%
Convex	8	3%
Sinuuous	15	5%
Sinuuous twisted	1	0%
Twisted	14	5%
Total	294	100%

Table 5.6: Microgravettes from Kostënki 8 Layer 2: ventral surfaces

of cases (n=204, 69%). A smaller number were concave in form (n=48, 16%) with the remainder sinuous, twisted, etc (Table 5.6).

In almost all cases the backed edge is abruptly retouched; in 28 cases (10%) crossed-abrupt backing was used. In 24 cases (8%) as discussed further in the next section, the blank edges forming the backs were already at near 90°(likely deriving from burin spall blanks); in all except two cases these edges received further extensive retouch to straighten the edge and/or increase its angle.

Almost all the microgravettes (n=270, 92%) were made on fine-grained very dark brown, translucent or semi-translucent flint, often with some grey, light blue or white patination. Four were made on yellow or yellow-brown opaque or semi-translucent fine-grained flint. Twenty are burnt, making it impossible to see what type of flint they were made on.

5.4.3 Other backed bladelets and points

Only a few backed lithics were not classified as microgravettes or unfinished microgravettes (n=13). These were miscellaneous in form, including pieces with sinuous or irregular backing (n=5), or with backing on both edges (n=5) or incomplete backing (n=3). One interesting piece among this group is a bipoint with continuous backing on both edges, forming acute points at its proximal and distal ends. The rest of the pieces are unfinished and/or pieces with various unknown functions.

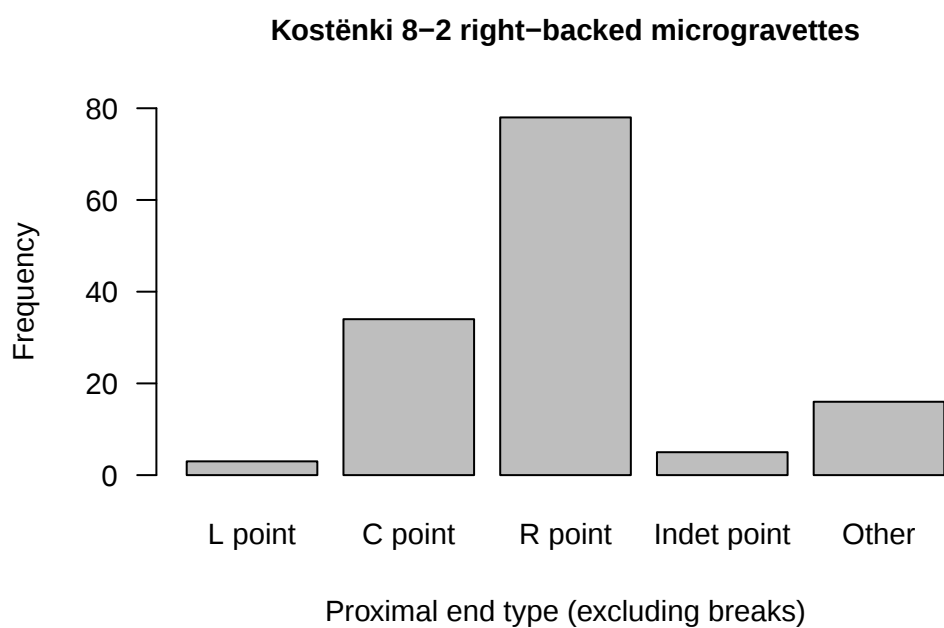


Figure 5.14: Kostënki 8 Layer 2: proximal ends of right-backed microgravettes (n=136). Key: L: left; C: central; R: right; Indet: indeterminate.

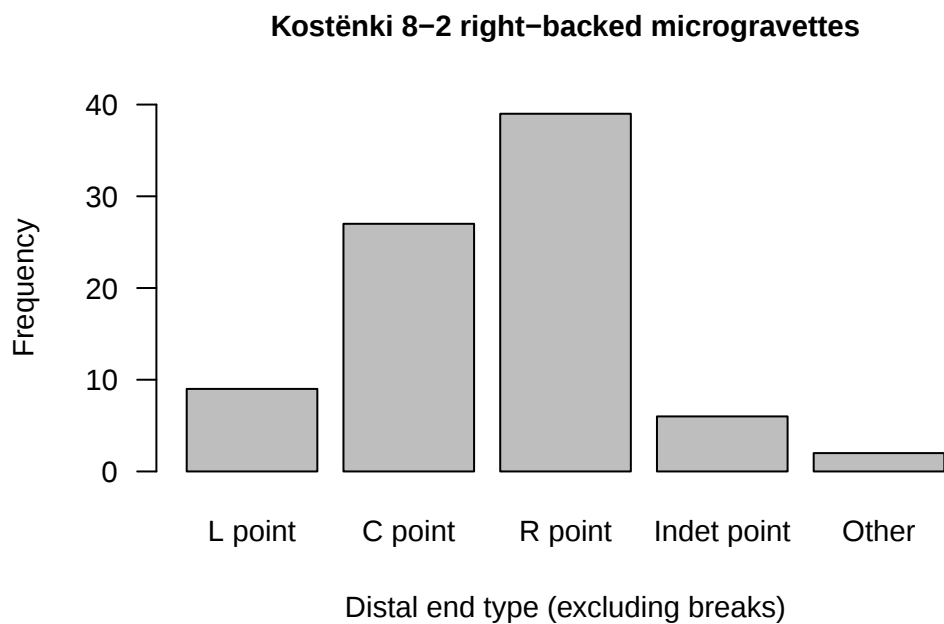


Figure 5.15: Kostënki 8 Layer 2: distal ends of right-backed microgravettes (n=83). Key: L: left; C: central; R: right; Indet: indeterminate.

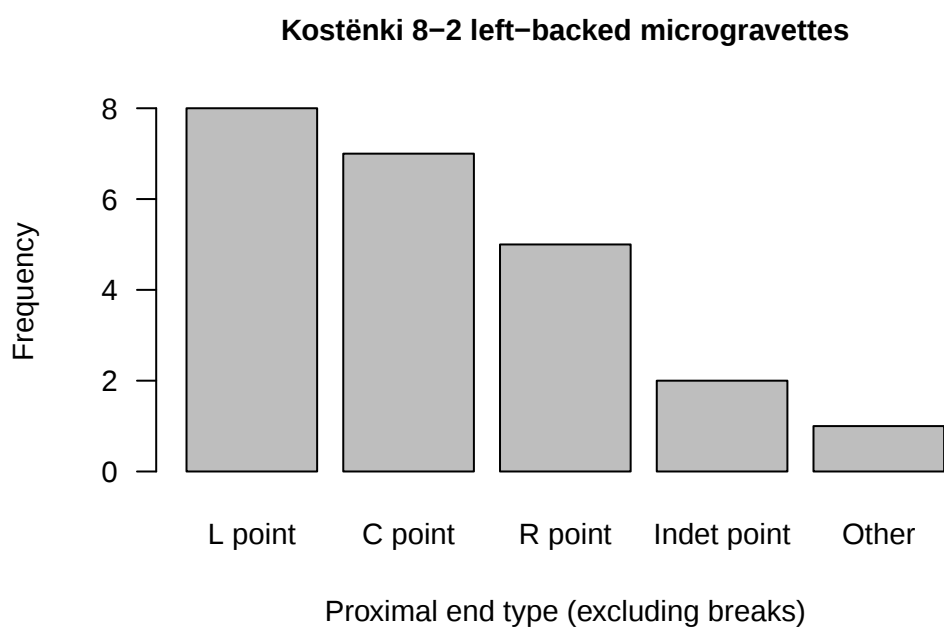


Figure 5.16: Kostënki 8 Layer 2: proximal ends of left-backed microgravettes (n=23). Key: L: left; C: central; R: right; Indet: indeterminate.

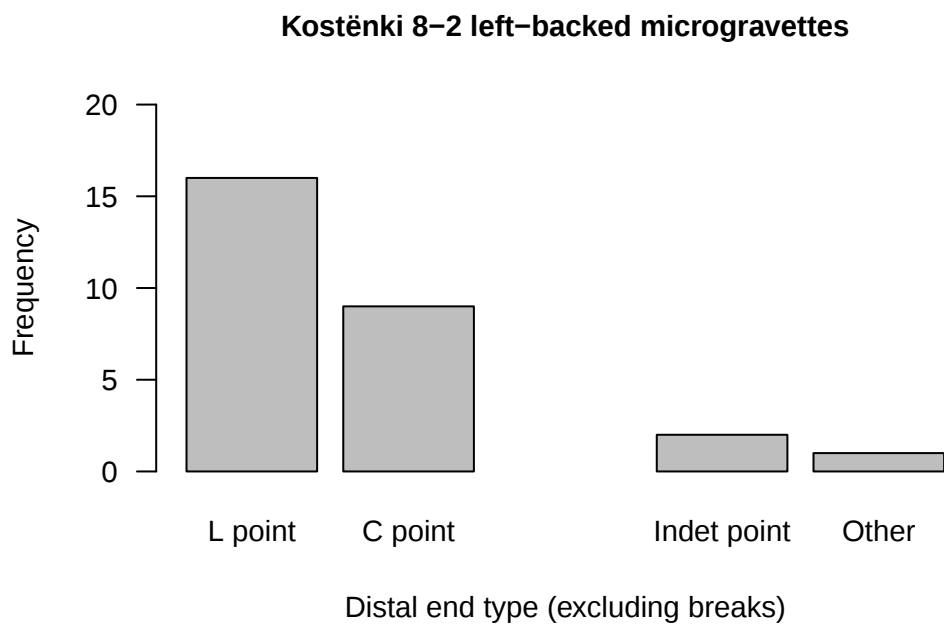


Figure 5.17: Kostënki 8 Layer 2: distal ends of left-backed microgravettes (n=28). Key: L: left; C: central; R: right; Indet: indeterminate.

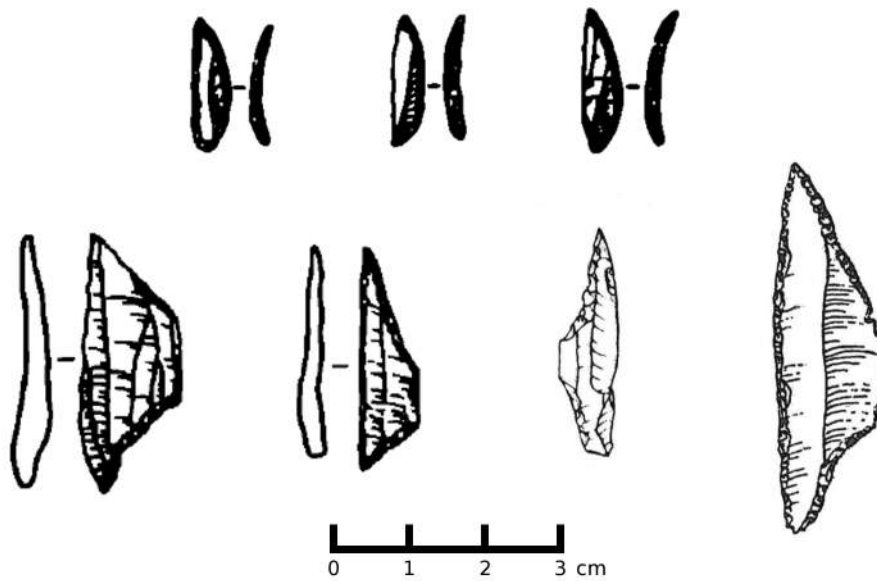


Figure 5.18: “Segments” (top row) and “trapezes” (bottom row) from Kostënki 8 Layer 2 a: (from Litovchenko, 1969, Fig. 2, Rogachëv et al., 1982b, Fig. 32 and Rogachëv, 1957, Fig. 23)

5.4.4 Segments and trapezes

Other backed lithics, which were not examined directly as part of this research as they were not found in the studied collection, but which are important because of their significance in past inter-site comparisons, are those described as “segments” and “trapezes” or “geometric microliths” (Figure 5.18). They do not constitute a large part of the backed assemblage at Kostënki 8 Layer 2: Rogachëv et al. (1982b) give a count of 10 “trapezes” and 14 “segments”. The trapezes are described as bladelets of various sizes with backing on one edge. The backing is either incomplete, with an unbacked section part-way down the edge, or else forms an angle part-way down the edge. Based on the available descriptions (Litovchenko, 1969; Rogachëv et al., 1982b) they do seem to form a group, or perhaps multiple groups, of idiosyncratic backed lithics. The segments are described as bladelets, one edge of which has an arch-shaped back. The segments all derive from the south-eastern dwelling. They are described as being very standardised in shape and dimensions.

The importance of these pieces has often been emphasised. Otte and Noiret (2003,

p. 231) describe the Kostënki 8 Layer 2 assemblage as “*un ensemble à technique microlithique, armatures géométriques et pointes de la Gravette*.”⁹ The trapezes are not necessarily parts of weapons: Litovchenko (1969, p. 117) suggests that they could have been awls, points or inserts for composite tools. As discussed below, these pieces form the basis for past comparisons with Pavlovian sites.

5.5 Bladelet blank production techniques

As noted early in the study of this site (Litovchenko, 1969; Rogachëv, 1957), the production of bladelet blanks using burin blow techniques was important to the bladelet economy at Kostënki 8 Layer 2. A very large number of unworked burin spalls were found at the site (Litovchenko, 1969, p. 116). Of the backed lithics, a rather significant number had extant blank morphology indicating probable detachment from a burin-type core (i.e., a near-90° angle to one or more edges meeting the ventral face). Forty-three pieces (14%) had an edge of this type, including two with two edges of this type. It can be assumed that far more lithics than this originally had such an edge, which may have been removed by retouch; indeed, many of the extant edges were partially retouched (often with abrupt retouch to create a backed edge closer to 90°). It is often apparent that the bladelet blanks were nearly as thick or even thicker than they are wide. A significant number of backed lithics, however, were obviously made on prismatic-type bladelet blanks. Few bladelet blanks had any sign of bipolar removal scars on their ventral surfaces: a total of 15 pieces (5%).

Further evidence for the use of burin spalls as blanks is found in the burins themselves. Of the examined burins, 30 were convincing cores, bearing up to thirteen spall removal scars and, often, evidence of platform preparation and renewal. A notable feature of the possible burin-cores is their lack of standardisation. Many different types of blanks were used for these, including both flakes and blades, some bearing cortex, and some which had been retouched and/or utilised before their use as cores. Usually, spalls

⁹“an assemblage with microlithic technology, geometric armatures and Gravette points”

were removed from both left and right edges of the blank, forming a dihedral-type end. Spalls could also be removed from both proximal and distal ends of the same edge or from proximal and distal ends of different edges.

Other cores (n=9) were also seen in the collection; they were always completely exhausted, often with small flake removals towards the end of the reduction sequence. Presumably some of these, earlier on in the reduction sequence, could have provided prismatic bladelet blanks on which some of the microgravettes were made. Only around 20 such nucleuses are known from the entire Kostënki 8 Layer 2 collection (Anikovich et al., 2008b, p. 130). Given that the entire lithic collection numbers 22–23,000 pieces, this number appears very small. This raises the possibility that flint was transported to the site not only in the form of raw nodules or nucleus pre-forms, but perhaps as prepared blade and/or bladelet blanks, or that cores were transported to the site and subsequently removed again. Further detailed study of the entire lithic collection from a *chaîne opératoire* perspective would be necessary to further explore this.

All of the cores studied were made on the same dark brown flint, often patinated, as the vast majority of the microgravettes, except for one, which was made on yellow-brown flint.

5.6 Discussion

The backed lithic assemblage from Kostënki 8 Layer 2 should be characterised as a homogeneous microgravette assemblage without a significant Gravette point component. As such it is not conclusively chronologically diagnostic. Assemblages with large numbers of microgravettes are known from the early to the late Gravettian and from sites all over Europe. This means that the assignment of the site to the Early Gravettian rests on the radiocarbon dating of the site and its stratigraphic position.

The assemblage from this site is remarkable: it is extremely large, with an outstanding collection of microgravettes, probably numbering more than 800 in the full collection. The exceptional nature of the site frustrates efforts to properly contextualise

the assemblage: there are no similar contemporary sites known (and particularly, none of a comparable size) anywhere in Eastern Europe. Even on a European scale, Kostënki 8 Layer 2 stands out for its size: for example, at the major site of Geißenklösterle (Germany), just 41 backed points were found, among a total of 168 backed lithics (Moreau, 2010); in the collection from layer 23 of Grotta Paglicci (Italy) there are 164 (Wierer, 2013).

The size and composition of the archaeological assemblage taken as a whole suggests that the site received substantial use with multiple kinds of activities carried out, and was not a very short-term site. The backed lithic assemblage itself is extremely homogeneous. The vast majority of pieces appear to relate to a single purpose.

The bladelet blank production techniques indicate an approach which exploited the available material, much of which was apparently imported, to its full extent. This included the use of very varied blanks for the creation of spalls as well as prismatic bladelet production.

Radiocarbon dates indicate an age for the site of ca. 27,000–26,500 ^{14}C BP (ca. 32,000–31,000 cal. years BP) (Section 4.9.1). In seeking comparisons for the assemblage, it is necessary to concentrate on sites of the same age. Because the assemblage is so similar to those from elsewhere in Europe, there are many sites suitable for comparison.

Although there are no obvious analogues for the lithic assemblage from Kostënki 8 Layer 2 within Russia, comparisons have been drawn with many sites across Europe, as outlined above (Section 5.2). The sites include Grotta Paglicci, Krems-Hundssteig, Amvrosievka, Khotylëvo 2 and sites of the Perigordian and Pavlovian. These claims of similarities can now be examined based on the new analysis of the backed lithic assemblage presented here. I will mostly ignore the sites of the Perigordian, given that they are very distant from Kostënki and the framework for the study of “Perigordian” sites has changed immensely since these comparisons were made in the 1950s.

In many cases the site has been compared with sites that we now know are some millennia younger, such as Amvrosievka and Khotylëvo 2. Amvrosievka, which does indeed have comparable backed lithics to Kostënki 8 Layer 2 (Boriskovskii, 1951; Krotova

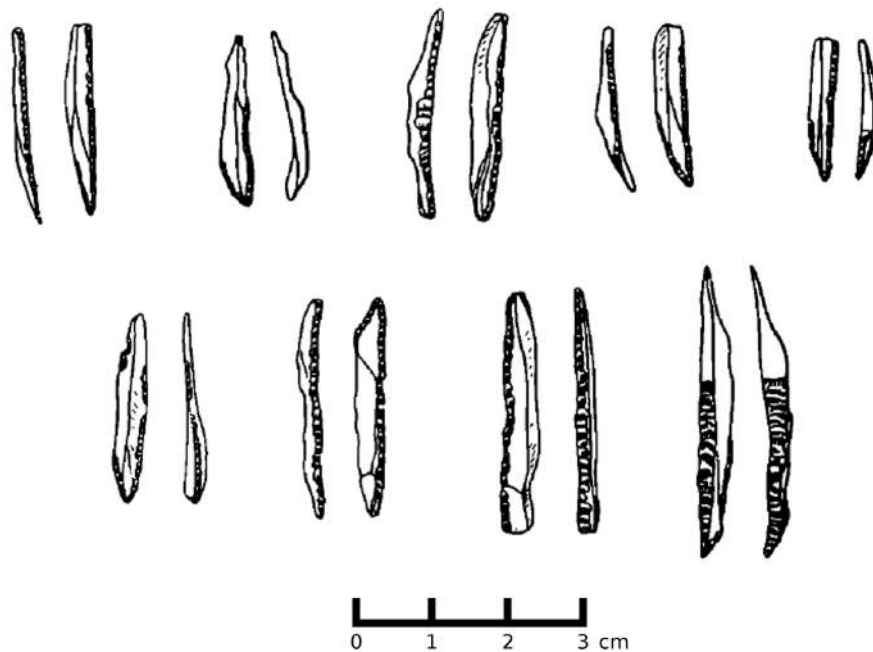


Figure 5.19: Backed lithics from the Epigravettian site of Amvrosievka (Ukraine) (based on Boriskovskii (1951, Fig. 3))

& Belan, 1993; Leonova, 1994) (Figure 5.19), is generally included in the Epigravettian and has yielded radiocarbon dates which place it close to the LGM. Khotylëvo 2 is most likely younger than 24,000 ^{14}C BP, placing it several thousand years later than Kostënki 8 Layer 2 (Section 4.9.4). In any case, the lithic assemblage from Khotylëvo 2 is very different: the former does contain a very small number of microgravettes similar to those found at Kostënki 8 Layer 2, but overall is dominated by lithic forms not found at the latter site (Chapter 8).

Rogachëv's comparison (1957) with the site of Krems-Hundssteig is difficult to understand. Although Gravettian cultural layers are now recognised at the site, for many years it was thought of as an Aurignacian site. A small collection of Gravettian lithics was found at the site around the turn of the twentieth century, but these were not published until the 1970s (Neugebauer-Maresch, 2008; Wild et al., 2010).

5.6.1 Comparisons with sites in Eastern Europe

The site of Mezhygirtsy 1 on the upper Dniester has been described as “the most reliable assemblage from the early phase of the Ukrainian Gravettian” (Nuzhnyi, 2009, p. 160) and is dated to ca. 27,000 ^{14}C BP according to a single radiocarbon date on charcoal (Haesaerts et al., 2004b). However, the backed assemblage from this site is markedly different from that found at Kostënki 8. Although there is one piece described as a microgravette illustrated by Nuzhnyi (2009), it is very different from those found at Kostënki 8 Layer 2, having a sub-rectangular base and being relatively large: just over 5 cm in length. There are also fragments of possible *fléchettes* and some backed rectangles (the illustrated rectangles are considerably smaller than the Late Gravettian rectangles found at Kostënki 9). Grigor’eva & Klapchuk (1981), in their study of Mezhygirtsy, also do not describe or illustrate any pieces similar to the Kostënki 8 microgravettes. In short, the backed assemblage does not look anything like that from Kostënki 8 Layer 2. In fact, the illustrated “microgravette,” which is perhaps better described as a small Gravette point, is reminiscent of the Gravette points from the Middle Gravettian assemblages of Kostënki 4 and Kostënki 9. The Early Gravettian attribution of the site currently rests on a single radiocarbon date (which has not yet been properly published: the lab code and uncertainty are not given in publications); other radiocarbon dates for the site were considerably later in time. It is perhaps best for now to regard this assemblage as not firmly dating to the Early Gravettian.

There is another site which is not yet well-dated but is worth considering because of the lack of Eastern European comparisons for Kostënki 8 Layer 2. This is the assemblage from the recently investigated site of Troyanove 4 in Central Ukraine. Here, a series of backed microliths was discovered, including some pieces which are very plausibly fragments of microgravettes (Zaliznyak et al., 2013). The authors note the presence of some backed lithics which “resemble the “needle-shaped” types of Gravette points from some early Gravettian sites of Europe”¹⁰ (ibid, p. 152). Importantly, there are no

¹⁰“нагадують “голкоподібні” різновиди граветських вістер деяких ранніх граветських пам’яток Європи”

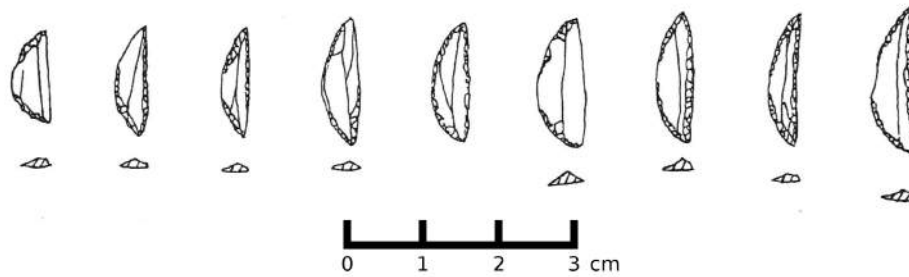


Figure 5.20: “*Kreissegments*” from Pavlov I (Czech Republic) similar to Kostënki 8 Layer 2 “segments” (from Klíma, 1997, Fig. 8. NB: no scale on original drawings so presumed to have been reproduced life-size.)

obvious full-sized Gravette points or shouldered points in the assemblage. No radiocarbon dates have yet been published, but the Gravettian attribution of the assemblage seems safe on both typological and stratigraphic grounds. Based on the information about the backed collection, it would not be surprising if the assemblage dated to the Early Gravettian; an Epigravettian attribution is however also a definite possibility.

5.6.2 Comparisons with the Pavlovian

There is an obvious and important group of sites which were likely contemporary with Kostënki 8 Layer 2: the group of sites in Moravia classified as “Early Pavlovian,” as found at Dolní Věstonice I and II (lower) (Czech Republic) and Willendorf II Layer 5 (Svoboda et al., 2000). As noted above (p. 113), comparisons have been made before with Pavlovian sites based on the presence of “geometric microliths”.

The “segments” from Kostënki 8 Layer 2 (bladelets with backing forming a semi-circular edge) also find possible parallels in certain pieces illustrated from Pavlov I (Klíma, 1997, Fig. 8, p. 306) (Figure 5.20), although this has not previously been emphasised. The Pavlov I pieces are classified as “*Kreissegments*” (“circular segments”) by Klíma.

However, a full comparison of the backed assemblages from these sites must include the much larger microgravette component of the Kostënki 8 Layer 2 assemblage. There are comparable pieces in the assemblages from Pavlov and Dolní Věstonice, not only

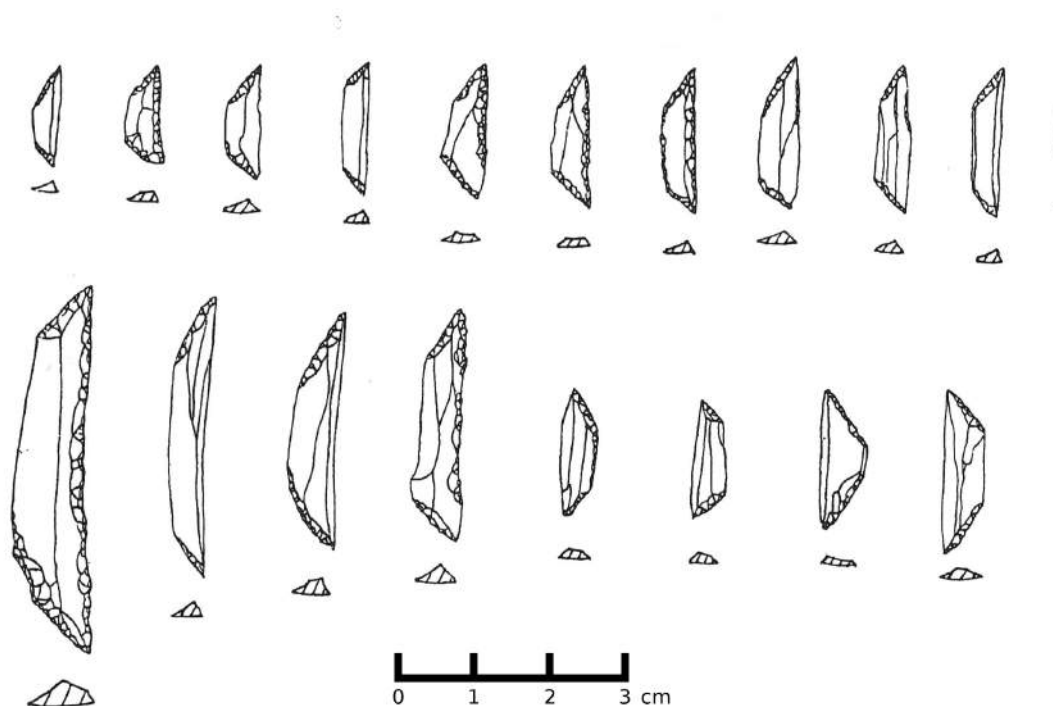


Figure 5.21: “Trapezes” from Pavlov I (Czech Republic) (from Klíma, 1997, Fig. 10. NB: no scale on original drawings so presumed to have been reproduced life-size.)

among the lithics published as microgravettes or “pointed backed microblades” (Svoboda, 1997, p. 185) but also among pieces described as crescents, bipoints, triangles and trapezes in the Pavlovian sites (although the quality of some of the available illustrations warrants caution here). Many of these lithics are not backed, but some do appear to bear semi-abrupt retouch. This raises the interesting possibility that recognition of similarity has been hindered by the typological names used at these sites (as explored by Tomášková, 2000).

Despite these similarities, there are obvious differences in the assemblages; the morphologies of the backed lithics from the Pavlovian sites are more diverse than the extremely homogeneous Kostěňki 8 Layer 2 assemblage.

The complex of Dolní Věstonice II is well dated to the same period of Greenland Stadial 5 as Kostěňki 8 Layer 2, although it was perhaps also the location of human activity until somewhat later (Beresford-Jones et al., 2011). The backed assemblage from this site (112 pieces in the pre-1990s excavations) includes a few ($n=19$) backed

pointed bladelets and Gravette points (Svoboda, 1991). The typological categories illustrated by Svoboda (2007) include a form of “backed microlith” which is very similar to the microgravettes found at Kostënki 8 Layer 2 and elsewhere.

5.6.3 Comparisons with other European sites

Microgravettes similar to the Kostënki 8 Layer 2 backed lithics are found in all Gravettian levels at Willendorf II, from Level 5 (the earliest) through to Level 9 (Otte, 1981, pp. 266–291). The microgravettes from Willendorf II Layer 5 are indeed, like those from Geißenklösterle, Weinberghöhlen etc. (Moreau, 2009), very similar in form and size to those I have studied from Kostënki 8 Layer 2. As previously noted, major Early Gravettian sites from Western and Mediterranean Europe have also yielded substantial collections of microgravettes. These include Abri Pataud Level 5, La Vigne-Brun, Grotta Paglicci and Grotta de la Cala (Borgia, 2009; Digan, 2008; Leoz, 2007).

The traditional comparison between Kostënki 8 Layer 2 and Grotta Paglicci seems sound: microgravettes are abundant there. There are also clear similarities with the Early Gravettian of Grotta de la Cala (Italy), especially layer GL. In this layer only microgravettes, rather than Gravette points, are found, including “needle-like” (*“aghi-formi”*) backed points, with widths equal to their thicknesses (Borgia, 2006). The description of the backed points and the absence of full-sized Gravette points makes the backed assemblage very similar to that from Kostënki 8 Layer 2.

5.6.4 Blank production technology and summary

The production of bladelet blanks on burin cores was important at Kostënki 8 Layer 2. Although many bladelet blanks derive from prismatic cores, the complete exhaustion of all such cores and the frequently heavy reduction through retouch of the bladelets themselves makes it very difficult to be sure of the method used (e.g., intercalation, bipolar reduction). Wierer (2013) gives an excellent summary of bladelet production methods used in Western and Mediterranean Europe during the Early Gravettian. There was great variety among these methods. Production of bladelets on burin cores, either non-

carinated or carinated, was widespread, and especially important at sites including Puy Jarrige (France), Grotta Paglicci and Azé-Camping de Rizerolles (France). Interestingly, the latter site, like Kostënki 8 Layer 2, yielded nanogravettes (Floss & Taller, 2011). The bladelet production methods used at Kostënki 8 fit perfectly well within the range of variation seen elsewhere in Europe during this time.

If we do accept the allocation to the early part of the MUP, the assemblage should be seen as part of an extremely widespread Early Gravettian phenomenon, in which sites rich in homogeneous microgravettes with a high level of inter-site similarity are found across Europe. This may include sites of the Pavlovian. At present there is no strong reason to believe that the relative homogeneity of Early Gravettian lithic assemblages did not extend to all corners of the European continent. This high level of inter-regional similarity has some profound consequences for how we view the development of the European MUP, which will be further explored in Chapter 10.

Chapter 6

Kostënki 4 (Aleksandrovskaja)

6.1 History of excavation and investigation

The site is found on the first terrace above the Don, at the mouth of two ravines which converge in their lower reaches: Aleksandrovskii Log and Biriuch'ii Log (Rogachëv & Anikovich, 1982b, p. 76) (Fig. 2.3). In the present day the site is extremely close to the level of the Don river and is found within a few tens of metres of a marshy pond in the floodplain.

The site was discovered in 1927 by S. N. Zamyatnin, who test-pitted the area, and further excavated in 1928 by P. P. Efimenko. The first area of the site to be excavated was part of what is now known as the southern dwelling complex: a large, linear concentration of finds with a line of hearths along its axis (Fig. 6.1). A larger area was opened in 1937 and 1938 by A. N. Rogachëv. During this time he excavated what would become known as the northern dwelling complex: a line of hearths with an associated accumulation of finds, similar to that found at the southern dwelling complex. He established the presence of a second, upper cultural layer at the northern dwelling complex, including two circular dwellings. Limited excavations were carried out in 1953 and 1959, including at the small area known as the “northern locus”¹, located ca. 80 m north of the northern dwelling complex (Anisutkin, 2006; Rogachëv & Anikovich,

¹“северный пункт”

1982b). In total, 922 m² were excavated at the site (Rogachëv & Anikovich, 1982b). Limited excavations began again at the site in 2013 (Anikovich et al., in press).

The site is well-published in Russian, with a large amount of information available. A monograph was published in 1955 (Rogachëv, 1955). It is also discussed in numerous review publications (e.g. Anikovich, 2005; Beregovaia, 1960; Efimenko, 1953; Rogachëv, 1957; Rogachëv & Anikovich, 1982b, 1984; Sinitsyn, 2013). Most recently, work has continued on the interpretation of the stratigraphy (Anisyutkin, 2006; Zhëltova, 2009) and on limited aspects of the lithic assemblage (Zhëltova, 2011). The site has been included in English- and French-language reviews, e.g. Djindjian et al. (1999); Kozłowski (1986); Sinitsyn (2007, 2010).

The full classic Kostënki geological stratigraphy (with Upper and Lower Humic Beds) was not found at Kostënki 4. However, all sites of the first terrace (including Kostënki 4) are, according to Rogachëv's scheme (Rogachëv, 1957), included in the third and latest group of Kostënki sites and correlated with those elsewhere found *above* the Upper Humic Bed (see Section 4.4). The cultural layers are described as being stratigraphically above a thick buried soil, for which a correlation has been suggested with the Gmelin soil (Rogachëv & Anikovich, 1984).

The stratigraphy of the cultural layers is rather complicated and has recently been reinterpreted. According to Rogachëv's interpretation, the two lines of hearths about 20 m apart and described as dwelling structures belong to a lower cultural layer (Layer 2). The northern measured ca. 23 by 5.5 m and the southern, ca. 35 by 5.5 m. The hearths were surrounded by accumulations of finds (rather similar to the lines of hearths found at sites of the Kostënki-Avdevo Culture but without the associated large pits). The dwelling structures of the lower layer were described as being constructed within artificial hollows 20–30 cm below the ancient ground surface. Apart from a couple of small areas, the density of lithic finds was low beyond the borders of the dwelling structures (Rogachëv, 1955; Rogachëv & Anikovich, 1982b, 1984).

The upper layer (Layer 1) is described as having contained two circular dwellings, overlying the long dwelling in the northern dwelling complex. These were ca. 6 m in

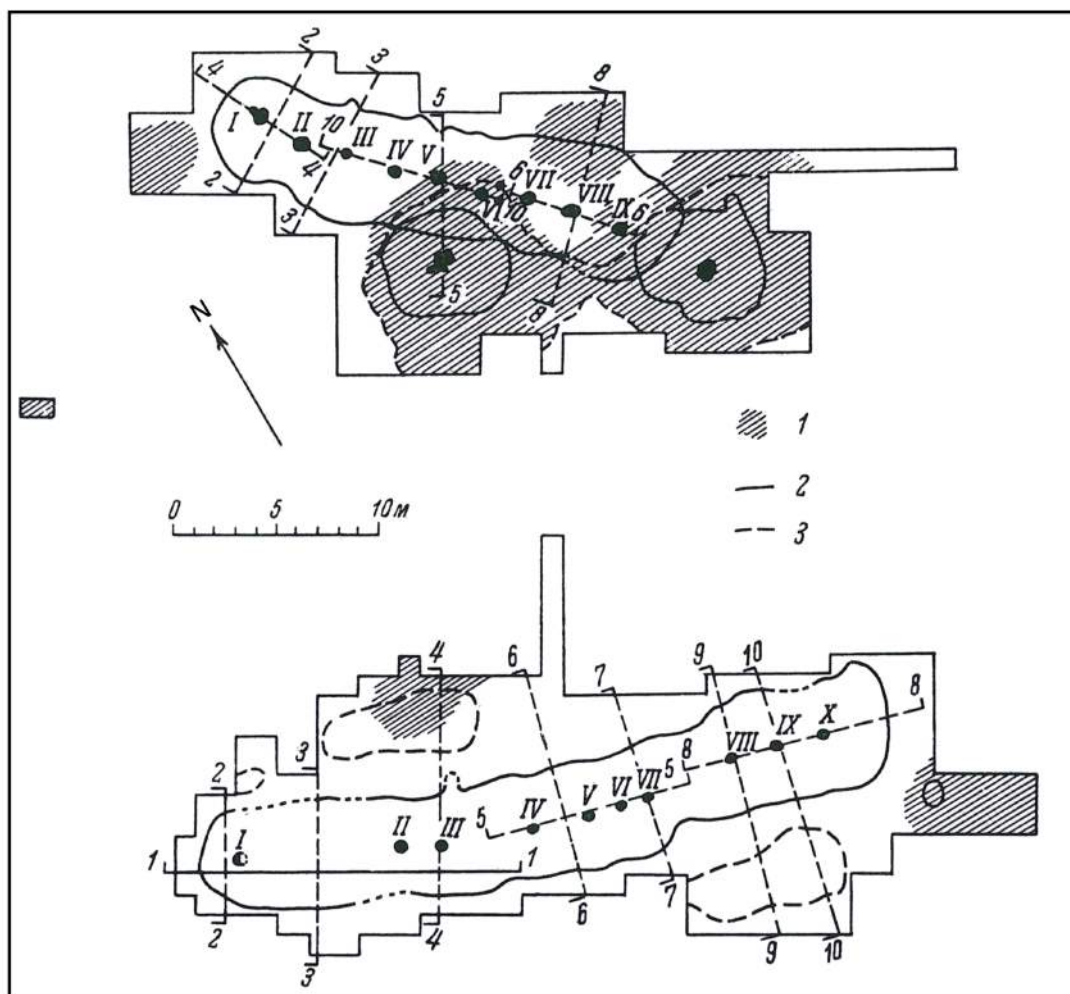


Figure 6.1: Kostënki 4: plan of excavation area. Key: 1: remains of the dwellings and find concentrations of the upper layer; 2: border of the dwelling depressions; 3: border of the concentrations of cultural remains; Roman numerals: hearths found in the lower layer; Arabic numerals: section numbers. (After Rogachëv, 1955, Fig. 3)

diameter and their floors were deepened below the ground surface by up to 50 cm. They each had hearths at their centres, which were apparently associated with multiple small holes and pits. Storage pits are also described elsewhere within the dwellings and the layer, including a large one between the two dwellings (Rogachëv, 1955; Rogachëv & Anikovich, 1982b, 1984). The upper layer is also supposed to have been represented in the southern excavation area in the form of clusters of finds surrounding the dwelling complex itself (Fig. 6.1) (Rogachëv, 1955; Zhëltova, 2009).

According to Rogachëv, and as repeated in reviews since, the two layers found in the northern dwelling complex were deposited directly one on top of the other in most areas where they coincided. However, in other areas there was an intermediate sterile layer. Although the find horizons were inseparable over most of the site, the raw material and artefact typology were apparently sufficiently different in the areas where they were separated to sort part of the remaining material: “The peculiarity of the forms of the flint and other tools, the difference in flint-working technology, and most importantly, the utilization of different flint raw materials, which were mined by the inhabitants of the circular and long dwellings from different sources, have allowed the separation of the collections according to occupation level with high precision even where they were mixed”² (Rogachëv, 1955, p. 37). Quartzite and coloured flint artefacts were attributed to the upper layer, while the assemblage ascribed to the lower layer was made almost exclusively on dark fine-grained flint (Klein, 1969; Rogachëv, 1955; Rogachëv & Anikovich, 1982b, 1984; Sinitsyn, 2007). A cluster of finds beyond the borders of the circular accumulations was also included in Layer 1 because of the proportion of quartzite and coloured flint artefacts (Zhëltova, 2009, p. 24).

The site’s stratigraphy has recently been re-assessed by Zhëltova (2009), working from original field documentation. It seems that the stratigraphy of the site was more complicated than has been acknowledged in the literature. In particular, “in small parts

²“Своеобразие форм кремневых и других орудий, различие техники обработки кремня, а главное, использование различного по характеру кремневого сырья, добывавшегося обитателями круглых и удлиненных жилищ в различных месторождениях, позволили с большой точностью разделить коллекции по горизонтам поселения даже там, где они были смешаны.”

where the horizons were separated by a lens of colorless loam, the latter cannot be described as a sterile layer, since the field records suggest that it contained finds” (ibid., p. 26). Furthermore, she finds that “the eastern round dwelling ... was either part of the long dwelling or was completely constructed on its remains” (ibid.). On the other hand, she finds that the western circular dwelling is different from the eastern circular dwelling and the remains of the lower layer, based on the particular construction of the hearth in the western circular dwelling and the presence of specific small pits apparently containing red ochre and black flint pebbles (ibid.).

A large faunal assemblage was found at Kostënki 4 (Table 6.1). The remains of hare were particularly abundant, as were wolf and arctic fox. Among larger animals, horse, mammoth and reindeer were well-represented.

6.2 History of interpretation

Perhaps due to the way material was sorted into the upper and lower layer assemblages, there seems to have been less consensus on the interpretation of Kostënki 4 (particularly the upper layer) than any other site studied.

6.2.1 Layer 1

The Layer 1 assemblage has been described as Gravettian (Djindjian et al., 1999, p. 429), Gorodtsovian (Efimenko, 1956, 1958 cited in Sinitsyn, 2010, p. 32), Solutrean (Rogachëv, 1955, p. 158) and Aurignacoid (Anikovich, 2005, p. 88; Anisyutkin, 2006).

Rogachëv, the principal excavator, passed through many stages in his evaluation of the site and of Layer 1. In his 1955 monograph he described the site as belonging to a sub-group of Solutrean sites together with Layer 1 of Kostënki 8. This was based on the presence at both of circular dwellings with entrance passages on the south-west and pits in their floors, bifacially worked flint tools, the wide use of the burin spall technique and the absence of nucleus-shaped pieces. He later suggested communication with the creators of the Kostënki-Avdeevo Culture based on the presence of animal

Kostënki 4			
Species		NISP	MNI
Pleistocene			
<i>Mammals</i>			
<i>Mammuthus primigenius</i>	Mammoth	272	2
<i>Coelodonta antiquitatis</i>	Woolly rhinoceros	2	1
<i>Bos primigenius/Bison priscus</i>	Aurochs or bison	5	1
<i>Equus ferus</i>	Horse	421	6
<i>Cervus elaphus</i>	Red deer	3	1
<i>Rangifer tarandus</i>	Reindeer	76	2
<i>Saiga tatarica</i>	Saiga antelope	6	1
<i>Sus scrofa</i>	Wild boar	1	1
<i>Ursus spelaeus</i>	Cave bear	2	1
<i>Panthera leo spelaea</i>	European cave lion	58	2
<i>Canis lupus</i>	Wolf	105	2
<i>Gulo gulo</i>	Wolverine	3	1
<i>Alopex lagopus</i>	Arctic fox	163	6
<i>Castor fiber</i>	Beaver	1	1
<i>Lepus sp.</i>	Hare	3356	99
<i>Marmota sp.</i>	Marmot	1	1
<i>Spermophilus sp.</i>	Ground squirrel	6	1
<i>Spalax microphthalmus</i>	Greater mole rat	1	1
<i>Cricetus cricetus</i>	European hamster	35	3
<i>Ellobius talpinus</i>	Northern mole vole	1	1
<i>Microtus sp.</i>	Vole	1	1
<i>Birds</i>			
	All	29	No data
Holocene (Neolithic and Bronze Age)			
<i>Mammals</i>			
<i>Spalax microphthalmus</i>	Greater mole rat	78	5
Domesticated			
<i>Mammals</i>			
<i>Ovis aries</i>	Sheep	2	1
Modern			
<i>Mammals</i>			
<i>Spalax microphthalmus</i>	Greater mole rat	3	3
<i>Cricetus cricetus</i>	European hamster	26	1
Total		4657	>145

Table 6.1: Fauna from Kostënki 4 (after Vereshchagin & Kuz'mina, 1977)

sculptures carved from marl (Rogachëv, 1957, p. 93). In Rogachëv & Anikovich (1982b) he describes its cultural affiliation as impossible to establish, finding no analogous sites. He draws a few comparisons, based on certain osseous pieces, the animal figurines and the construction of the hearths, with the sites of Kostënki 8 Layer 2, Kostënki 1 Layer 1, Kostënki 11 Layer 2, Kostënki 19, Mezin and Eliseevichi, but notes that the flint assemblages from all these sites differ strongly from that of Kostënki 4 Layer 1.

Other researchers have varied widely in drawing conclusions on its cultural affiliation. It was included in the Gorodtsovian by Efimenko (1956, 1958 cited in Sinitsyn, 2010, p. 32). Beregovaia (1960, p. 54) describes the layer as having links with the assemblage from the circular dwellings from Kostënki 8 Layer 1, due to the presence of bifacially worked leaf points, backed bladelets, large scrapers, etc. Kozłowski (1986) summarizes the layer as including “leaf points associated with backed pieces” (ibid., p. 149). He compares the mobiliary art and osseous industry to that from the Kostënki-Avdeevo Culture, Kostënki 11 Layer 2 and the Mezinian (a grouping he defines as including the Ukrainian sites of Mezin, Dobranichevka and Mezhirich) (ibid., p. 190). Anikovich (2005, p. 88) describes the layer as “definitely Aurignacoid” alongside several other Kostënki sites which he believes are approximately contemporary, but describes it as “culturally unrelated” to these other sites, and “isolated.” Sinitsyn (2007, p. 197) follows Rogachëv & Anikovich (1984, p. 212) in comparing the animal figurines to those from Kostënki 11 Layer 2 but noting the strong dissimilarity of other aspects of the material culture. Parallels have been found for this assemblage in the Protomagdalenian of Laugerie-Haute-Est (Layers 36 and 38) and Abri Pataud (Layer 2) by Zhëltova (2013). This is based on various aspects of the lithic assemblages, for example, the forms of scrapers, the types of burins found, and the presence of denticulated backed bladelets.

6.2.2 Layer 2

The long lines of hearths surrounded by accumulations of artefacts are very comparable to those of the Kostënki-Avdeevo Culture, and are occasionally described as such (e.g. Djindjian et al., 1999, p. 429). At Kostënki 4, however, large pits surrounding the

lines of hearths (as found at Kostënki 1, Avdeevo and Zarsk) are not present. Russian authors, as a rule, do not link the dwelling structures with those of the Kostënki-Avdeevo Culture. Kozłowski (1986, p. 176) describes them as “not . . . dwellings *sensu stricto*, but rather sheltered living areas.” The assemblage from this layer is usually described as Gravettian by recent Russian authors (Sinitsyn, 2007, p. 186; Zheltova, 2009, p. 19).

Efimenko (1953, p. 318) included the layer in his group of “sites of the Mezin type”³ alongside Mezin (Ukraine) and Mal’ta and Buret’ in Siberia. He placed these sites at the end of the Solutrean and the transition to the Magdalenian (following the French Upper Palaeolithic sequence then in use). Rogachëv (1955, p. 160) describes the collection as “pre-Solutrean”⁴ along with Kostënki 8 Layer 2, noting the absence in both collections of bifacially-worked pieces and the stratigraphical position of both archaeological levels below what he defined as Solutrean assemblages. However, he does not claim similarity between Kostënki 8 Layer 2 and Kostënki 4 Layer 2. He notes strong differences in their lithic assemblages and dwelling structures, and that according to geological data (Kostënki 8 Layer 2 being found in the Upper Humic Bed and Kostënki 4 being included in the group of sites found above the Upper Humic Bed) they derive from different time periods. In his 1957 article (p. 93) he suggests that the upper and lower layers of the site did not belong to separate periods of the Upper Palaeolithic, but were left by two different tribes of the same period. Rogachëv & Anikovich (1982b, p. 83) and Rogachëv & Anikovich (1984, p. 210) stress the absence of any analogous sites for Kostënki 4 Layer 2 (as for the upper layer).

Kozłowski (1986) summarizes the layer as containing “slender gravette points and truncations” which he tentatively links with the assemblage from Kostënki 11 Layer 2 (pp. 149, 166). Sinitsyn (2007) bases one of his four *faciès* of the Gravettian at Kostënki on this layer, noting the high proportion of *pièces esquillées* in the lithic assemblage, describing the long dwelling structures as “unique” and writing that the points and backed blades are similar to Western European points and different from those found

³“памятники мезинского типа”

⁴“досолутрейский”

at other Russian Gravettian sites. Djindjian et al. (1999, p. 429) describe the site as having dwelling structures of the Kostënki-Avdeevo Culture type and a Gravettian lithic industry.

6.3 Collections and sampling

The major collections from Kostënki 4 are held at the Kunstkamera, Saint Petersburg. These derive from Rogachëv's excavations of 1937 and 1938, and include material from the northern and southern dwelling complexes (including material from both cultural layers). The collections are far too large to study in full (they include approximately 2000 backed lithics), so a 15% random sample was studied: 294 pieces (see Section 3.2.4 for details of sampling methods). Alongside this, a 100% sample of selected lithics was studied (n=21). A weighted dataset was created to compensate for having two different rates of sampling, and was used in analysis where appropriate (e.g., when summaries were made of aspects of the entire assemblage, or of a sub-category which included members of both sampling groups). In this chapter it is always made clear whether the raw or weighted dataset was used for analysis.

The huge size of the collection posed problems. It was not possible, in the time available, to examine every single piece carefully and decide, for example, whether it was a possible Gravette point fragment or not, so it was not possible to obtain a full sample of all such pieces. However, some groups of artefacts, mostly described as “backed awl-like points”⁵ (Rogachëv, 1955, pp. 129–130) had previously been separated from the ordinary backed bladelets. These included artefacts which I would classify as Gravette points, and a 100% sample of these pieces was studied (although some artefacts were later reclassified). Ideally, however, all possible Gravette point fragments would have been identified and studied: only four fragments and one atypical Gravette point were identified in the main 15% sample.

⁵“шиловидные остря с притупленным краем”

6.3.1 Layer 1

As explained above, the collection has been divided into two layers but this is often based on raw material and typology rather than stratigraphical information, and the division is not unquestionable.

The inventory for Layer 1 includes around 16,000 pieces of fine-grained flint and quartzite, including about 270 cores and 1,700 retouched pieces. Blade cores are nearly exclusively prismatic: either single-platformed with removal of blades along the whole perimeter, or double-platformed with removals along part of the perimeter only. There were about 180 bladelet cores on large blades or flakes (Rogachëv & Anikovich, 1982b, p. 78).

Of the retouched tools, backed bladelets form the largest group, of around 400. Usually one edge has straight backing retouch, while the opposite edge is curved and partly retouched at the end. There are also around 250 burins and 75 scrapers of various types. There are around 190 symmetrical points on blades, with one end bearing semi-steep retouch shaping a point and flat retouch on the very end, and the other end worked with dihedral burin removals (Rogachëv & Anikovich, 1982b, p.78). These are known as Aleksandrovsky-type points (Zhëltova, 2011). Among the remaining lithics are a bifacially-worked leaf point and shouldered piece (Rogachëv & Anikovich, 1982b, p. 78).

There were also more than forty pebbles believed to have been used as pestles or grinding stones, and nearly forty fragments of quartzite and sandstone slabs believed to also have been for grinding: three fragments could be refitted to make part of a trough-shaped slab (Klein, 1969, p. 189; Rogachëv & Anikovich, 1982b, p. 79). There are a large number of objects made on ivory, bone or marl, including rods, awls, points, and decorative pieces (Rogachëv & Anikovich, 1982b, p. 79).

6.3.2 Layer 2

The collection from this layer numbers about 60,000 pieces, including about 250 cores and 7,000 retouched pieces. The blade cores are similar to those described above for Layer 1 (Rogachëv & Anikovich, 1982b, p. 82).

There are around 2,600 backed lithics, which Rogachëv & Anikovich (1984) divide into two groups. The first consists of subrectangular backed bladelets, sometimes with one or both ends also backed, either straight across or in the form of a notch. The unbacked long edge may be either unworked, bear limited retouch towards the ends, or be denticulated. Their second group is made up of points, bladelets with backing forming a point at one end.

There are about 1,200 splintered pieces, 150 burins and 220 scrapers. The osseous industry includes awls and polishers, and there are pierced teeth of arctic fox and wolf, and perforated mollusc shells (Rogachëv & Anikovich, 1984, p. 210).

6.3.3 Northern locus

A collection of 10,534 flints is reported as deriving from this excavation area, which contained archaeological material described as corresponding to that from the lower cultural layer only (Anisyutkin, 2006). Material from this area was not studied as part of this research.

6.3.4 Sampling and the various layers and areas of the site

The studied collection contains material deriving from both the upper and lower cultural layers, but has not been labelled or physically sorted according to these layers (although quartzite artefacts have been separated within the collection). The only information available for defining material according to cultural layer was the square number, written on most (but not all) studied lithics from the northern area and a handful of those from the southern area.

Although quartzite artefacts were seen during the examination of the collection,

none were accepted for study as backed lithics. Occasional backed pieces that could be described as “coloured” were seen, but the vast majority of the collection was made on dark brown or grey fine-grained flint. In the studied sample no clearly “coloured” flint lithics were included.

The upper cultural layer was described only at the northern dwelling complex, so all the material from the southern complex can be attributed to the lower layer. At the northern complex, the area where the upper cultural layer was identified overlay, but is smaller than, the area of the lower cultural layer (Fig. 6.1). So, in order to investigate the possible differences between the northern and southern complexes and the area of the upper cultural layer, lithics were separated into four groups:

- Lithics from the southern complex (n=203, 67% of weighted dataset). Most of these were not labelled by square so they are all analysed together although some material from this area was attributed to the upper cultural layer by Rogachëv (see above).
- Lithics from the northern complex (area where the upper cultural layer was described) (n=37, 11% of weighted dataset).
- Lithics from the northern complex (area where the upper cultural layer was *not* described) (n=55, 16% of weighted dataset)
- Lithics from the northern complex (unknown area) (n=20, 6% of weighted dataset)

In the weighted dataset, there are twice as many lithics from the southern complex as from the northern (67% vs 33%). The typological compositions of each of the areas defined here are given below in Section 6.4.3.

6.4 Backed lithic assemblage

6.4.1 Sub-categories

A number of sub-categories were established during the study of this collection. See below (Table 6.2) for the number of pieces studied in each sub-category and their proportions of the weighted dataset.

Gravette points This sub-category includes elongated backed lithics with a well-formed point at one end and smoothly formed edges. The basal ends are re-touched. A few pieces which are very likely to be fragments of the same are also included here.

Atypical Gravette points These are lithics which are very similar to the Gravette points described above, but which have some defect which excludes them from being included in that group. For example, the point may be rather blunt, or the backed edge may be irregular.

Miscellaneous points Lithics with a well-formed point but which are not convincing fragments of Gravette points are included here.

Regular backed bladelets This large sub-category, constituting ca. 88% of the weighted dataset, includes backed bladelets with a regular and straight or nearly straight backed edge, and which are rectilinear or sub-rectilinear in overall form. A very significant number of these pieces bear truncations at one or both ends. In the analyses below three subcategories are often used: Non-truncated backed bladelets, Truncated backed bladelets and Double truncated backed bladelets.

Part-backed bladelets This small sub-category includes diverse bladelets with only partial backing of an edge.

Irregularly backed bladelets The small number of bladelets with markedly irregular backing are included here.

Sub-category	Number sampled at 15%	Number sampled at 100%	Percentage of entire weighted dataset
Whole Gravette points	0	10	0.5%
Gravette point fragments	4	2	1.4%
Atypical Gravette points	1	8	0.7%
Miscellaneous points	10	1	3.4%
Non-truncated backed bladelets	161	0	54.2%
Truncated backed bladelets	91	0	30.6%
Double truncated backed bladelets	10	0	3.4%
Part-backed bladelets	13	0	4.4%
Irregularly backed bladelets	4	0	1.3%
Total	294	21	100%

Table 6.2: Backed lithics from Kostënki 4: counts of sampling groups and sub-categories

Element	Raw count	Raw percentage	Weighted percentage
Whole	41	13%	8%
Proximal fragment	108	34%	36%
Medial fragment	94	30%	32%
Distal fragment	68	22%	23%
Indeterminate (prox./dist.) fragment	4	1%	1%
Total	315	100%	100%

Table 6.3: Backed lithics from Kostënki 4: counts of whole examples and fragments

As noted in the previous section, certain sub-categories were found in both the 15% and the 100% sampling groups, creating some complications for their analysis. Table 6.2 shows the composition of each of the sampling groups and the weighted dataset by sub-category.

6.4.2 General remarks

The main backed bladelet collection is somewhat heterogenous, without the overwhelming uniformity seen at Kostënki 8 Layer 2 or Kostënki 9. The majority of the collection is made up of straight backed bladelets, a very significant number of which bear truncations (Table 6.2).

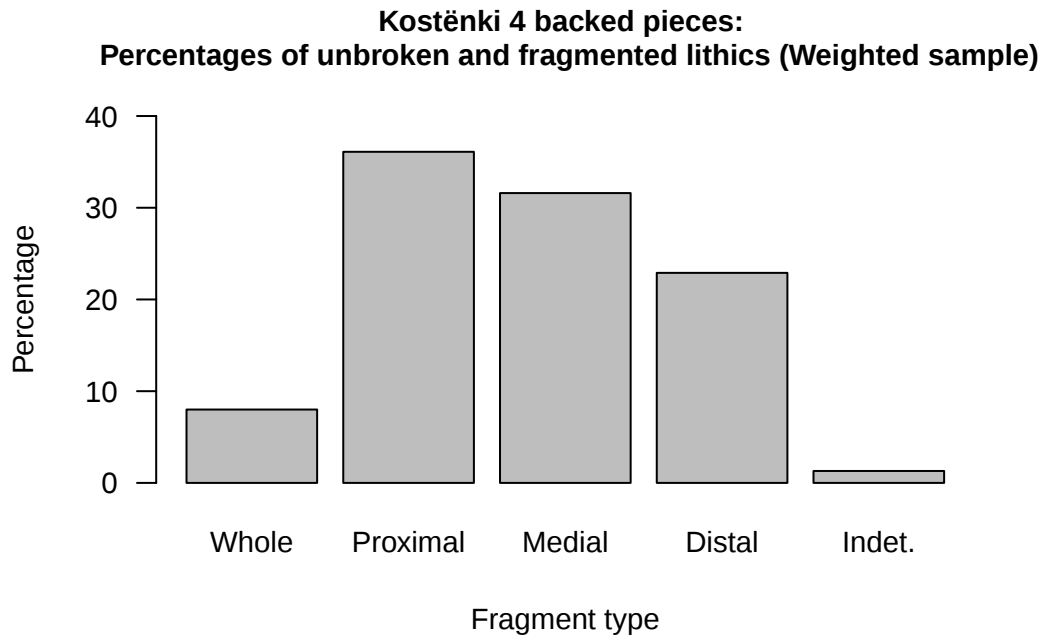


Figure 6.2: Backed lithics from Kostënki 4: counts of whole examples and fragments (n=315; weighted sample)

The proportions of proximal, medial and distal fragments are as expected, with proximal fragments outnumbering the other two categories (Fig. 6.2 and Table 6.3).

The widths and thicknesses of the backed lithics taken as a whole both form unimodal distributions (Figs. 6.3 and 6.4). (As will be seen below, however, there are in fact differences between the widths of the Gravette points and the ordinary backed bladelets: it is not seen in the plot of the distribution of the entire dataset because of the tiny proportion of Gravette points). There is a strong correlation between the widths and thicknesses of the backed lithics (weighted sample: Pearson's $r=0.63$) (Fig. 6.5).

The lengths of the unbroken backed lithics form a bimodal distribution when drawn as a histogram (Fig. 6.6). When we examine a box plot of the same data (Fig. 6.7), we can clearly see the reason for this. The Gravette points (including the atypical examples) form one length grouping; the other backed bladelets, including the unbroken truncated lithics, form another, shorter grouping. If we plot two histograms: one of the lengths of the unbroken Gravette points (including broken and atypical Gravette points), and

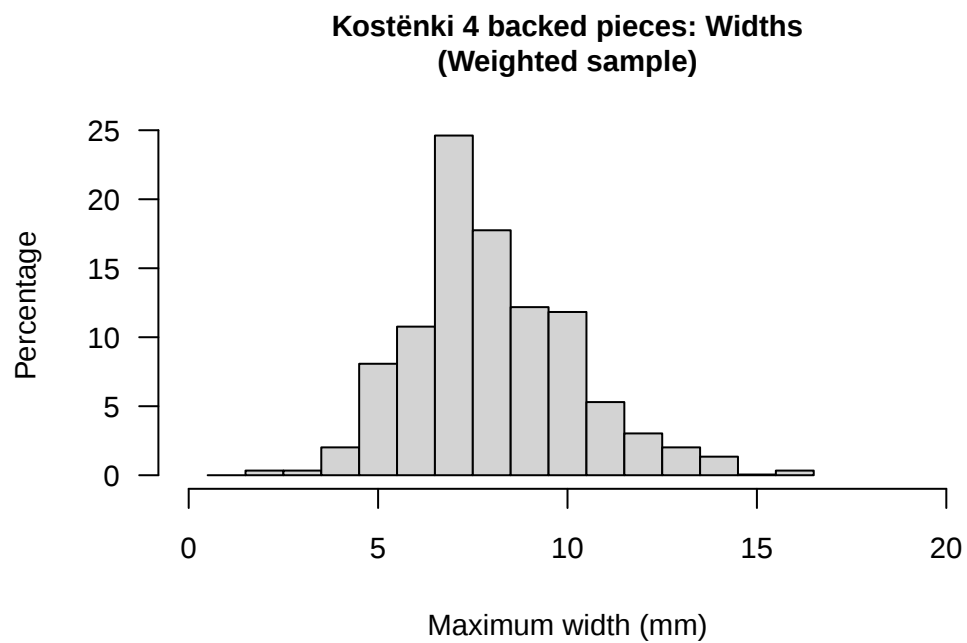


Figure 6.3: Backed lithics from Kostënki 4: histogram of widths (n=315; weighted sample)

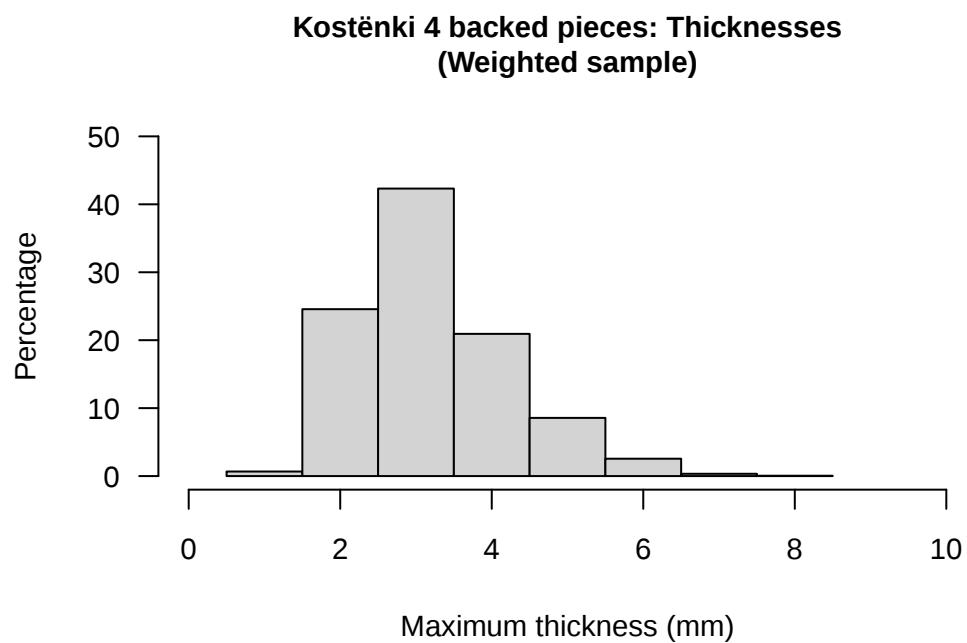


Figure 6.4: Backed lithics from Kostënki 4: histogram of thicknesses (n=315; weighted sample)

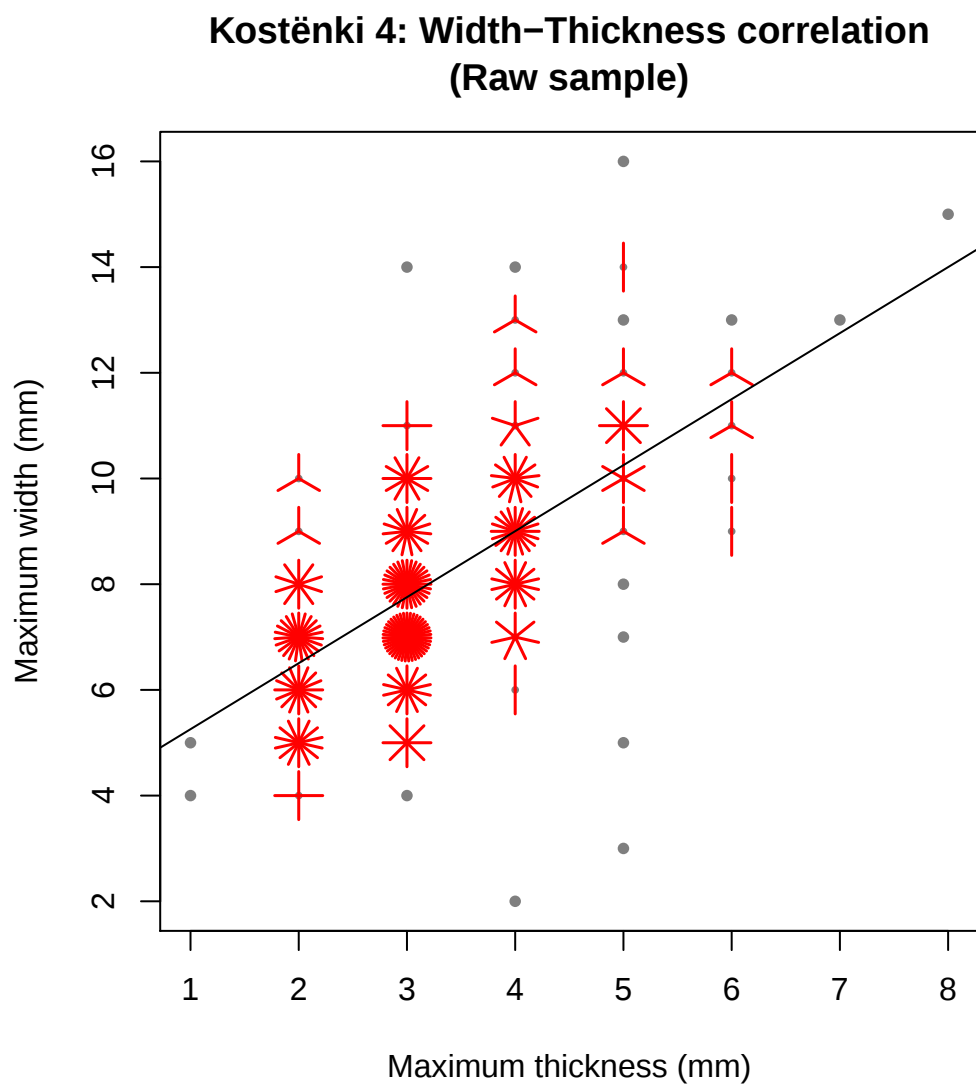


Figure 6.5: Backed lithics from Kostënki 4: sunflower plot of width vs thickness (n=315; raw sample). Pearson's $r=0.63$ (for weighted sample)

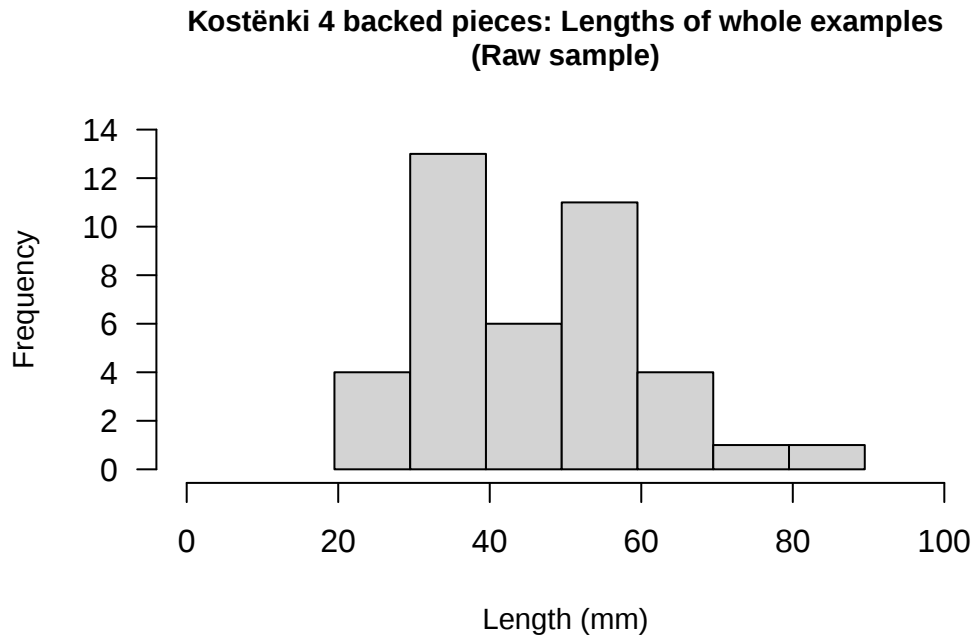


Figure 6.6: Whole backed lithics from Kostënki 4: histogram of lengths (n=40; raw sample)

the other of the lengths of all other unbroken backed lithics (Fig. 6.8) we can see that there are clearly two different distributions.

There is no particularly strong preference shown in the collection as a whole for backing on a particular lateral edge (Fig. 6.9). Of the weighted dataset, 49% of pieces are backed on the left edge of the blank and 42.2% on the right; 7.5% have some backing on both edges and 1.3% are backed on an indeterminable edge. There are no very obvious strong preferences within sub-categories for backing on a particular edge (Table 6.4). Although it is interesting that the Gravette points do not seem to demonstrate a preference for backing the right edge of the blank (and/or the lithic when the point is oriented distally) as seen elsewhere (Section 10.4), the small numbers of lithics mean that this observation is not robust.

Any kind of crossed backing is rare in this assemblage, present on only 10 lithics (3% of the weighted dataset). In the vast majority of cases, at least one arris was intact along the full length of the dorsal surface of each lithic.

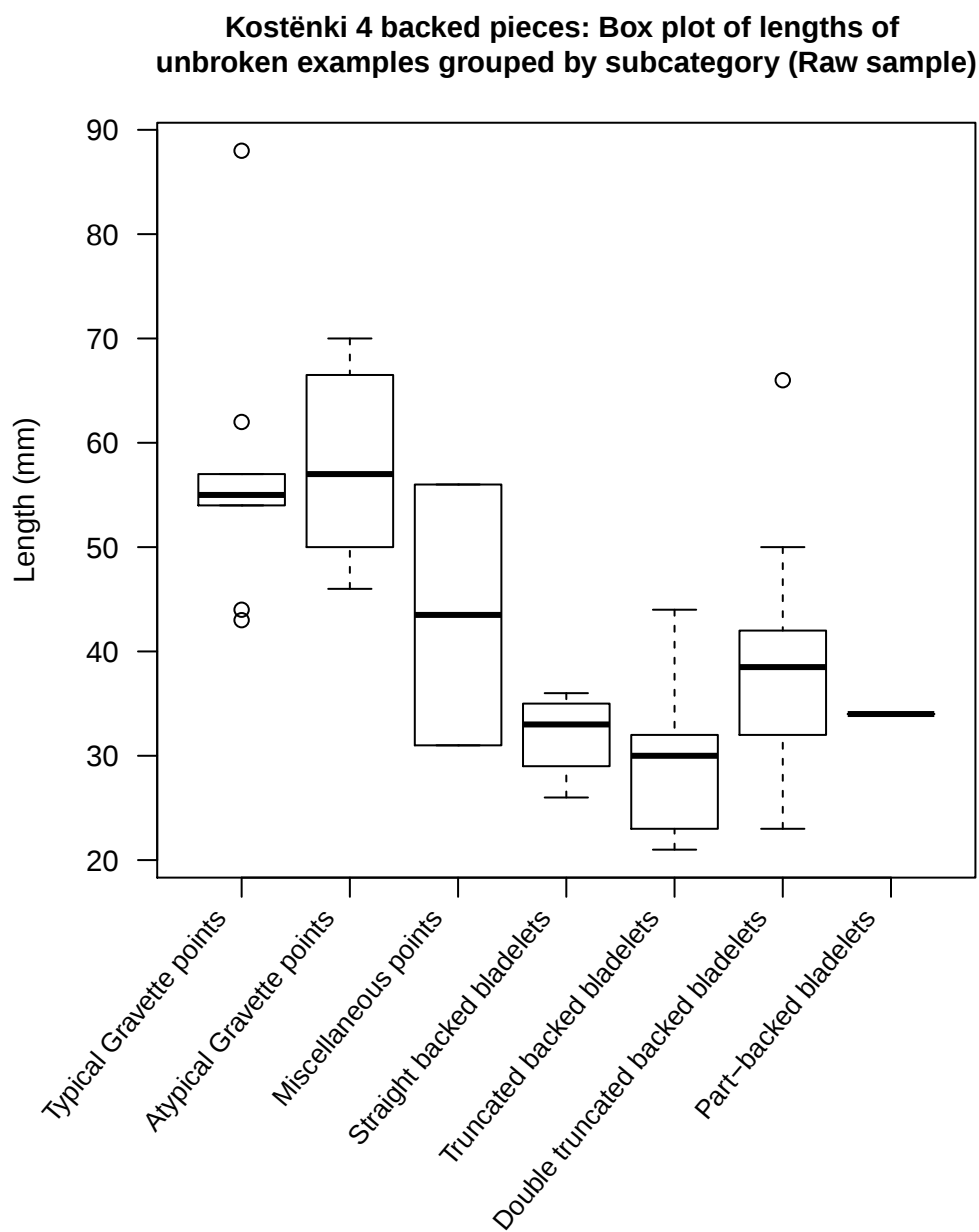


Figure 6.7: Whole backed lithics from Kostënki 4: box plot of lengths (n=40; raw sample)

**Kostënki 4: Comparison of lengths
of unbroken backed lithics (Raw sample)**

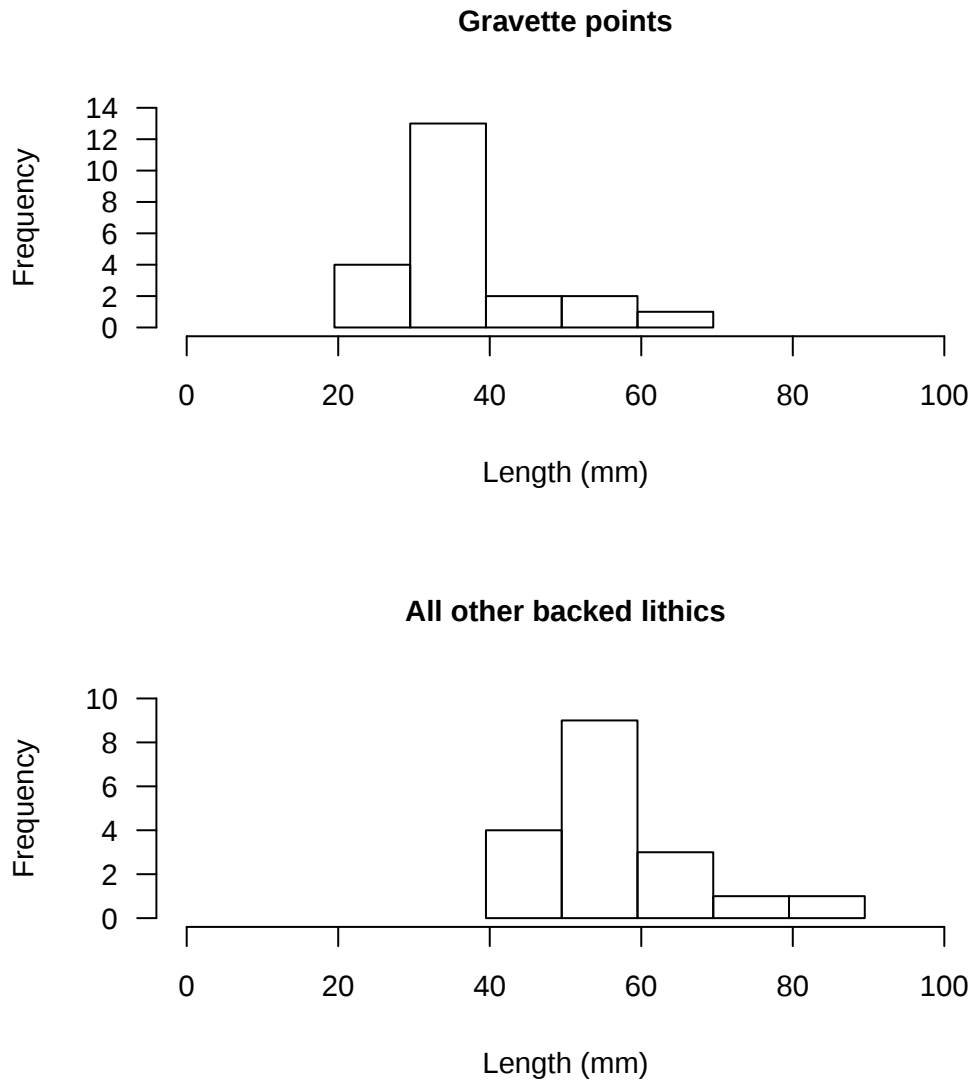


Figure 6.8: Whole Gravette points and all other whole backed lithics from Kostënki 4: histograms of lengths (Gravette points: n=18; All other backed lithics: n=22; raw sample).

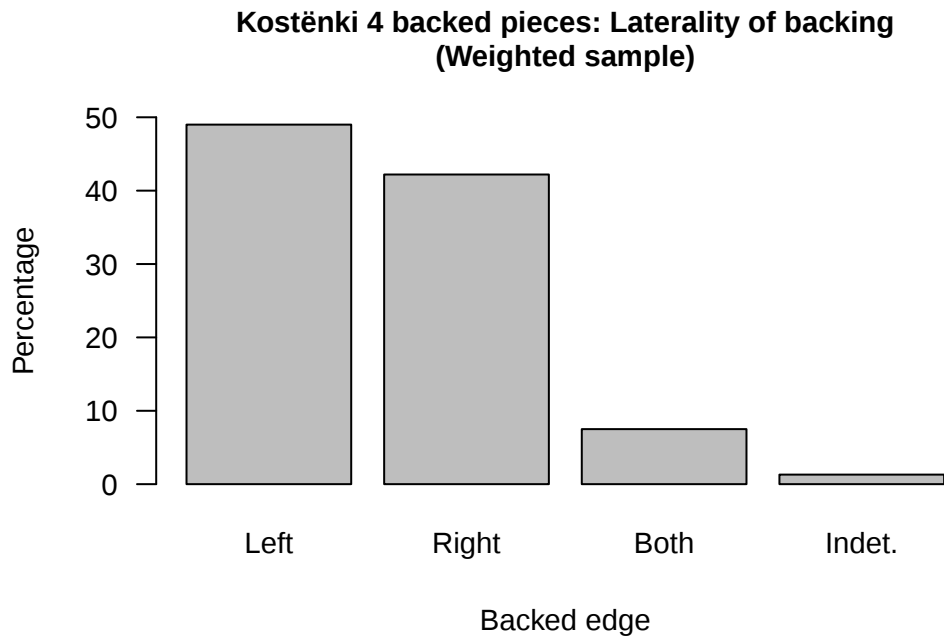


Figure 6.9: Backed lithics from Kostënki 4: backing by edge (n=315; weighted sample)

Sub-category	n	Backed edge				Total
		Left	Right	Both	Indet.	
Gravette points	16	69.8%	30.2%	0.0%	0.0%	100%
Atypical Gravette points	9	65.9%	27.3%	0.0%	6.8%	100%
Miscellaneous points	11	40.9%	49.3%	0.0%	9.9%	100%
Non-truncated backed bladelets	161	49.1%	43.5%	1.9%	5.6%	100%
Truncated backed bladelets	91	51.6%	38.5%	1.1%	8.8%	100%
Double truncated backed bladelets	10	20.0%	60.0%	0.0%	20.0%	100%
Part-backed bladelets	13	46.2%	38.5%	0.0%	15.4%	100%
Irregularly backed pieces	4	50.0%	50.0%	0.0%	0.0%	100%

Table 6.4: Backed lithics from Kostënki 4: backed edge by sub-category (weighted sample) Key: n: total raw number of pieces in sub-category.

Subcategory	Northern excavation	Southern excavation	All
Gravette points	1.4%	2.2%	1.9%
Atypical Gravette points	0.9%	0.7%	0.7%
Miscellaneous points	3.0%	3.6%	3.4%
Non-truncated backed bladelets	47.4%	57.6%	54.2%
Truncated backed bladelets	36.3%	27.8%	30.6%
Double truncated backed bladelets	3.0%	3.5%	3.4%
Part-backed bladelets	7.1%	3.0%	4.4%
Irregularly backed pieces	1.0%	1.5%	1.3%
Total	100%	100%	100%

Table 6.5: Backed lithics from Kostënki 4: proportions of subcategories by excavation area

6.4.3 Typological composition by area

As already discussed (Section 6.3.4) the collection studied here derives from two excavation areas, each containing a linear “dwelling structure.” In the northern excavation area and restricted areas of the southern excavation area, lithics were found which were attributed to an upper cultural layer.

There are no obvious typological differences between the assemblages from the northern and southern excavation areas: all typological groups are represented in each area and there are no significant differences in their proportions (Table 6.5).

In the northern excavation area, there are also no major typological differences between the lithics from the area where the upper cultural layer was described and other areas. For the purpose of this comparison (Table 6.6), the collection was categorised into lithics found in the area where Rogachëv (1955) defined the upper cultural layer (“Layer 1 area” in the table; n=37), lithics found outside this area (“Outside Layer 1 area”; n=55), and lithics which were not labelled by square (“Indet.”; n=20). The only differences in proportions of any significance concern the miscellaneous points and the part-backed bladelets, but both of these involve tiny raw numbers of artefacts: three miscellaneous points outside the Layer 1 area compared with none inside, and four part-backed bladelets inside the area compared with three outside. These are unlikely to be

Subcategory	Layer 1 area	Outside Layer 1 area	Indet.	All
Gravette points	0.4%	1.8%	1.7%	1.4%
Atypical Gravette points	1.3%	0.6%	0.9%	0.9%
Miscellaneous points	0.0%	6.2%	0.0%	3.0%
Non-truncated backed bladelets	53.6%	56.0%	11.5%	47.4%
Truncated backed bladelets	29.8%	29.0%	68.8%	36.3%
Double truncated backed bladelets	0.0%	0.0%	17.2%	3.0%
Part-backed bladelets	11.9%	6.2%	0.0%	7.1%
Irregularly backed pieces	3.0%	0.0%	0.0%	1.0%
Total	100%	100%	100%	100%

Table 6.6: Backed lithics from Kostënki 4 (northern complex excavation area): proportions of subcategories by area. Layer 1 area according to Rogachëv (1955); see Fig. 6.1.

meaningful differences.

6.4.4 Gravette points, atypical Gravette points and fragments

A 100% sample of Gravette points was studied as part of this research. Ten unbroken typical Gravette points were found (0.5% of the weighted dataset), alongside more pieces (n=9, 0.7% of the weighted dataset) which may be unfinished, modified or imperfectly manufactured points. Apart from this, a number of pieces (n=6, 1.4% of the weighted dataset) which are likely fragments of Gravette points were also found.

The 10 fully typical unbroken Gravette points are shown in Figs. 6.10 and 6.11. Three were found in the collection from the southern complex and seven in the collection from the northern complex. They all fulfil the criteria (set out in Demars & Laurent, 1992, p. 100) of being elongated and approximately rectilinear, with continuous or almost-continuous backing along one edge.

However, the basal modifications do not match the description used by Demars and Laurent. Rather than the proximal ends being “*en pointe ou en ogive*,”⁶ they are truncated, with similar sub-rectangular truncations to those used on many of the regular

⁶“pointed or ogival”

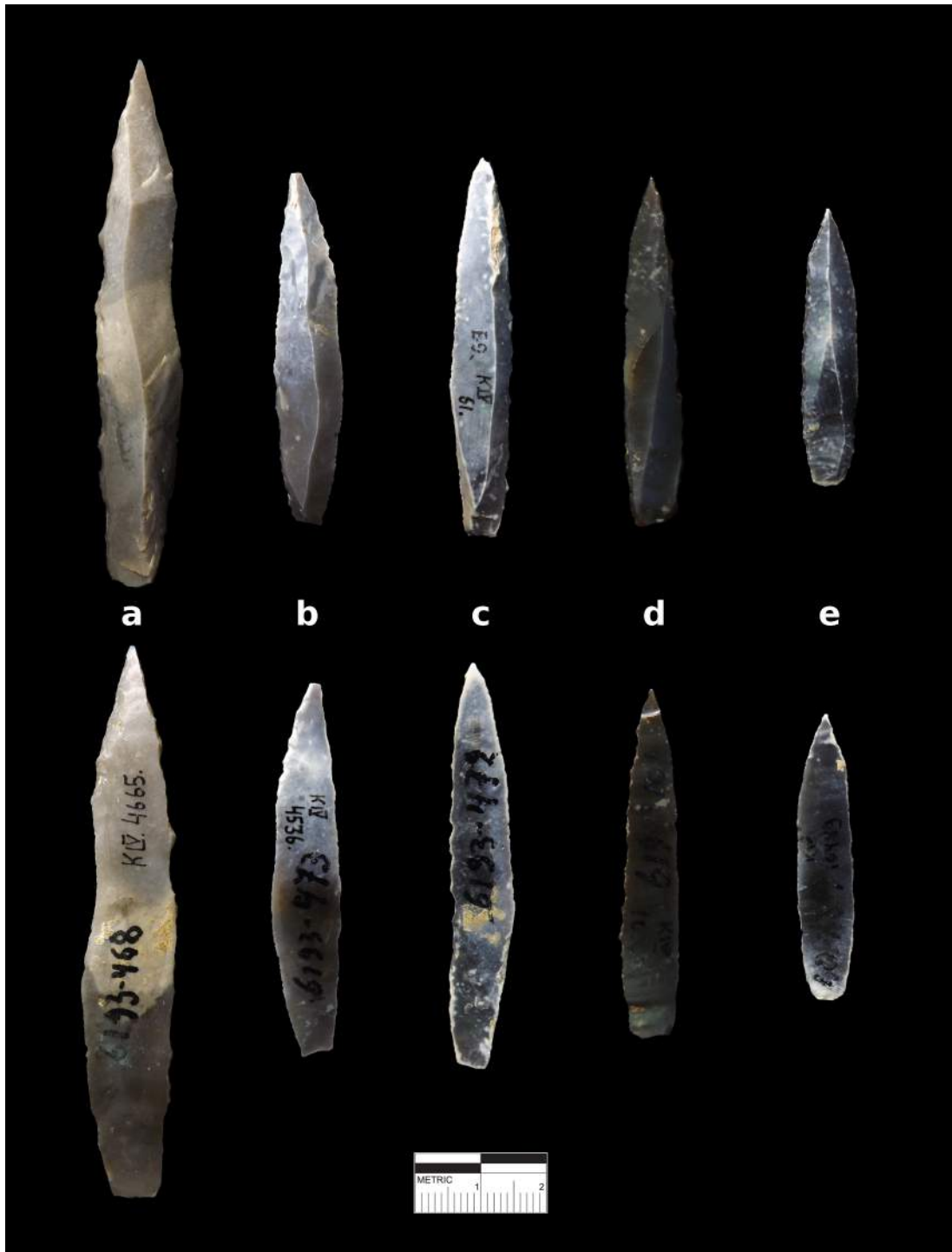


Figure 6.10: Gravette points from Kostënki 4 (1): dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph. a–c: from southern dwelling complex. d–e: from northern dwelling complex.

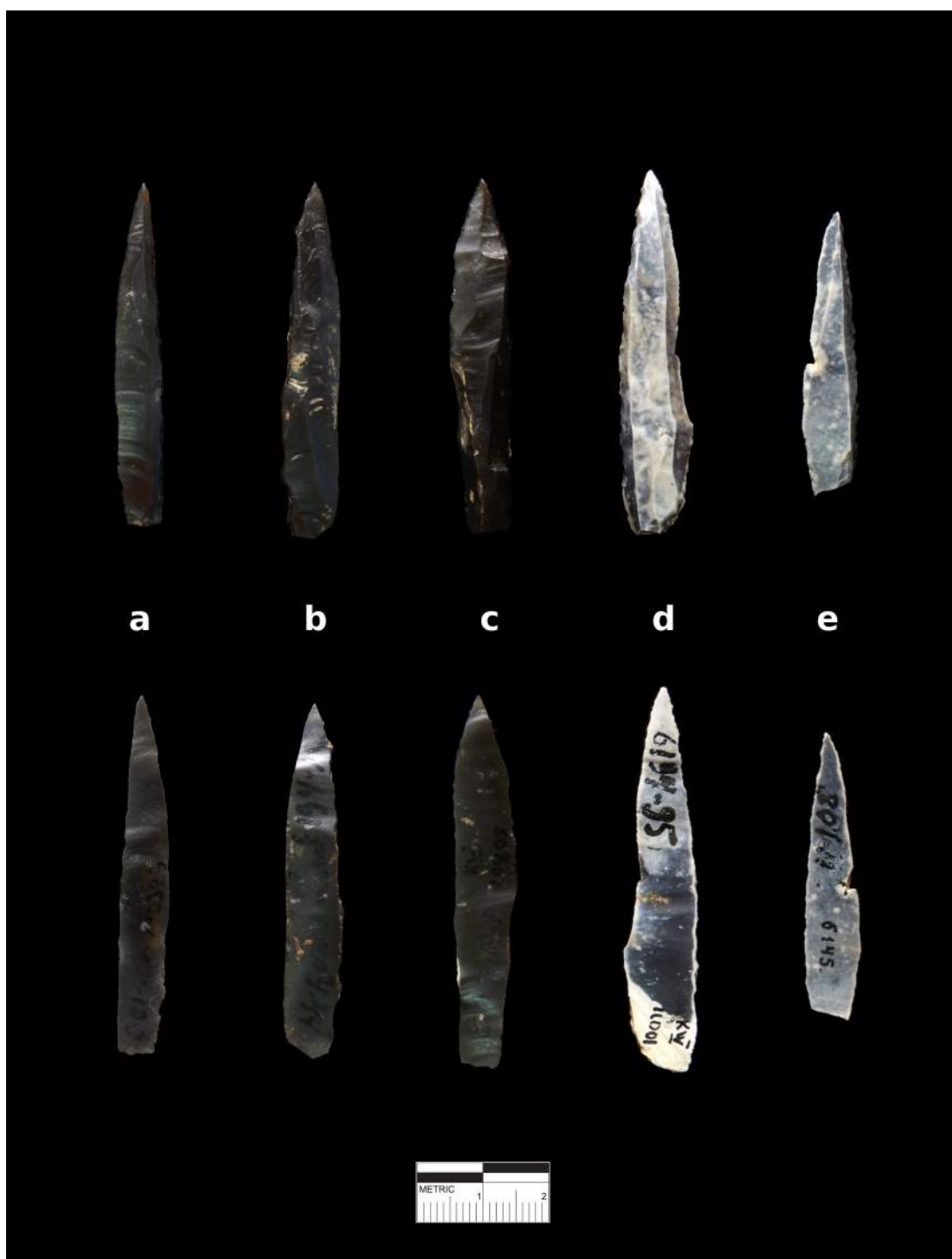


Figure 6.11: Gravette points from Kostënki 4 (2): dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph. All from northern dwelling complex.

backed bladelets (see below, Section 6.4.6). Some of the truncations are slightly oblique ($n=5$) or rectangular ($n=2$), while perhaps two could be described as sub-rounded (the base of the final point has a broken corner). In Harrold's database of Gravette points from France, 25.1% of the bases "were abruptly truncated or, more rarely, pointed," of which about two-thirds had an oblique truncation (Harrold, 1993, p. 75). The truncations at Kostënki 4, however, are much less oblique than the illustrated oblique truncations on Gravette points in Harrold's article: those are much more similar in form to the acutely pointed bases common among Gravette points from France. The oblique truncations at Kostënki 4 are close to rectangular, rather than being pointed.

The proximal ends of the Gravette points usually taper slightly towards the truncated ends, which perhaps relates to hafting. Only six of the Gravette points have clear retouch of the unbacked edge at the proximal ends: this is always direct retouch. In the other cases retouch was not necessary to form the tapering end. None of them have any inverse retouch to the proximal ends. The points of the pieces are located on or close to the central axis of the lithics, and there is no clear break of outline between the point of the piece and the medial section.

In their lengths, widths and thicknesses, all except one of the pieces are very similar to each other (Figs. 6.12, 6.13 and 6.14). There is a very strong correlation between the widths and thicknesses of these pieces (Pearson's $r=0.93$), much higher than that for the assemblage as a whole ($r=0.63$).

The largest Gravette point (Fig. 6.10: a) is much larger than all the others (length=88 mm); Fig. 6.7 shows it as an outlier and it is also an outlier on all the histograms of the Gravette point dimensions. It is also made on obviously different flint: medium-grained grey flint, rather than the fine-grained dark brown flint used for all the other Gravette points studied. It is also the only point to have inverse retouch to the distal point (or, indeed, any inverse retouch). It is worth considering whether this point might have been imported, already manufactured, to the site from elsewhere.

On the unbroken typical Gravette points, all have had their bulbs and platforms removed except a single lithic which retains a plain platform and diffuse bulb. The

ventral surfaces of the points, and hence their profiles, vary. Three of them are quite significantly concave. Of the remainder, two are flat to within 1 mm, two are somewhat concave and three are somewhat sinuous. This does, of course, have ramifications for whether these points should be interpreted as projectile points or not.

Eight out of ten of the typical unbroken Gravette points are made with their point formed on the distal end of the blank. Of those with the point located on the distal end of the blank, four are backed on their right edge and four on the left edge; of those with the point located on the proximal end of the blank, one is backed on the right edge and one on the left edge. In other words, among the unbroken typical Gravette points there is an exactly 50/50 split between left-backing and right-backing, regardless of how the blank is oriented for retouch. Of the six probable fragments of Gravette points, all are oriented with their points towards the distal ends of the blanks. Five out of six are backed on their *left* edges.

The pieces classified as atypical Gravette points (n=9) vary widely in their morphology and retouch. They include pieces which have apparently unfinished backing (n=3), points with unmodified proximal ends (n=3), lithics with very blunt pointed ends (n=2), and one distal fragment of a piece which has its backing located on its left edge but its distal point on the right and whose overall morphology does not match the unbroken Gravette points. One of these also has continuous backing on both edges but is otherwise very close in shape to the typical Gravette points.

6.4.5 Miscellaneous points

Eleven lithics (3.4% of the weighted dataset) are categorised as miscellaneous points (Fig. 6.16). These are points, mostly broken, which do not match the morphology of the Gravette points found in this assemblage, and which do not seem to be atypical versions of them: they are rather different in retouch, proportions and size. The distinction between these points and the “atypical Gravette points” is somewhat arbitrary but the latter group is generally closer in overall shape and dimensions to the typical Gravette points. The group of miscellaneous points includes pieces which could relate to projectile

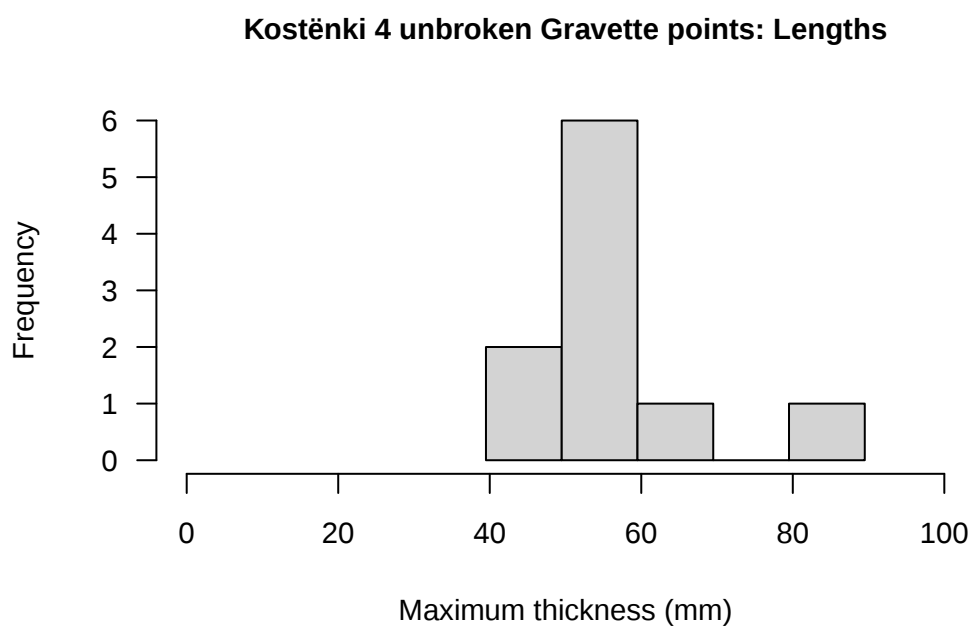


Figure 6.12: Whole Gravette points from Kostënki 4: histogram of lengths (n=10; raw sample)

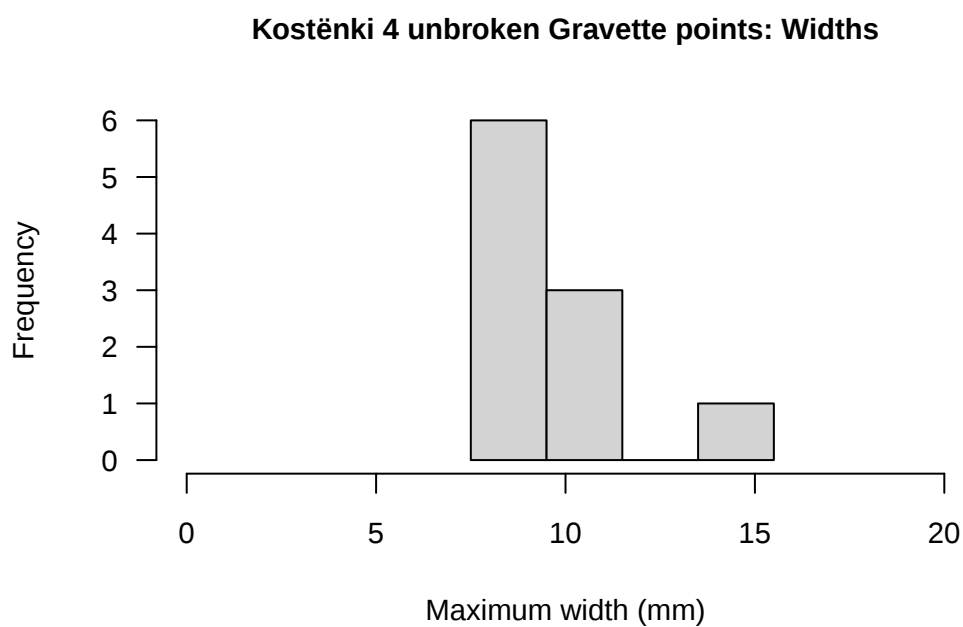


Figure 6.13: Whole Gravette points from Kostënki 4: histogram of widths (n=10; raw sample)

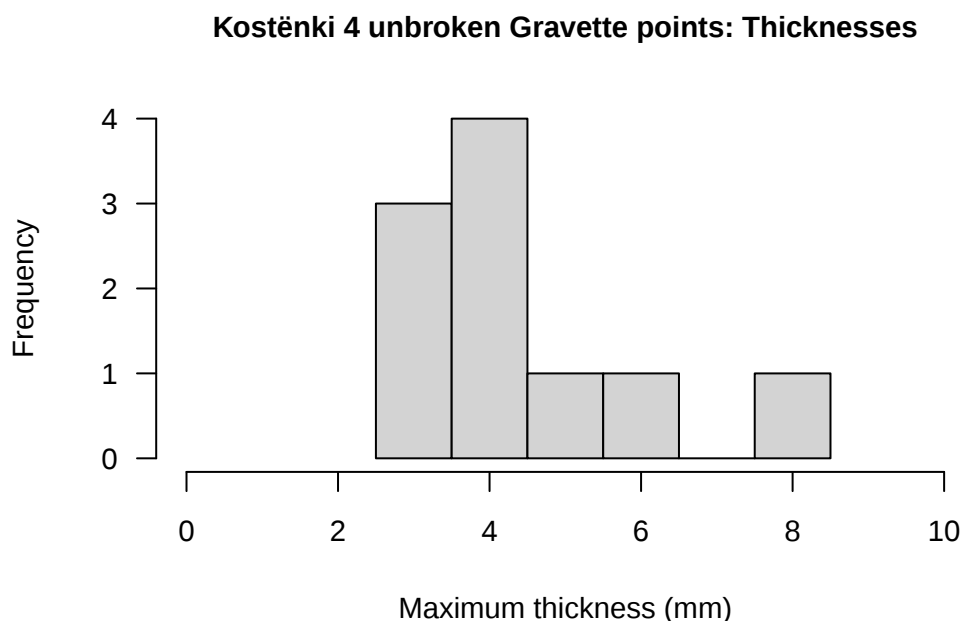


Figure 6.14: Whole Gravette points from Kostënki 4: histogram of thicknesses (n=10; raw sample)

points as well as to knives, awls and other tools. They are very diverse in all their descriptive features.

6.4.6 Regular backed bladelets

The overwhelming majority of the assemblage (n=262, 88.2% of the weighted dataset) consists of regular backed bladelets with straight backed edges (Fig. 6.17). Very many of these bladelets are truncated. The non-truncated backed bladelets, truncated backed bladelets and double truncated backed bladelets are analysed together here. All these lithics were sampled at 15%, so the raw dataset is used in the descriptions below.

The representation of different fragment types in this subcategory is unsurprising (Table 6.7). The majority of the ventral surfaces of the pieces are flat to within 1 mm tolerance (n=166, 63%), while a significant number are slightly concave (n=44, 17%), and the remainder are sinuous, convex, concave and/or twisted.

The widths and thicknesses of the regular backed bladelets are shown in the his-

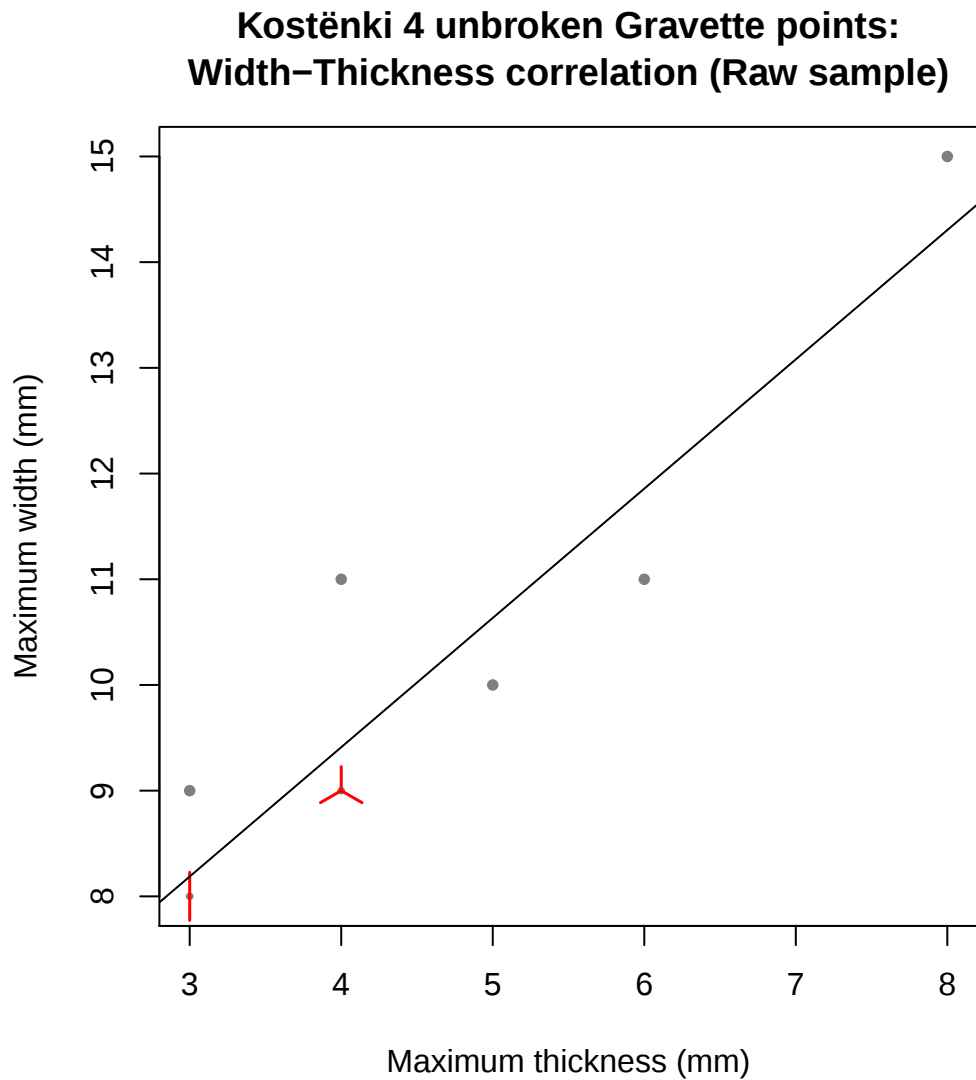


Figure 6.15: Whole Gravette points from Kostënki 4: sunflower plot of width vs thickness (raw sample). Pearson's $r=0.93$ (for weighted sample)

Element	Count	Percentage
Whole	19	7%
Proximal fragment	97	37%
Medial fragment	86	33%
Distal fragment	56	21%
Indeterminate (prox./dist.) fragment	4	2%
Total	262	100%

Table 6.7: Straight backed bladelets from Kostënki 4: counts of whole examples and fragments (raw sample)



Figure 6.16: Miscellaneous points from Kostënki 4: dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph



Figure 6.17: Backed bladelets from Kostënki 4: dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph

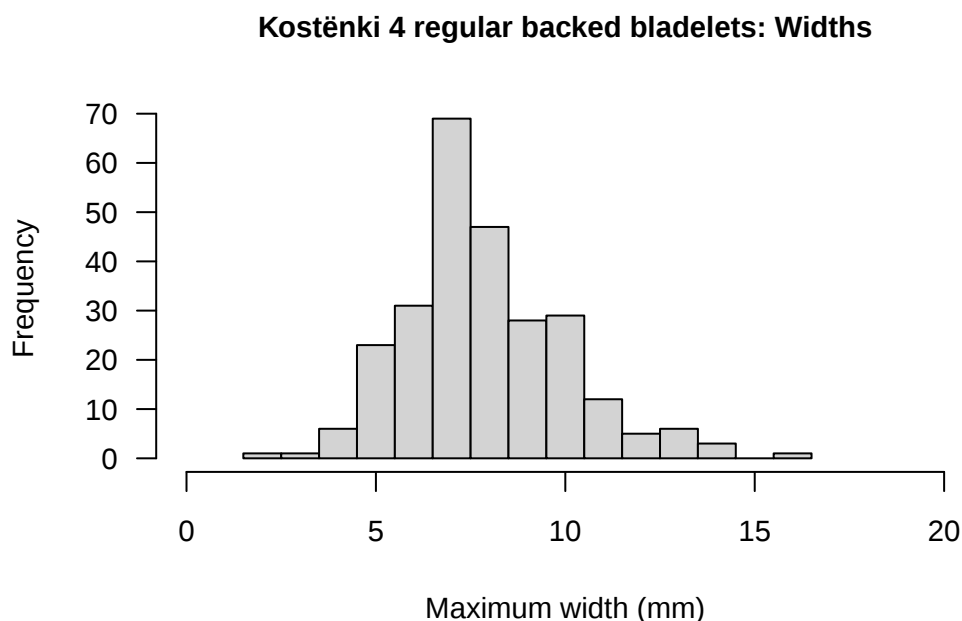


Figure 6.18: Straight backed bladelets from Kostënki 4: histogram of widths (n=262; raw sample)

tograms in Figs. 6.18 and 6.19. They form unimodal distributions. The majority of the bladelets (67%) have rectilinear sides; another 21% have straight edges which taper slightly towards one end. The remaining 11% have a curved or other regular unbacked edge.

In 115 cases (44%) the proximal end of the blank was present and observable; in the majority of these cases the bulb and platform had been removed. (On 142 lithics the proximal end had been broken off, while in another five broken lithics the proximal and distal ends were not firmly determinable). Of these 115 proximal ends, in 81 cases (70% of intact proximal ends) the striking platform had definitely been removed (and one was obscured by concretions). In 53 cases (46% of proximal ends) the bulb of percussion had been entirely removed; in another 15 cases (13%) it had been mostly removed and in 39 (34%), partly removed. Only 8 bulbs (7%) were left completely intact.

In the vast majority of cases, the removal of the bulb and platform is connected with the truncation of the proximal ends of the pieces (rather than, for example, the



Figure 6.19: Straight backed bladelets from Kostënki 4: histogram of thicknesses (n=262; raw sample)

continuation of lateral retouch to remove the ends). Truncation is very common among the regular backed bladelets in this assemblage. If we exclude the medial fragments and the indeterminate end fragments, we have a sample of 172 straight backed bladelets with at least one intact end. Among the 97 proximal fragments, 54 (56%) are truncated. Similarly, of the 56 distal fragments of straight backed bladelets, 30 (54%) are truncated. In considering only the 19 unbroken bladelets, the presence of truncations is even more striking. Ten of these lithics have truncations on both ends, and another five have truncations on their distal (n=3) or proximal (n=2) ends. Only four are not truncated.

In total (including the indeterminate ends) there are 111 truncations available for study. The truncations of the ends do vary in their form, but the vast majority are probably best described as “sub-rectangular.” This includes quite a few truncations which are slightly concave (n=17, 15%) or convex (n=7, 6%) or oblique (n=10, 9%) in form. These forms, however, are not clearly defined and it is not possible to establish clear categories of truncation shape: the truncations exist on a continuum, whereby

some are more rectangular, concave, etc., than others. When considering just the ten unbroken double truncated backed bladelets, there is no obvious patterning to the truncations: the shape of one end does not predict the shape of the other end. Likewise, there is no clear difference between the shapes of the truncations on the proximal and distal fragments. The truncations are typically formed by semi-abrupt direct backing; only in eight cases (7%) is inverse retouch used. All the inverse truncations are found on the proximal ends of pieces.

The eight pieces with proximal inverse truncations do not seem to relate to Late Gravettian rectangles as found at Kostënki 9 (Chapter 7). In seven out of eight cases the truncating retouch is semi-abrupt, unlike the low-angle inverse retouch more typical for Late Gravettian rectangles. There is only one case where the retouch is low-angle, on a proximal fragment of a backed bladelet, and this lithic *may* be a Late Gravettian rectangle but is not an obvious example of one (it tapers slightly towards the distal end, rather than being rectilinear like a typical rectangle).

The presence of truncations on many of these backed bladelets, as also seen on the Gravette points, raises the question of whether many of the truncated backed bladelets are in fact the basal ends of Gravette points. This is likely true in a few instances. However, it is probably not the case for the majority of the bladelets, for two reasons. First, the presence of double truncated backed bladelets and unbroken singly truncated backed bladelets indicates that there is certainly another typological category present here: many of the fragments can be expected to derive from these tools. Second, there is a noticeable difference in size distribution between the straight backed bladelets and the Gravette points. Figure 6.20 shows histograms of the widths of non-truncated and truncated straight backed bladelets and Gravette points (including atypical and broken Gravette points). The widths of the non-truncated and truncated straight backed bladelets have extremely similar distributions. The widths of the Gravette points do fall within the range of variation of the ordinary backed bladelets, but they are larger on average than the ordinary bladelets⁷. The averages for width and thickness are shown

⁷Results of Kruskal-Wallis test comparing non-truncated backed bladelets, truncated backed

		Width		Thickness	
Group	n	Mean	SD	Mean	SD
Entire backed lithic dataset	315	8.1 mm	2.2	3.3 mm	1.1
All Gravette points	25	9.6 mm	1.8	4.4 mm	1.3
Straight backed bladelets					
without truncations	161	7.9 mm	2.3	3.2 mm	1.0
Truncated and double truncated					
backed bladelets	101	7.6 mm	1.8	2.9 mm	0.9

Table 6.8: Backed lithics from Kostënki 4: comparison of widths and thicknesses by subcategory (raw sample)

in Table 6.8, showing the differences between the means of the groupings of the relevant sub-categories.

6.4.7 Part-backed bladelets and irregularly backed bladelets

These pieces make up a small minority of the backed collection: just 5.7% of the weighted dataset ($n=17$). They are varied in their form. Some of them may be unfinished backed bladelets, or relate to currently undefined tool types.

6.5 Bladelet blank production techniques

As with the other Kostënki sites studied, the main raw material used was dark brown fine-grained flint, usually heavily patinated to light grey-blue and white. Other types of flint were encountered rarely while studying the collection (although not necessarily among the recorded dataset). These include a light yellow flint with partial white patination, some opaque light grey flints or cherts, and a single bladelet made on brown/red striped flint.

The existence of bidirectional scars from previous removals on the dorsal surface is notably more prevalent here than at any of the other sites studied. Forty-eight lithics (14% of the weighted dataset) have such scars. This indicates a relatively high use of

bladelets and Gravette points: $H = 19.4837$, $df = 2$, $p < 0.0001$; results of Mann-Whitney U test comparing truncated and non-truncated backed bladelets (combined) and Gravette points: $U = 1582.5$, $p < 0.0001$, $n_{backedbladelets} = 262$, $n_{Gravettepoints} = 25$

Kostënki 4: Comparison of widths of untruncated and truncated straight backed bladelets and Gravette points (Raw sample)

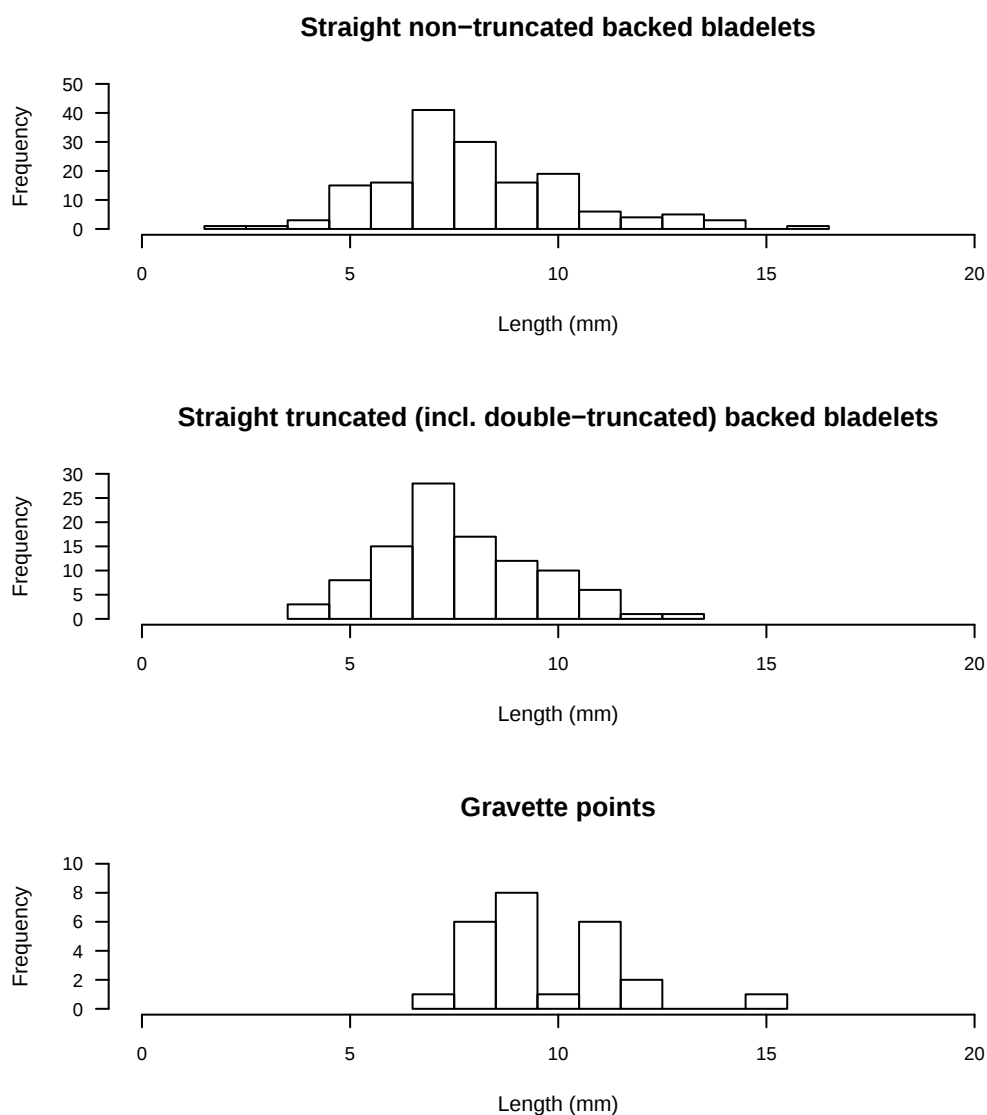


Figure 6.20: Untruncated and truncated (including double truncated) straight backed bladelets and Gravette points from Kostënki 4: histograms of widths (Untruncated straight backed bladelets: n=161; truncated straight backed bladelets: n=101; Gravette points: n=25; raw sample).

bipolar cores for bladelet production. The proportion is highest for the Gravette points: three out of ten (30%) of the typical unbroken Gravette points have bipolar scars, and seven out of 25 (28%) of all the Gravette points, including the atypical and broken examples. Of the regular backed bladelets without truncations, 18% have bipolar scars. This drops to 11% of those with truncations, perhaps because the process of truncation removed some scars.

Rogachëv (1955, pp. 37–46) identified the use of burin spall-type blanks and other products of “secondary cores”⁸ (cores made on flakes and blades) for the creation of retouched bladelets in the upper layer of Kostënki 4. He drew a comparison with the assemblage from Kostënki 8 Layer 2, which he also studied and which I have found does indeed contain a substantial number of backed bladelets produced on spall-type blanks (Section 5.5). However, in the Kostënki 4 assemblage the number of identified possible spall blanks is far lower than that at Kostënki 8. In total (from all areas and layers), only ten lithics were identified as possibly having been made on burin spall blanks (3% of the weighted sample). There is also no unequivocal correlation between the Layer 1 area and the presence of burin spall type blanks. Although seven out of ten did come from the area of the northern excavation where the upper layer is supposed to have been present, one came from elsewhere in the area of the northern dwelling complex and two derived from the southern complex. According to my data, burin spall type blanks do appear more often in the northern dwelling complex, especially in the area of Layer 1, but the small sample size means this is not conclusive.

Possible *lames sous crêtes* (17 examples, or 4% of the weighted sample) were more commonly identified than spall blanks. The vast majority of blanks used, however, were regular bladelets and small blades created during *plein débitage*. Among the regular backed bladelets, of the 33 present and observable striking platforms, 32 were plain in form and just one appeared facetted. Of the 61 bulbs of percussion suitable for study on lithics of the same subcategory, almost all were diffuse: only three could be described as prominent.

⁸“вторичные ядрища”

The presence of at least two separate size classes among the finished pieces is notable, with Gravette points being both wider and longer than other backed lithics (Figs. 6.6, 6.7, 6.8, 6.20). Crossed-abrupt backing is very rarely used, and without the use of this technique the degree of widthwise reduction of the blanks is restricted. This means that the differences in the final widths of the pieces are likely to be reflective of the widths of the blanks, not just of choices made during retouching.

6.6 Discussion

The assemblage from Kostënki 4 is distinctive among the sites studied. The backed assemblage is best summarised as a Gravette point and backed bladelet assemblage with a high proportion of truncated backed bladelets. Microgravettes are very few or absent. The same style of truncation was used on both the Gravette points and the backed bladelets. The use of this style of truncation on Gravette points is unusual but comparable to that found at the later site of Khotylëvo 2. The site is very large (both spatially and in terms of its assemblage size) suggesting a camp that was perhaps returned to repeatedly, or even occupied on a permanent basis. The presence of an unusual, perhaps imported, Gravette point could indicate social connections beyond the Kostënki area: it would be very interesting to know the origin of the flint it was made on.

The blank production techniques are unique among the assemblages studied for the importance of bipolar cores (although this may be exaggerated by the relatively light reduction of many blanks, which preserves more dorsal scars). The presence of two distinct size classes among the blanks for producing backed lithics is also notable.

No meaningful differences were found between the typological compositions of the area of the northern excavation area where Layer 1 was found and the area outside it. This does not demonstrate that Layer 1 did not exist as a distinct cultural layer. However, it does mean that it seems safe to treat the entire backed assemblage as homogeneous for the purposes of this research (while always being mindful of the fact that

there may have been mixing of material of different ages). The similarities in typological composition between the northern and southern excavation areas are striking, with almost identical proportions of each typological group found in each area (Table 6.5). The only possibly interesting difference found between the excavation areas, and perhaps linked with the presence of material from an upper cultural layer, concerns the use of bladelet spall blanks. This data presented here, however, is not on its own conclusive. I agree strongly with Zheltova (2013) that the presence of two cultural layers at the site, and the attribution of artefacts to one layer or the other, are highly questionable and requires further investigation.

Gravette points make up a small but important component of the collection. These points are for the most part extremely homogeneous in their forms, and the very strong correlation between width and thickness points to the exertion of a high level of control over the morphology of the pieces and a strong homogeneity among the blanks used for their production. The rectangular truncations of their basal ends are not usual for Gravette points and are not to my knowledge found beyond Eastern Europe, but they are also found on the (rather narrower) Gravette points from the later site of Khotylëvo 2 (Section 8.4.4). There is an illustrated point from the site of Mezhygirtsy 1 (Ukraine), which appears to be a Gravette point with a sub-rectangular base (Fig. 6.21) (Nuzhnyi, 2009). Mezhygirtsy 1 has yielded a radiocarbon date of 27,070 ^{14}C BP, significantly earlier than Kostënki 4 (*ibid.*) (but see discussion on p. 135). There is also a fragment of a possible Gravette point with an oblique base from Molodova 5 Layer 7 (Fig. 6.21) (*ibid.*). The latter layer has yielded radiocarbon dates of between ca. 25.3 and 23 ^{14}C kyr BP (Haesaerts et al., 2010a); the earlier of these are similar to the new dates for Kostënki 4.

The morphology of most of the Gravette points seems consistent with use as projectile points. The symmetry of the pieces, with their tips located close to the central axes of the lithics, is suggestive of axial hafting.

The ordinary backed bladelets, which so dominate numerically, are an obviously important part of the assemblage. They were created with a great deal more attention

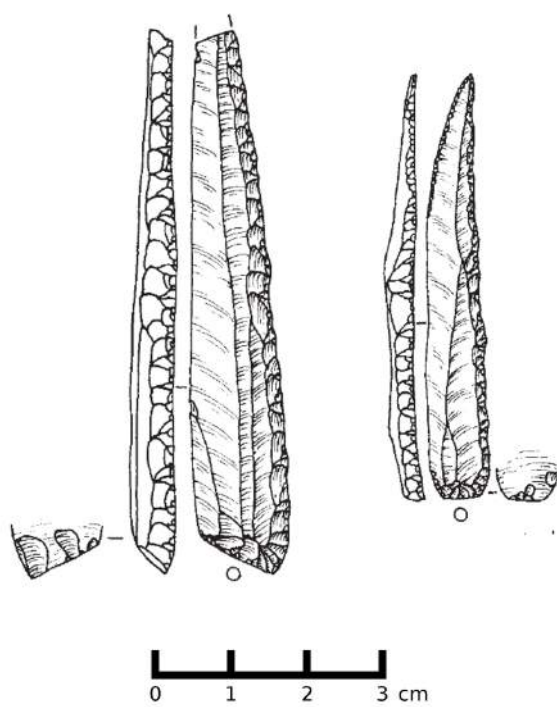


Figure 6.21: Possible truncated Gravette points from Molodova 5 Layer 7 (left) and Mezhygirtsy 1 (right) (Ukraine) (after Nuzhnyi, 2009, Figs. 5 and 2)

than those from Kostënki 21 Layer 3, which also yielded backed bladelets in very large numbers. The frequent truncation of the pieces, including the double truncation of a number of the unbroken lithics, suggests the presence of a particular category of tool here, perhaps most likely to do with cutting or scraping activities. The semi-abrupt direct retouch usually used to truncate the ends also blunted them, probably precluding use as part of composite projectile weapons. The existence of somewhat irregular bladelets within the collection (e.g. Fig. 6.17: f, which is a proximal fragment of a tool made on a relatively irregular blank with deep dorsal scars which was nonetheless carefully retouched) suggests that bladelets were not required to be smooth and regular in all cases. This perhaps indicates a difference in function from the backed bladelets found, for example, at Kostënki 9.

No microgravettes were found among the studied pieces. However, Rogachëv (1955, p. 46) does illustrate a small number of “retouched bladelets”⁹ (Fig. 6.22) from the Layer 1 assemblage. Although most of these are not backed, a few of them could perhaps be described as microgravettes or atypical microgravettes (particularly No. 1).

There are no obvious analogies for this assemblage. The approximately contemporary site of Borshchëvo 5, and its twin, Kostënki 9, are strongly dissimilar from Kostënki 4 in the composition of their assemblages. No Late Gravettian rectangles or convincing fragments thereof were found in the Kostënki 4 assemblage, while the abundance of truncated backed bladelets is unique to Kostënki 4. Furthermore, if we compare just the Gravette points, common to all three sites, differences are apparent. While the bases of the Gravette points at Kostënki 4 are rectangularly or sub-rectangularly truncated, the Gravette point from Kostënki 9 has an obviously rounded base (Fig. 7.6: a), as do those from Borshchëvo 5 (Lisitsyn, 2011).

⁹“микропластинки с ретушью”

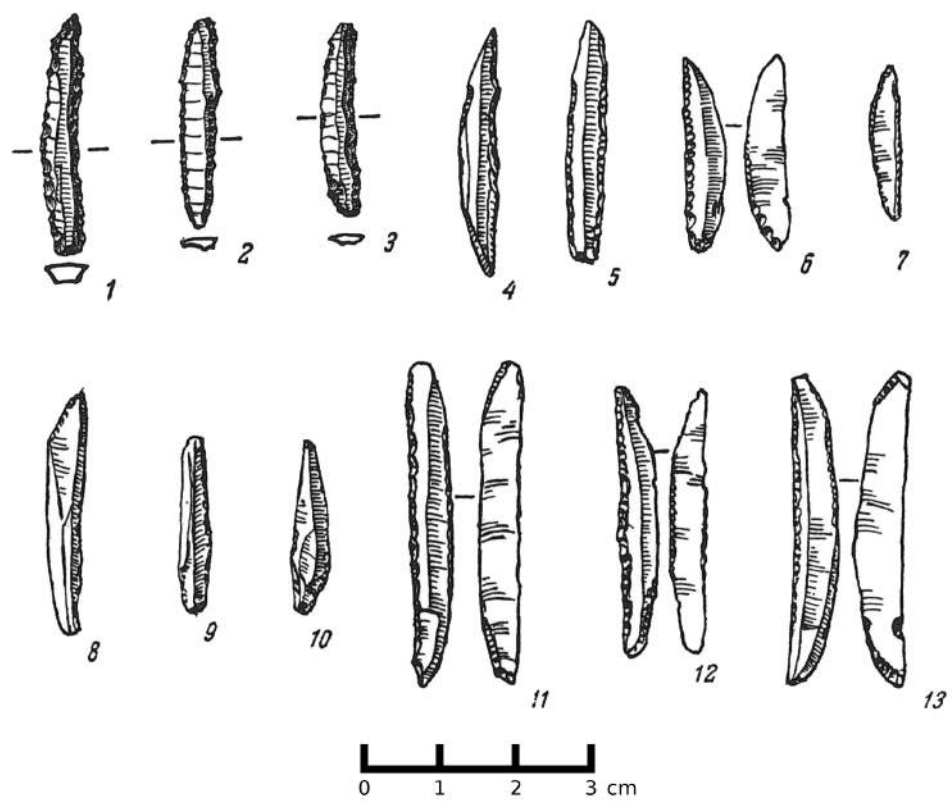


Figure 6.22: Retouched bladelets from Kostënki 4 (after Rogachëv, 1955, Fig. 18)

Chapter 7

Kostënki 9 (Biriuch'ii Log)

7.1 History of excavation and investigation

The site of Kostënki 9 (Biriuch'ii Log) is located very close (50 m) to Kostënki 8, near the mouth of Aleksandrovskii Log on the northeastern slope of the promontory formed by the intersection of Aleksandrovskii and Biriuch'ii Logs (Fig. 2.3) (Litouchanka, 1966, p. 110). It was discovered in 1937 by P. P. Efimenko when (in connection with his work at Kostënki 8) he dug seven test-pits along the side of a dirt road, four of which contained archaeological material (Rogachëv & Anikovich, 1982a, p. 109). In 1953 one of the test-pits was deepened and widened to better study the stratigraphy, and in 1959 A. N. Rogachëv excavated an area of 50 m² (ibid.). The collection studied as part of this research derives from these latter excavations. Small-scale rescue excavations took place in 2006–7 (Pustovalov, 2011).

The site remains little-published and has received limited attention over the last couple of decades. There is only one short article dedicated to it, in Belarusian (Litouchanka, 1966). It has however been included in some reviews of the Russian MUP (Anikovich, 2005; Djindjian et al., 1999; Rogachëv & Anikovich, 1982a; Sinitsyn, 2007). There are no radiocarbon dates from the site and no material suitable for dating could be found in the collection from the site held at IIMK.

The relationship of the Kostënki 9 deposits to the Kostënki-Borshchëvo sedimen-

tological framework has not been firmly established, although it was claimed that the stratigraphy recorded at the site was similar overall to that of Kostënki 8 (Rogachëv & Anikovich, 1982a, p. 109). According to the 1953 excavations, cultural remains were found within a brown loess-like loam as well as within an underlying humified loam, which it was suggested may represent the Upper Humic Bed (*ibid.*). In the more recent rescue excavations, artefacts were quite similarly found within a brown unhumified loam and a weakly humified loam, but the latter was tentatively correlated with the Gmelin soil. Finds were vertically distributed over ca. 80 cm (Pustovalov, 2011, p. 81). The stratigraphic relationship between the cultural layer at Kostënki 9 and the upper layers (1, 1a and 2) of nearby Kostënki 8 have been debated (Pustovalov, 2011; Rogachëv & Anikovich, 1982a) but no consensus has emerged and there is insufficient published information to evaluate the competing claims. Rogachëv (at one stage) and Litovchenko regarded the site as the uppermost level of Kostënki 8 (Beregovaia, 1960; Litouchanka, 1966), while Rogachëv & Anikovich (1982a) suggested that Kostënki 9 could be the continuation of either Layer 1a or 1 of Kostënki 8. Given the fact that the stratigraphy of Kostënki 8 is itself currently disputed (Section 5.1), it is probably not productive to pursue this debate.

Following the 1959 excavations, a dwelling structure was described at the site, based on the presence of a circular accumulation of finds ca. 5–6 m in diameter, with an *in situ* hearth at its centre, and associated large, poorly-preserved mammoth bones suggested to have been used for construction (Litouchanka, 1966, p. 110).

A very small faunal assemblage was found at this site, as follows (MNI/NISP figures in brackets): arctic fox (1/9), hare (1/2), mammoth (1/1), horse (1/1) (Vereshchagin & Kuz'mina, 1977).

7.2 History of interpretation

The most important recent breakthrough in the study of Kostënki 9 is the discovery of a strikingly similar assemblage at Borshchëvo 5 Layer 1. The backed bladelets from

this site are essentially identical to those from Kostënki 9 in shape, dimensions and technology (Lisitsyn, 2011; Sinitsyn, 2007) (Fig. 7.7; see also below). The existence of a twin site is important for the interpretation of Kostënki 9.

However, even in the last decade, there has been a spectrum of published opinion on the cultural affiliation of Kostënki 9. Sinitsyn (2007) defines a Kostënki 9-Borshchëvo 5 *faciës* among several which he attributes to the Recent Gravettian at Kostënki—he sees similarity between the sites not only in their backed bladelet assemblage but also among “des pointes symétrique ou asymétrique dont les bords portent une retouche semi-abrupte parfois importante”¹ (Sinitsyn, 2007, p. 197). Lisitsyn (2011), the ongoing excavator of Borshchëvo 5, supports this opinion, outlining the similarities in terms of lithic assemblage composition and technology between the two sites, as well as emphasising the identical nature of a major part of the backed bladelet assemblage.

In contrast, Anikovich (2005) describes Kostënki 9 as a site “in which Aurignacoid elements co-occur with distinctly Gravettoid features”; however, he sees it as “culturally unrelated” to sites containing “definitely Aurignacoid industries.” Anikovich defines his “Aurignacoid technocomplex” by the presence of massive blades, invasive retouch, frequent burin spall removals, amorphous or absent bladelets, and the predominance of Aurignacian blades, *grattoirs*, carinated scrapers, *burins busqués*, and Dufour bladelets—presumably he recognised some of these features in the Kostënki 9 collection, while seeing the backed bladelets as “Gravettoid” but no further details are given. In any case he does not draw any similarities with any other sites.

Pustovalov (2011) describes the Kostënki 9 assemblage as being most similar to the “Anosovko-Telmansky archaeological culture” including the sites of Kostënki 8 Layer 1 and Kostënki 11 Layer 3. This archaeological culture is discussed in more detail by Anikovich (2005, p. 88); however, neither of these assemblages contain backed bladelets (Klein, 1969), so in this important feature they appear to bear little relation to the assemblages under discussion here.

¹“the symmetrical or asymmetrical points whose edges bear sometimes considerable semi-abrupt retouch”

Other reviews do not add much to the interpretation of the site. Djindjian et al. (1999, p. 430) describe it as being “d’attribution gravettienne incertaine, proche de la couche 1 de Kostienki 8.”² It is omitted from the important review of the Eastern Gravettian by Kozłowski (1986).

7.3 Collections and sampling

The lithic collection deriving from Rogachëv’s 1950s excavations is relatively small and is held at the IIMK, Saint Petersburg. Authors differ regarding the number of lithics found at the site: Rogachëv & Anikovich (1982a) give a figure of “more than 2,300” for the entire lithic collection, of which ca. 300 have retouch or wear traces; Litouchanka (1966) writes that during the 1959 excavations 2,340 pieces of knapped flint were found, including 502 with retouch. She gives a count of 69 backed bladelets; according to Rogachëv & Anikovich (1982a) there are “more than 80” backed blades and 5 backed points. During this research, 94 backed bladelets and points were identified in the collection, all of which were studied.

Aside from the backed bladelets, other lithic typological categories described in the literature include splintered pieces, scrapers, “leaf-points”, burins, perforators and blades, flakes and fragments thereof with retouch and/or use-wear (Litouchanka, 1966). There are some quartzite and sandstone artefacts which may relate to grinding activities, and some possibly polished slate artefacts (ibid.). Also found at the site were a single perforated arctic fox canine, a small marl artefact said to depict an animal or bird head, a polisher created on a mammoth rib and several pieces of worked mammoth ivory (Rogachëv & Anikovich, 1982a, p. 112).

²“of uncertain Gravettian attribution, similar to Layer 1 of Kostënki 8”

7.4 Backed lithic assemblage

7.4.1 Typological categories

Most studied lithics from Kostënki 9 fall into a single typological category, but other pieces are also present. The categories defined during this research are as follows.

Rectangular flat backed bladelets (n=84). This category, which dominates the backed lithic assemblage, is made up of rectilinear bladelets, straight in profile and with flat ventral surfaces, with inversely retouched rectangular or curved ends.

Gravette point (n=1). This category contains a single very typical Gravette point.

Other backed bladelets and points (n=9). All other pieces studied were included in this category. It includes several backed points or awls, as well as other very miscellaneous pieces.

7.4.2 Rectangular flat backed bladelets

The Kostënki 9 backed lithic assemblage is dominated by a single typological category, numbering 84 pieces out of a total of 94 studied. This category consists of bladelets with rectilinear or sub-rectilinear edges and which have flat ventral surfaces and inversely retouched ends. Examples of this category are shown in Figure 7.1.

The majority of these bladelets were broken, with proximal fragments outnumbering medial and distal, as seen in Figure 7.2.

The widths and thicknesses of these pieces are given in the histograms in Figures 7.3 and 7.4. There is a weak correlation between width and thickness for these pieces ($r=0.35$). This could be in part because the data are too coarse (measurements were taken to the nearest millimetre), or because there is simply a weak correlation between width and thickness among these bladelets. The sample of unbroken backed bladelets is very small ($n=8$) but their lengths range from 31 mm to 47 mm (mean: 38 mm; SD: 5.7).

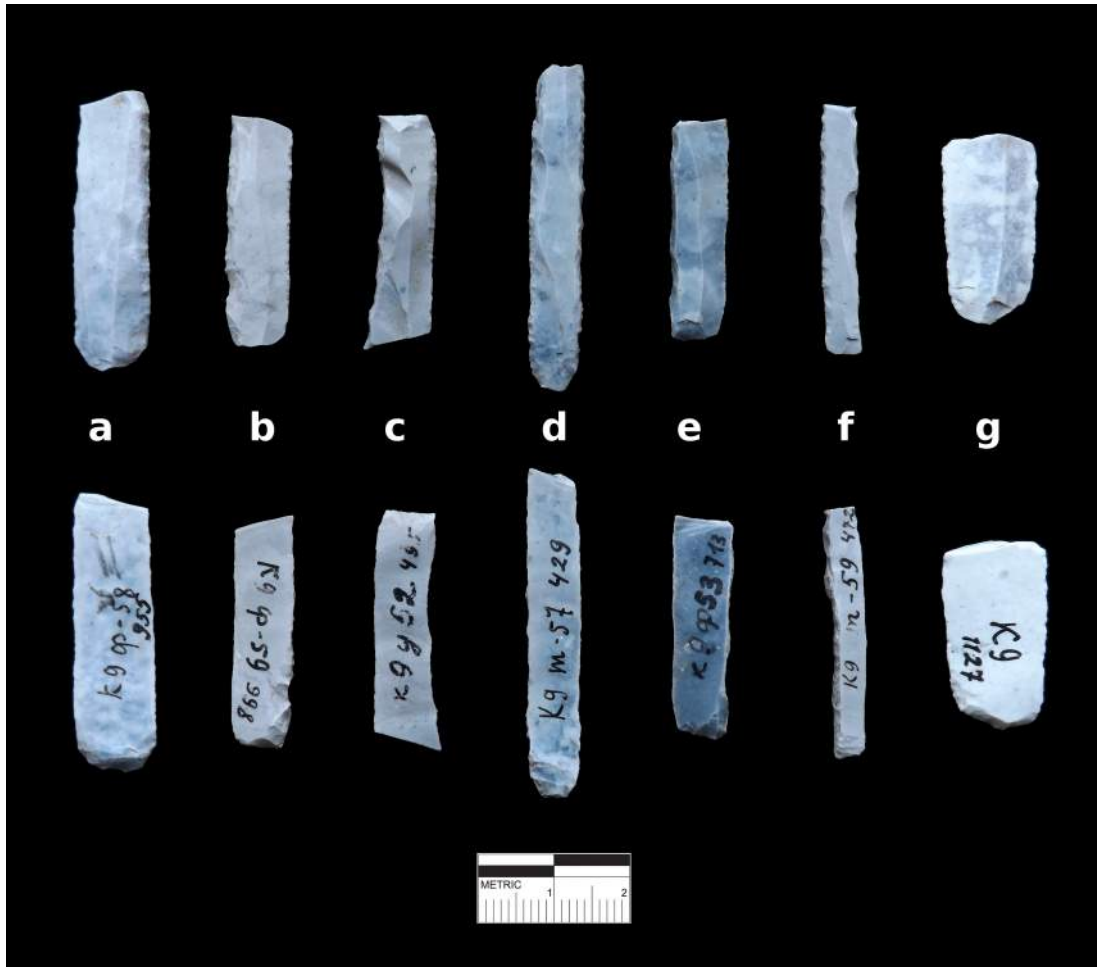


Figure 7.1: Rectangular backed bladelets from Kostënki 9: dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph

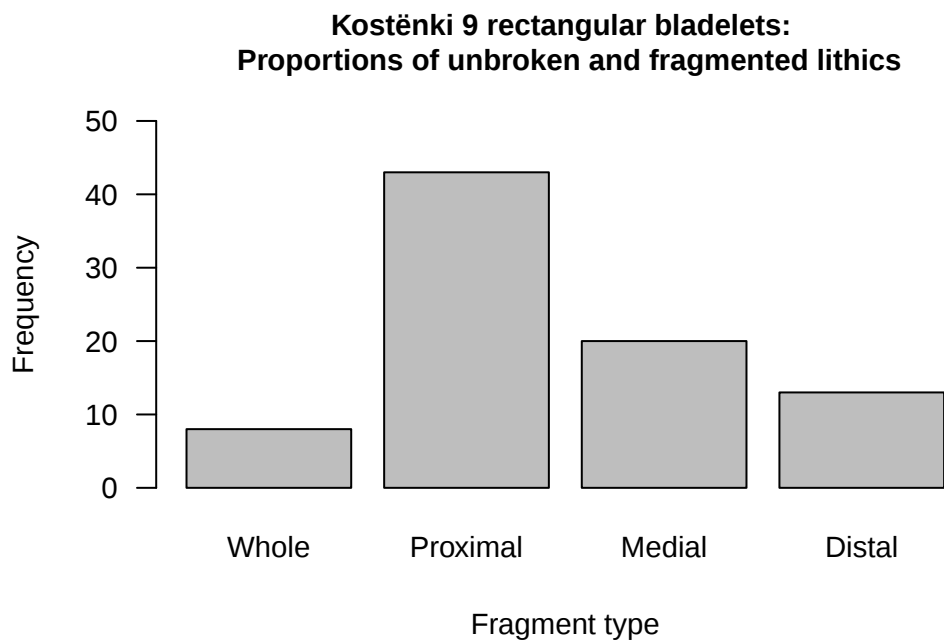


Figure 7.2: Rectangular backed bladelets from Kostënki 9: counts of whole examples and fragments (n=84)

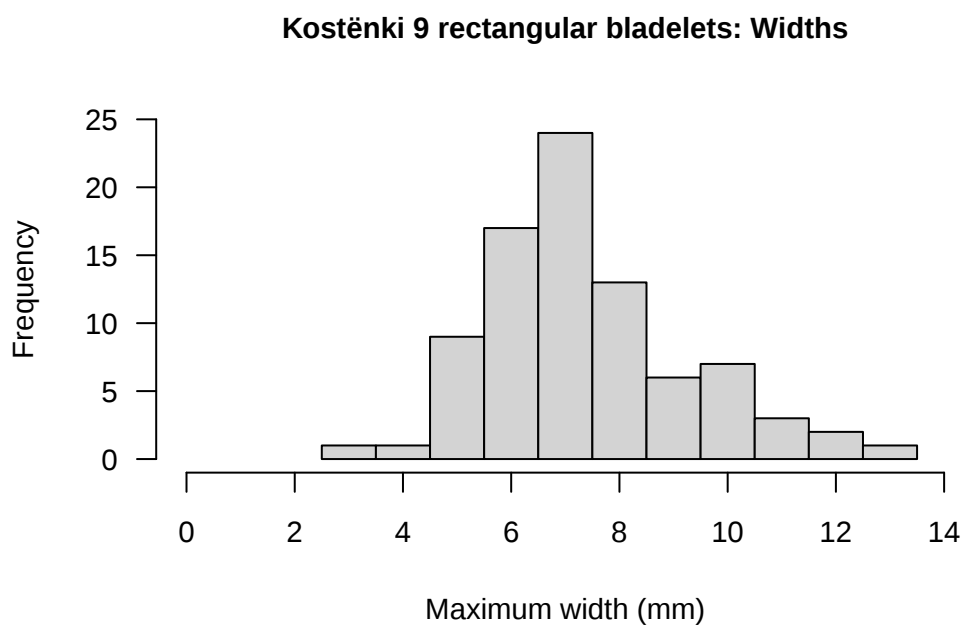


Figure 7.3: Rectangular backed bladelets from Kostënki 9: histogram of widths (n=84)

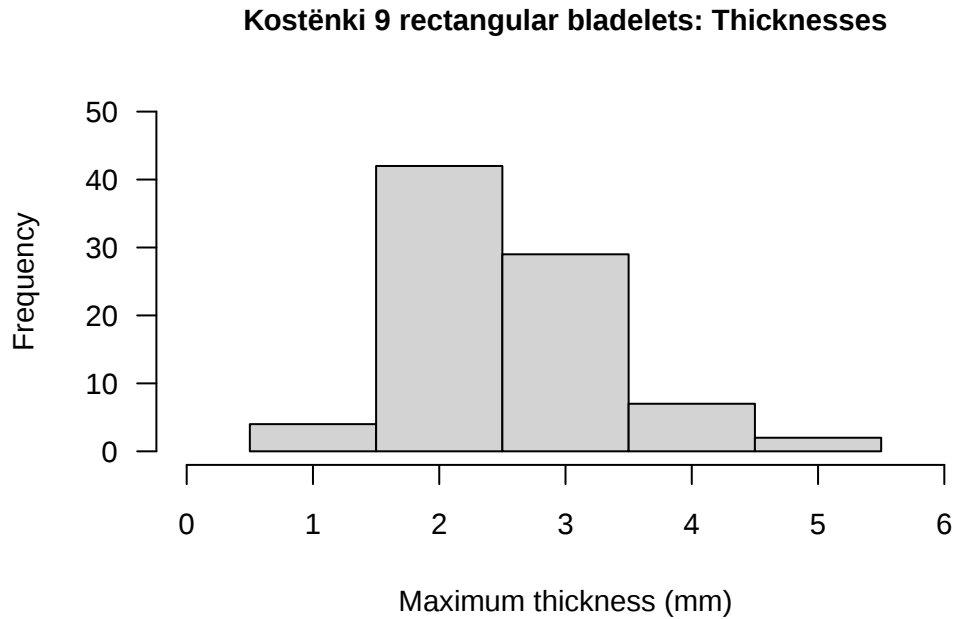


Figure 7.4: Rectangular backed bladelets from Kostënki 9: histogram of thicknesses (n=84)

Often (n=28), *both* lateral edges of these bladelets are backed. In this case, usually one edge bears more invasive backing than the other—most often, the right edge (n=21)³. Figure 7.5 and Table 7.1 show the proportion of bladelets with each combination. (Two bladelets could not be classified, as only a single (backed) edge was extant.)

In some cases, it was very difficult to differentiate “semi-abrupt backing” from

³A binomial test indicated that the proportion of rectangular backed bladelets with backing on both edges but with backing more invasive on the right edge than on the left (21/25) was higher than expected (1/2) ($p < 0.001$).

Backed edge	Count
Left	20
Right	34
Both (Left more invasive)	4
Both (Right more invasive)	21
Both (Equally invasive)	3
Indeterminate	2
Total	84

Table 7.1: Rectangular backed bladelets from Kostënki 9: backing by edge

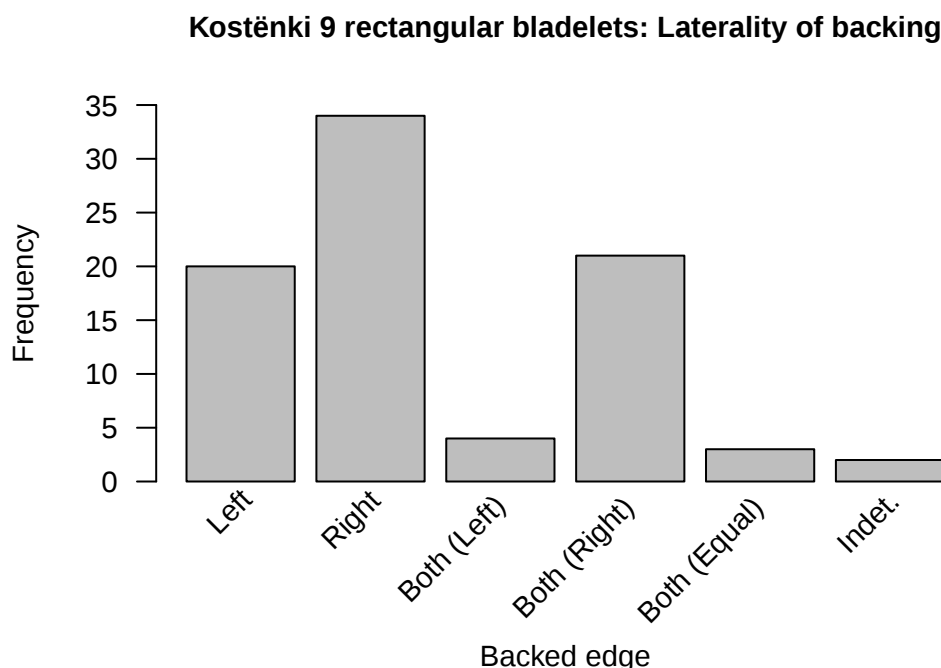


Figure 7.5: Rectangular backed bladelets from Kostënki 9: backing by edge

“marginal semi-abrupt retouch”: there is a continuum of retouch types between retouch which is uninvasive but nonetheless blunts rather than sharpens the edge, and abrupt invasive backing of edges. The distinction drawn here between retouch and backing is necessarily arbitrary in these cases—as a rule, very marginal retouch which did not form a “back” was not described as “backing” even if it blunted the edge. Such retouch, however, was generally regular and seemed deliberate, rather than being a product of damage during use.

The treatment of the ends of the bladelets is consistent. In almost all cases (Tables 7.2 and 7.3), the ends bear inverse retouch, almost always short and semi-abrupt, forming a sub-rectangular, sub-rounded, rectangular or rounded end. In a couple of cases the ends form points, and, rarely, an end is left unmodified. In the case of the eight unbroken bladelets, four have proximal and distal ends with the same morphology (e.g. both sub-rounded) while the other four have ends with different morphologies.

In all but one case, the striking platform is removed (Table 7.4), and the bulb of

Treatment of end	Proximal ends	Distal ends
Inverse truncating retouch	49	17
Retouched to point	1	1
Unmodified end	1	3
Break	33	63
Total	84	84

Table 7.2: Rectangular backed bladelets from Kostënki 9: treatment of ends

Morphology of end	Proximal ends	Distal ends
Rounded	0	1
Sub-rounded	29	6
Rectangular	4	4
Sub-rectangular	14	6
Sub-pointed	1	1
Indeterminate	2	3
Break	34	63
Total	84	84

Table 7.3: Rectangular backed bladelets from Kostënki 9: morphology of ends

percussion is usually completely removed (Table 7.5). Often, inverse removals continue part-way up one or both edges of the ventral surface of the piece. The ventral surface of the bladelets is flat (to within 1 mm tolerance) in almost all cases (n=74, 88%); in a minority of examples it is concave (n=7, 8%) or twisted (n=3, 4%).

All of these bladelets were made on dark brown translucent fine-grained flint, patinated (often heavily) to white, blue and/or grey. One bladelet was burnt. The heavy patination of these bladelets in comparison with bladelets made on similar dark brown fine-grained flint at other Kostënki sites could be due to differences in taphonomic history or reflect different raw material sources. The high degree of patination contrasts

Treatment of striking platform	Count
Unmodified (plain)	1
Removed	51
Missing (proximal break)	32
Total	84

Table 7.4: Rectangular backed bladelets from Kostënki 9: treatment of striking platforms

Treatment of bulb of percussion	Count
Unmodified	1
Partially (< 50%) removed	3
Mostly (> 50%) removed	3
Fully removed	45
Missing (proximal break)	32
Total	84

Table 7.5: Rectangular backed bladelets from Kostënki 9: treatment of bulbs of percussion

with what is seen in the assemblage from Kostënki 8 Layer 2, which may have some bearing on the debate concerning the stratigraphic relationship between these two sites (Section 7.1).

7.4.3 Gravette point

The single classic Gravette point (Fig. 7.6: a) is 48 mm long, 10 mm wide and 4 mm thick. It is made on a small blade blank which has a slightly sinuous ventral face and unipolar dorsal scars. There is continuous slightly convex direct abrupt backing on the right edge, becoming more marginal distally. The left edge of the piece bears direct semi-abrupt retouch over most of its length, disappearing for the proximal 6 mm. The sub-rounded proximal end has been modified with low-angle to semi-abrupt inverse removals, covering the proximal 5 mm of the piece and which continues along the right and left edges towards the distal end for another 5 and 7 mm respectively. The striking platform and bulb of percussion have been removed entirely. There is a small break to the distal tip of the piece but it is otherwise intact. Interestingly, this point is made on obviously different flint to all the rest of the bladelets studied from Kostënki 9: it is fine-grained opaque grey material, with very slight or no patination. This raises the possibility that the lithic may have been imported to the site from elsewhere, or that it is intrusive to the cultural layer.

7.4.4 Other backed bladelets and points

Nine further backed bladelets were studied as part of this project. This includes four points and five miscellaneous pieces (including one possible awl).

The other four points (Figure 7.6: b–e) are quite varied in shape. They include three whole pieces and one proximal fragment. Some of these (Figure 7.6: b and d) could perhaps be described as Gravette points. The points are rather varied in size, with the whole examples ranging from 42 mm to 58 mm in length and from 8 mm to 14 mm in width. The three whole examples are all backed on the right edge; the fragment is backed on the left but unlike the other pieces has its point on the proximal end, so that it *could* have been rotated to mirror the other points. Morphologically the points vary greatly, with one example being sub-rectilinear, another having a sinuous backed edge and another tapering towards the distal end. These points are all made on similar flint to the main group of backed bladelets.

Finally, there are five miscellaneous bladelets or small blades with backing. One of these could be an awl, as its distal end forms a narrow, blunt point for the distal 7 mm. The final four pieces are very miscellaneous in terms of their form.

7.5 Bladelet blank production techniques

The bladelets used for backing appear to have been produced on single-platform or opposed-platform prismatic cores. Of the 84 rectilinear or sub-rectilinear backed bladelets, only three (4%) had bipolar dorsal scars and one (1%) had possible bipolar dorsal scars (in this case it was unclear whether the relevant scar resulted from damage). Only one of these bladelets had an edge consistent with a burin spall blank, which could equally have derived from a near-90° angle on the surface of any type of nucleus.

As already mentioned, the vast majority (n=74, 88%) of these bladelets have a flat (within a 1 mm tolerance) ventral surface, with the remainder having a concave (n=7, 8%) or twisted (n=3, 4%) surface. The majority of bladelets have a single arris running

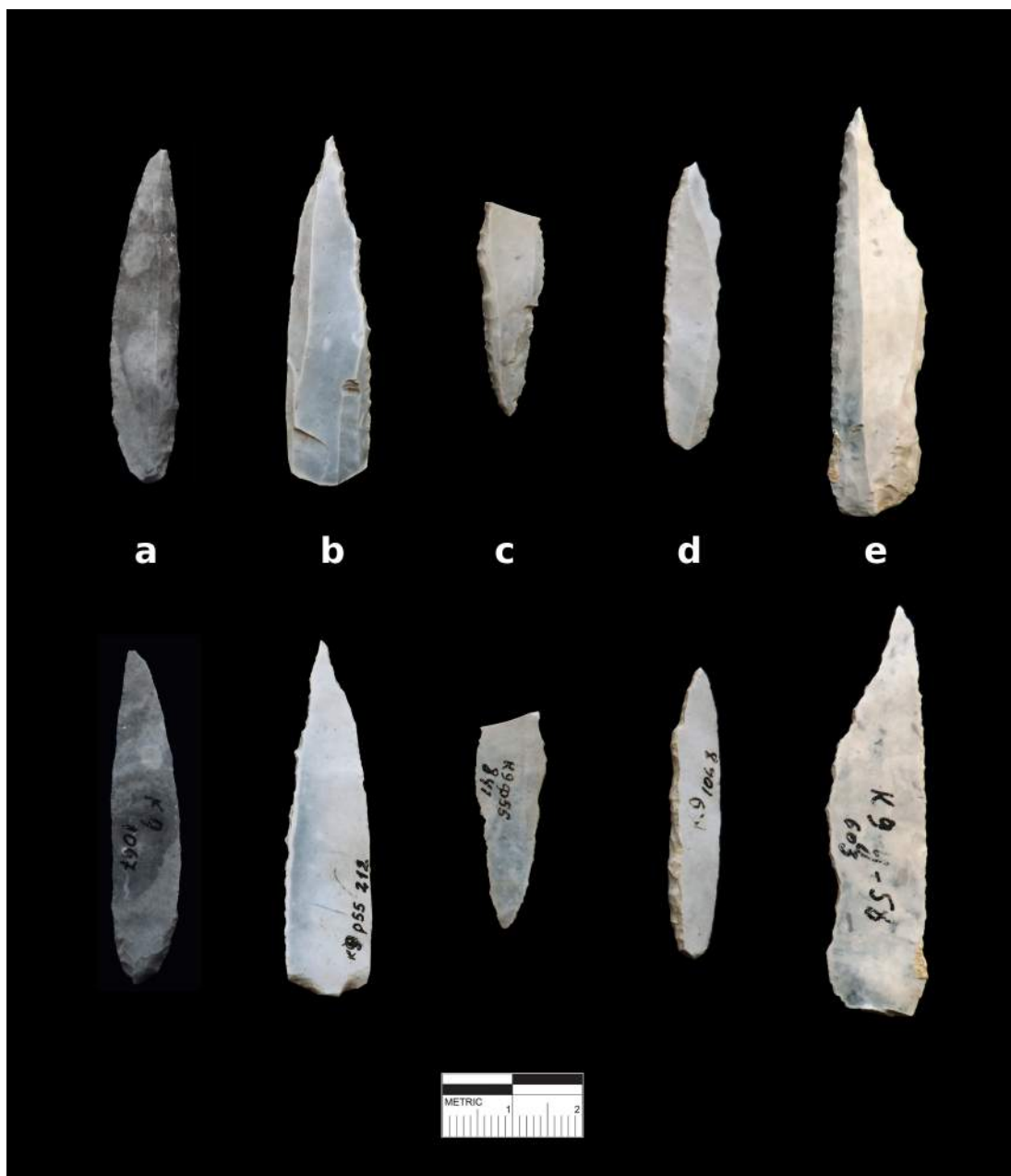


Figure 7.6: A Gravette point (a) and other points (b–e) from Kostënki 9: dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph

the length of the bladelet on the dorsal surface (sometimes with additional shorter arrises). On the few (n=7) bladelets where the bulb of percussion was present or partly present, the bulb is diffuse, consistent with soft hammer percussion.

Overall, these data show that the blanks used for producing this category of backed bladelet were homogeneous, and that the blanks preferred for backing were flat and rectilinear-sided bladelets, often triangular in section. The retouched bladelets are fairly wide on average but there is a large range of widths (range: 3 mm to 13 mm; median: 7 mm; mean: 7.4 mm; SD: 1.9) (Fig. 7.3). The longest backed bladelet is 47 mm long; it is truncated at both ends, indicating a blank of > 50 mm in length.

The blanks used for the other backed lithics studied here do not differ significantly in terms of production techniques from those already described.

Twelve cores were identified within the collection. Eleven of these were made of dark-brown translucent flint, usually heavily patinated to blue-grey and white, and similar to the vast majority of the bladelets. They were all worked to exhaustion and are typically very small (the largest is 54 mm x 37 mm x 24 mm in size). The largest removal scar on this (or any) core was 55 mm x 17 mm: a similar size to the blanks used for creating the rectangular bladelets. The majority of surviving removal scars were much smaller. Most cores were made on large flakes; at least one appears to re-use a retouched blade or flake. Four retain some cortex. Ten have evidence for at least two striking platforms; these include cores with two opposed platforms (n=5), cores with two platforms approximately orthogonal to one another (n=2), and multi-platform cores (n=3). The bladelet removal techniques included occasional burin-type removals. Extant striking platforms were usually formed by flake removals.

Clearly, raw material was being used to its maximum possible extent. The appearance of these bladelet cores and the evidence for quite ad hoc blank production, at least late in the reduction sequence, is at odds with the homogeneous appearance of the backed bladelets. It must be presumed that more systematic prismatic bladelet production, creating the flat, rectilinear blanks used for backing, took place earlier in the reduction sequence (or on cores that for some reason are not represented in the

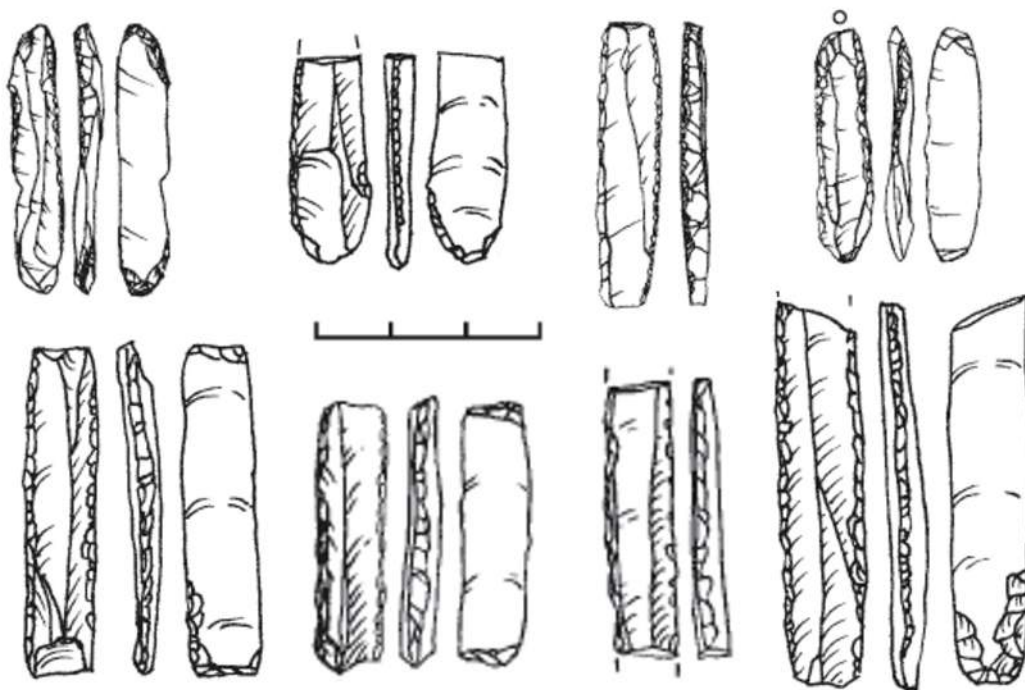


Figure 7.7: Rectangular backed bladelets from Borshchëvo 5 (after Lisitsyn, 2011, Figs. 2 and 5)

assemblage). This is confirmed by the fact that very few of the bladelet removal scars seen on the cores are large enough to have produced blanks corresponding even to the smallest of the whole backed bladelets.

7.6 Discussion

The function of the majority of backed bladelets in this assemblage remains obscure. They lack any obvious utility as part of projectile weaponry; with their blunted ends, it is difficult to see how even those which retain one sharp edge could have formed part of a weapon. It is more likely that they were used for some kind of cutting or fine processing. Regarding the many bladelets with double backing, one possibility is that they were used for scraping, perhaps as part of fur or hide processing. Unfortunately, no use-wear studies have yet been carried out on these pieces or those from Borshchëvo 5.

If the rectangular bladelets were used for cutting, scraping or some similar activity,

rather than having anything to do with projectiles, there are ramifications for any interpretation of site usage. If the main group of 84 bladelets is excluded from use as part of weaponry, then it reduces the number of lithic pieces which could potentially have served as weapon tips to a small handful. (It must, however, be remembered that smaller lithics may not have been recovered during excavation.) Neither are there any non-backed lithics whose morphology is consistent with use as part of projectiles. Even taking into account the small overall size of the lithic assemblage, the quantity of possible projectile components is very low in comparison with the proportions of such lithics at other sites. The existence of a large assemblage of homogeneous tools of unknown purpose raises the possibility that this was a site with a specialised, albeit unknown, function. The relatively small size of the assemblage and the fact that only a single hearth was found could be argued to lend support to this scenario. The faunal assemblage from the site is very small but arctic fox and hare are both present, with mammoth and horse represented only by single bones. The assemblage is consistent with use of the site for fur processing, but this is a speculative suggestion.

The preference for backing on the right edge of the bladelet blanks is enigmatic. The pattern seen here matches that seen on Gravette points and microgravettes across Europe; however, the symmetry seen here in the finished rectangular backed bladelets makes this even more difficult to explain. As most of the pieces are flat, rectilinear, have similar treatment to both ends, and have had their bulbs of percussion removed, they appear completely reversible. Perhaps the most plausible explanation is simply that backing on the right-hand edge was habitually preferred in manufacture, perhaps influenced by the creation of (non-symmetrical) Gravette points and backed bladelets which did require backing on the right-hand edge for some reason.

The rectangular backed bladelets are idiosyncratic and form an obvious typological category. Recently, Wilczyński et al. (in press) have defined a new typological category—“Late Gravettian rectangles”—based on the lithics found at Jaksice II (Poland), where a Gravettian lithic assemblage is found in association with an interstadial soil. These are described as follows:

“One group of more outstanding rectangles . . . have an edge worked by single lateral abrupt retouch and straight truncations of both ends, modified by semi-abrupt or flat retouch, always on their ventral side . . . On some of these specimens a flat ventral retouch partly covering the lateral edge is also observed. A single specimen of such a rectangle has a denticulated retouched edge. The rectangles tend to be very slender—more than half are only 3–5 mm wide and about 4 cm long. Like other backed forms they were probably used as inserts on hunting weapons.” (Wilczyński et al., in press)

Judging by the description and the available illustrations, the rectangles found there are clearly extremely similar to those found at Kostënki 9 and Borshchëvo 5; I would also describe at least one of the illustrated “microgravettes” from Jaksice II as a rectangle with convex ends, similar to those found in Russia (Fig. 7.8). The principal differences between the Jaksice II rectangles and those found at Kostënki 9 lie in their dimensions and backing. Those from Kostënki 9 are considerably wider (compare Fig. 7.3 with the description of more than half the Jaksice II bladelets being 3–5 mm wide) but probably about the same length. Furthermore, none of the rectangles from Jaksice II are described as having backing on both lateral edges, and none of the bladelets from Kostënki 9 have a denticulated retouched edge, as described for one of the pieces from Jaksice II.

The radiocarbon dates for Jaksice II, of between ca. 24,000 and 21,000 ^{14}C years BP, are contradictory and some were obtained on sub-optimal material, such as mammoth tooth and burnt mammoth bone. This assemblage provides an excellent analogy for Borshchëvo 5 and Kostënki 9; unfortunately, the radiocarbon dating is currently insufficient to be sure whether Jaksice II is contemporary with Borshchëvo 5 or is younger. As at Borshchëvo 5 and Kostënki 9, no convincing shouldered points were found. The association with a palaeosol could indicate correlation with Greenland Interstadial (GI) 4 or GI 3.

Wilczyński et al. (in press) suggest that Late Gravettian rectangles can also be found

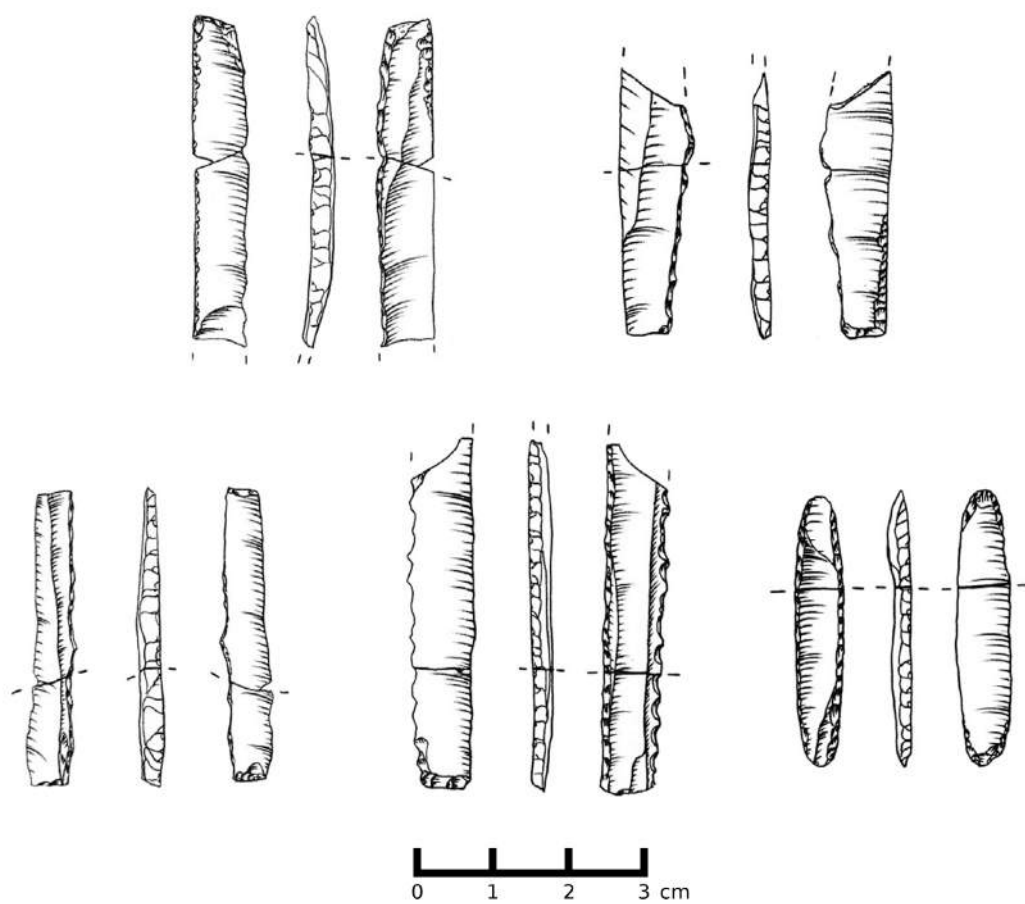


Figure 7.8: Rectangles and a “microgravette” (bottom right) from Jaksice II (modified after Wilczyński et al., in press, Fig. 9)

in the assemblages from Trenčianske Bohuslavice (Slovakia), Molodova V Layer VII, Kostënki 1 Layer 1 and Avdeevo. Their identification at the latter three sites, which all contain shouldered points and are dated to several thousand years later than Borshchëvo 5, demonstrate that this lithic type may have been made over quite a long period of time. No shouldered points were found at Trenčianske Bohuslavice and, while it is not clear where within the site the rectangles mentioned by Wilczyński et al. (in press) were found, some radiocarbon dates for the site do place at least some activity close to GI 4 and earlier than the Russian sites with shouldered points (Vlačiky et al., 2013).

Beyond those sites, there are other sites in Eastern and Central Europe which have yielded similar artefacts. Layer 8 of Willendorf II is dated by multiple consistent radiocarbon dates to ca. 25,000 ^{14}C years BP and is also correlated with GI 4 based on the dating and sedimentology (Haesaerts et al., 2010a; Nigst et al., 2008a). It too contains some possible Late Gravettian rectangles; apart from that the assemblage includes *flèches* and microgravettes, in contrast with the Russian sites (Otte, 1981, p. 280).

Litouchanka (1966) cites the site of Pavlov (Czech Republic) as providing analogies for these artefacts. Illustrations of similar artefacts from Pavlov I can be found in the literature (Figure 7.9). The artefacts from Pavlov differ in that the ends are usually rounded or slightly pointed, rather than sub-rectangular. Their sizes also seem to vary more than those from Kostënki 9. There are also bladelets from Pavlov which have the same general shape and retouch to the ends as the backed bladelets illustrated, but without any backing; their lateral edges may bear other kinds of retouch. At Kostënki 9 all the bladelets bearing inverse retouch of the ends are backed.

“Late Gravettian rectangles” are an important new index fossil. I would suggest that their definition should be expanded to include those with curved ends. In order to gain a proper perspective on their variability and chronology, comparative study is necessary.

Beyond the Gravettian, they share some similarities with Font-Yves bladelets (which have been interpreted as knives), in that both edges bear retouch and the right edge

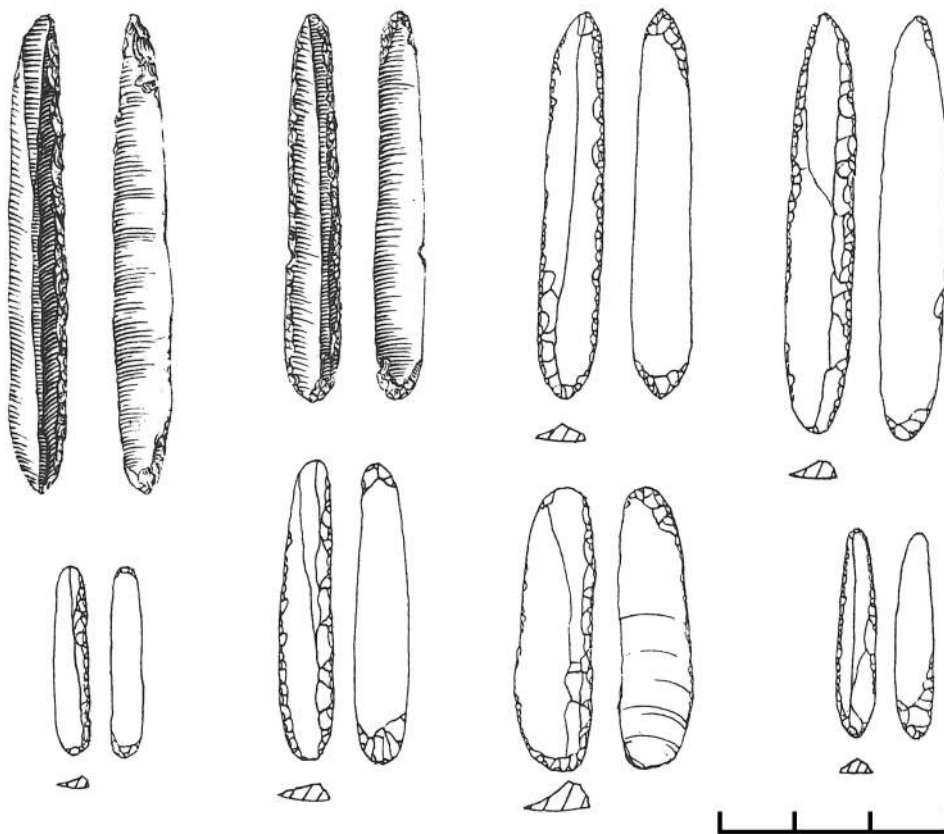


Figure 7.9: Backed bladelets from Pavlov, Czech Republic (after Klíma, 1961, 1997)

generally bears more substantial retouch than the left (Demars & Laurent, 1992, p. 105). However, the Kostënki 9 backed bladelets are more rectilinear and inverse truncations are not usual for Font-Yves bladelets. They are also similar to the rectangles known especially in the Western European Magdalenian, but the latter typically have directly retouched truncations of their ends and these truncations are either rectangular or oblique (Demars & Laurent, 1992, p. 119). A comparison can also be made with Late Mesolithic rods found in Britain; they have some overall similarities in their morphology, and, like Late Gravettian rectangles, their function remains obscure (Myers, 1989).

The dating of the twin site of Borshchëvo 5 and the presence at Kostënki 9 of one definite Gravette point and several pieces which could be described as atypical Gravette points demonstrates that the site can be attributed to the European Gravettian. The fact that this classification rests heavily on a single artefact at Kostënki 9 is disqui-

etening, especially as it differs in its raw material from the remainder of the backed assemblage. However, at Borshchëvo 5, Gravette points have been found in greater abundance (Lisitsyn, 2011). The sites of Kostënki 9 and Borshchëvo 5 differ strongly from all the other assemblages studied during this project; it is likely however that the function of the site played a significant role in creating this difference, and not necessarily cultural variation.

Chapter 8

Khotylëvo 2

8.1 History of excavation and investigation

The site is located at the edge of the village of Khotylëvo, approximately 20 km north-west of the city of Bryansk. It is found ca. 400 km north-west of Kostënki and ca. 330 km west-northwest of Gagarino (Fig. 2.2). Khotylëvo 2 itself is located on a plateau above the right bank of the Desna river, which itself is located in an extensive floodplain (Fig. 8.1).

The site was discovered in 1968 by F. M. Zaverniaev as the result of explorations that took place from 1966 after his find of a fragment of mammoth bone in the area (Gavrilov, 2008). The first cultural remains were found on a spur between two small ravines, 15–20 m above the flood plain of the Desna. Excavations led by Zaverniaev took place from 1969 until 1975 and again in 1977 and 1981. Following test-pitting in 2003, excavations at Khotylëvo were begun again in 2005 (Voskresenskaia & Gavrilov, 2011) and continue to the present day, directed by K. N. Gavrilov. The new excavations are being carried out several hundred metres further away from the river, but the assemblage found to date is apparently similar to that from the original site.

The site is well-published in Russian, with numerous articles by the excavators and a book available (Gavrilov, 1998, 2004, 2008; Zaverniaev, 1974, 1991). Very little has found its way into the Western literature. It is mentioned in some but not all English-



Figure 8.1: View from Khotylëvo excavations towards the Desna (not seen), August 2012 (Photo N. Reynolds)

and French-language reviews of the Russian MUP (e.g. Djindjian et al., 1999; Hoffecker, 2002; Kozłowski, 1986; Sinitsyn, 2007; Soffer, 1985; Vishnyatsky & Nehoroshev, 2004).

Only one cultural layer has been found at the site. The site is found at a depth of several metres (ca. 5 m in the area of the new excavations) below the modern surface, within an extensive and well-preserved Late Pleistocene sedimentary sequence. As only one cultural layer is present and the sequence is relatively undisturbed, the stratigraphy is far less complicated than that of the Kostënki-Borshchëvo sites. Palaeolithic archaeological remains of non-MUP time are found at other sites at Khotylëvo, particularly Mousterian (Ocherednoi, 2011), but not at Khotylëvo 2 itself.

In the new excavations, for which we have better sedimentological descriptions than Zaverniaev's, it is clear that the pedostratigraphy of the sequence and cultural layer contains a lot of information, which is still being studied. The following summary is based on that by Gavrilov (2008, pp. 17, 23–24). The cultural layer is buried by several metres of loesses laid down during the LGM and perhaps the Late Glacial. The top of the cultural layer appeared as a seam of pale bluish grey or grey-brown loess-like loam, containing badly preserved fragments of bone and ivory. Layers of pale brown gleyed sandy loam and lenses of sand were also found. The vast majority of the finds were associated with a thin layer of lightly humified loam of grey colour with a brownish tinge, up to 5 cm in thickness (Fig. 4.12, p. 93). The cultural layer has been strongly affected by the creation and subsequent disappearance of permafrost and ice wedges, which have displaced the layer in blocks and moved some finds deeper than the lightly humified layer; the maximum vertical displacement recorded is 36 cm. The tops of the ice wedges which disturbed the cultural layer were located at the top of the above-mentioned thin bluish-grey or grey brown layer containing badly preserved osseous material. More ice wedge casts are found further up the stratigraphy. Below the lightly humified cultural layer, there are at least 1.7 m of loess-like bluish grey loam. In the lower part of this loam, redeposited lenses of chalk and dark-grey humified material were found.

The cultural layer has also been affected by slope action, although it is close to

Khotylëvo 2			
Species		NISP	MNI
<i>Mammals</i>			
<i>Mammuthus primigenius</i>	Mammoth	>616	no data
<i>Coelodonta antiquitatis</i>	Woolly rhinoceros	2	1
<i>Bison priscus</i>	Steppe bison	15	1
<i>Ursus arctos</i>	Brown bear	6	1
<i>Canis lupus</i>	Wolf	276	6
<i>Gulo gulo</i>	Wolverine	159	6
<i>Alopex lagopus</i>	Arctic fox	191	2
<i>Lepus sp.</i>	Hare	8	1
<i>Birds</i>			
<i>Lagopus lagopus</i>	Willow ptarmigan	80	10
<i>Bucephala clangula</i>	Goldeneye	1	1
Total		>1354	>29

Table 8.1: Fauna from Khotylëvo 2, excluding microfauna (from Soffer, 1985)

horizontal. Its thickness ranges from 3 cm to 50 cm where pits and depressions are found (Gavrilov, 1998). A range of hearths, pits and accumulations of ash and other materials have been described at the site, and it has been argued that there were three dwelling structures located in the area of Zaverniaev's excavations, one of which has been suggested to be similar to the small dwelling structure at Pushkari I (Ukraine) (Gavrilov, 1998).

The faunal list given by Soffer (1985) is not exhaustive: the faunal collections were distributed to many different institutions and only some of them are included in the counts given (Table 8.1). The microfaunal assemblage is dominated by tundra species, including *Lemmus obensis* and *Microtus gregalis* (Soffer, 1985, pp. 155–157). The rest of the faunal assemblage, however, contains species that according to Soffer are more often found in forests: wolverine, brown bear and bison.

In terms of human remains, some fragments of deciduous tooth and mandible, belonging to a child, were found (Soffer, 1985, p. 141).

8.2 History of interpretation

There have been two main areas of discussion regarding similarities with other sites. Comparisons have been primarily based on the lithic assemblage and on the osseous industry, including decorative artefacts. The first line of debate involves comparisons with the Kostënki-Avdeevo Culture (i.e., the sites of Kostënki 1 Layer 1, Avdeevo and others). The second concerns comparisons with Moravian sites and those further west.

Some authors simply describe the site as being part of the Kostënki-Avdeevo culture. For example, Djindjian et al. (1999, p. 427) define the site as “*Gravettien récent de type Kostienki-Avdeevo*.” Soffer (1985, p. 446) finds that the lithics, art and osseous assemblage are all strongly similar to the Kostënki-Avdeevo sites. Grigor’ev (1993, p. 64) sees Khotylëvo 2 as the representation of an “indigenous population” under the influence of groups from his Willendorf-Kostënki cultural unity, of which the “Kostënki-Avdeevo Archaeological Culture” is a key component.

Sinitsyn (2007, p. 186) includes the site in the Kostënki-Avdeevo Culture but describes this attribution as “*fortement problématique*.” He describes it as being similar to Kostënki 1, Avdeevo and Gagarino based on the technology and typology of the lithic assemblages, but different in terms of the bone industry (including decorative objects). He writes that the lithic collection also differs from classic Kostënki-Avdeevo sites in its typological composition and the presence of particular (unspecified) lithic index fossils (Sinitsyn, 2007, p. 186). He also notes differences with Kostënki 1-1, Avdeevo and Gagarino in terms of dwelling structures (Sinitsyn, 2013, p. 10).

Zaverniaev (1991, pp. 180–181) notes, based on the lithic industry, that there are general similarities with the sites of Kostënki 1 Layer 1, Kostënki 4, Gagarino and Avdeevo, with Gagarino being the most similar. He writes that the main difference between Gagarino and Khotylëvo 2 and the sites of the Kostënki-Avdeevo Culture is the absence in the former two sites of large shouldered points with flat retouch. However, he also finds differences between Gagarino and Khotylëvo 2 in other aspects of the lithic assemblage, such as the absence at Gagarino of the “Aurignacian points” he describes

for Khotylëvo 2. Among other sites on the Desna he sees further similarities with the site of Pushkari I, although this is set out in rather general terms, for example the shared presence of backed bladelets and points. He also draws similarities with Level 7 of Molodova V, as well as with Pavlov, Willendorf, Aurignac and La Gravette, noting general similarities in the lithic assemblage and similar radiocarbon dates. Finally he notes that it could be linked to the Kostënki-Pavlov-Willendorf Culture.

Based on the backed microlithic assemblage of the site, Gavrilov (2004) argues that the site is similar to the Pavlovian, although he notes that triangles and truncated backed bladelets are absent at Khotylëvo 2. The presence of microgravettes leads him to see similarity with sites in Germany and south-western France, including Mainz-Linsenberg and Sprendlingen, Abri Pataud Level 3, and Levels B and B' of Laugerie Haute. He goes on to conclude that Khotylëvo 2 should be considered as a unique type of site of the Eastern Gravettian, and that it is unrelated to the Kostënki-Avdeevov Culture.

Kozłowski (1986, p. 184) writes that the osseous and decorative assemblage are similar to those from Pavlov and from the Kostënki-Avdeevov Culture, including Avdeevov specifically, but also describes certain (unspecified) artefact types as unique to Khotylëvo 2. He finds similarities with Central European sites among the backed lithic implements (Kozłowski, 1986, p. 190).

Other authors have described the site simply as “Gravettoid” (Vishnyatsky & Ne-horoshev, 2004) or “Eastern Gravettian” (Hoffecker, 2002).

8.3 Collections and sampling

The collections from Zaverniaev's excavations are held at the Kraevedcheskii Muzei, Bryansk. Gavrilov (2008, p. 85) gives a count of 914 backed lithics (including backed blades, which are not included in the present study) deriving from these excavations: 75 backed points, 823 blades or bladelets with a backed edge, and 16 shouldered points. The labels on the boxes in which the collection is held give a count of 777 backed lithics.

My count gave a total of 603 backed lithics of interest to this study in the collection. The disparities are in part to do with differences in classification and in part to do with the fact that some material is known to have gone missing since the boxes were originally labelled; also, several boxes could unfortunately not be found. The problems with locating material mean that the collection cannot be seen as representative of the excavated assemblage: as the material was sorted prior to storage, certain sub-categories of backed lithics may be underrepresented or not represented at all.

There is further reason to be cautious about the collection and its relationship to the excavated assemblage. Gavrillov (2008, p. 43) notes that almost 14% of the collection consists of retouched pieces, or more than five and a half thousand pieces of a total of ca. 40,000. He finds this number to be improbably high and notes that a large quantity of flint artefacts are known to have been discarded with the spoil at the time of the excavation: this may even include some retouched pieces.

For this collection, it was decided to study *all* of the shouldered pieces (n=16) and backed (bladelet size) lithics with a clear point (n=59). Due to time constraints, only one third, or 176, of the remaining 528 backed bladelets were studied. This was a random sample of the relevant part of the collection (see Section 3.2.4). In total, 251 backed lithics were studied. As a result of the differential sampling of different groups of pieces, two datasets are used for analysis. The first is an unmodified set of the collected data. The second is a weighted dataset, with the 176 ordinary backed bladelets given a triple weighting to compensate for the fact that only a third of the artefacts were studied. In the following analysis, it is always clearly stated whether the raw sample or the weighted sample has been used. Weighted samples (with results given in percentages) are generally used for analysis of the collection as a whole, as there is a mixture of material sampled at 100% and at 33%. The analyses of the various sub-categories are made using the raw samples, as each sub-category only includes material sampled *either* at 100% or at 33%.

Gavrillov (2008), in his study of Zaverniaev's collection, gives a total count of 5520 retouched lithics. Burins are the most numerous typological category (n=2385),

while (apart from the backed bladelets and points) scrapers (n=711), retouched blades (n=508) and notched blades (n=507) were also well-represented. Awls, truncated pieces and Kostënki knives were also present.

The osseous assemblage is rich and has featured heavily in discussions of the cultural attribution of the site. Alone of the five sites on which this research is based, it includes female (“Venus”) figurines. These include three whole or nearly whole ivory statuettes, as well as several fragments (Abramova, 1995, p. 156) (Fig. 8.2). More recently, a unique chalk representation of two female figures side-by-side, with no heads and which was broken before deposition, was found at the site (Gavrilov, 2012) (Fig. 8.3).

There are also some mammoth ivory artefacts which may be spear points, including decorated examples (Fig. 8.4) (Zaverniaev, 1987). These include pieces with long lateral grooves, which could be related to the addition of lithic elements (Fig. 8.4: b).

8.4 Backed lithic assemblage

8.4.1 Typological categories

The backed collection from Khotylëvo 2 is diverse, with numerous typological categories. These are as follows (the figures in brackets give the number of lithics studied):

Khotylëvo-type Gravette points (n=14). (100% sample). I argue that this typological category may represent a new index fossil for the Russian MUP. In its general morphology it strongly resembles an ordinary Gravette point, with an elongated form, rectilinear over much of its length, and with a clear point at one end. The non-pointed end is retouched to a rectangular or otherwise blunt end. Its difference from a classic Gravette point lies in the presence of a gibbosity on the backed edge near the pointed end.

Gravette points (n=33). (100% sample). This includes elongated, straight pieces with continuous backing on one edge and a clearly formed point on one end. Where present, the basal end is retouched.

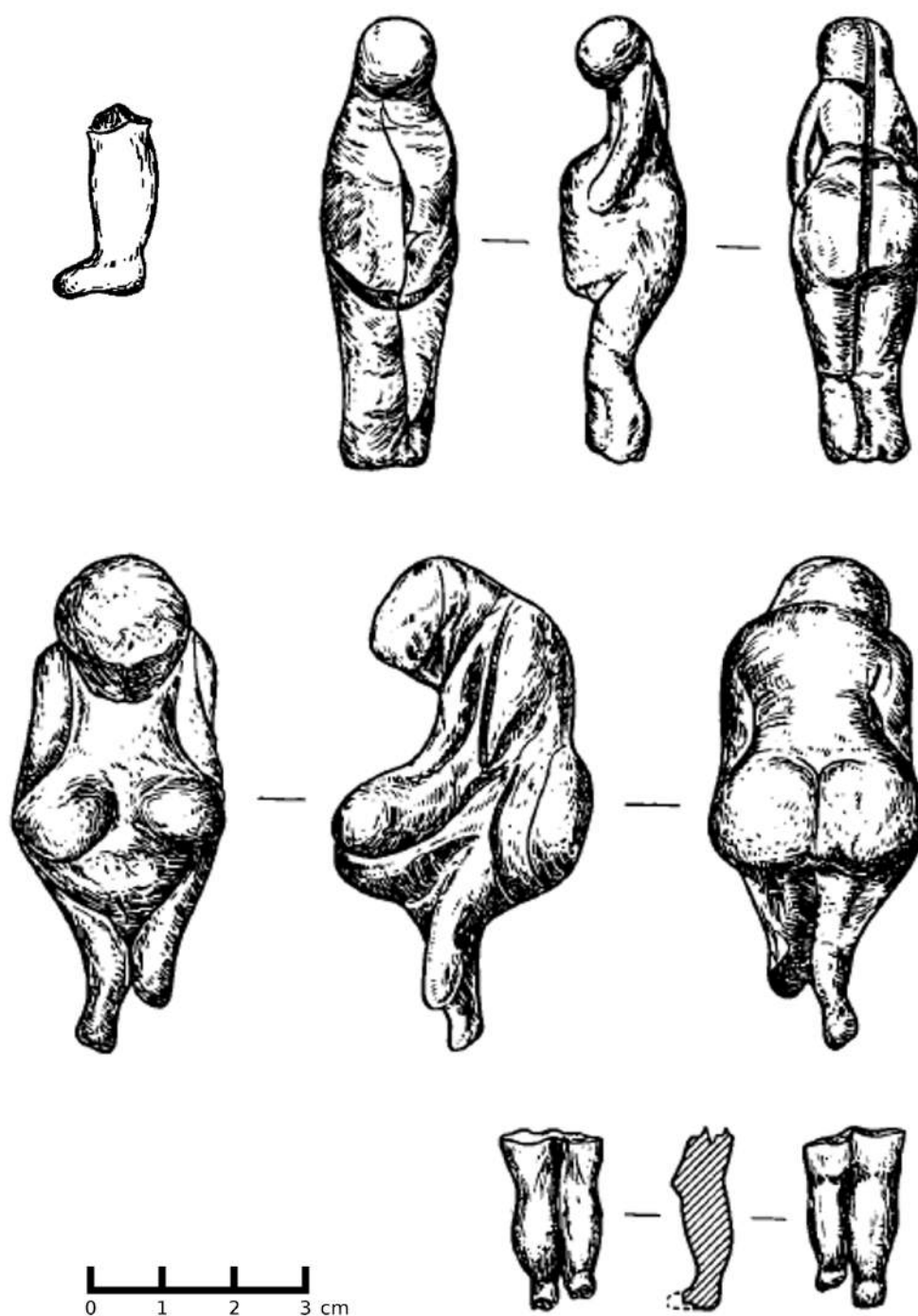


Figure 8.2: Ivory figurines from Khotylëvo 2 (after Zaverniaev, 1978, Fig. 3)

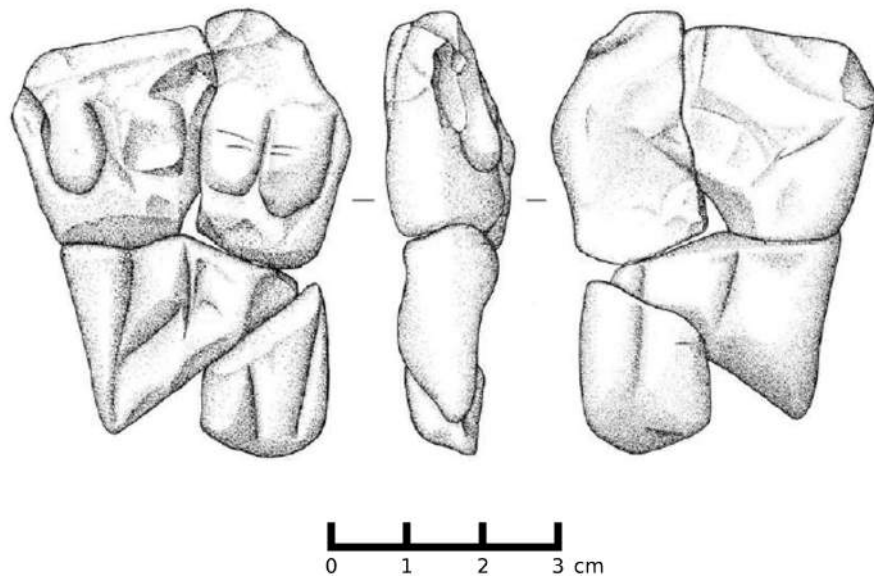


Figure 8.3: Chalk double female figurine from Khotylëvo 2 (after Gavrilov, 2012, Fig. 7)

Microgravettes (n=4). (100% sample). These are similar to Gravette points but form an obviously discrete size class.

Straight backed bladelets (n=142). (33% sample). These are bladelets with backing which is straight or nearly straight (it is sometimes slightly sinuous) in plan. The overall shape of the bladelets' sides is usually rectilinear, less often tapering to one end.

Shouldered pieces (n=16). (100% sample). Lithics with a clear backed shoulder are included in this group. They do not form a homogeneous group, and it seems likely that many of them are unfinished backed lithics. Only one of the shouldered pieces is classified here as a shouldered point.

Miscellaneous points (n=8). (100% sample). This includes pieces with continuous or near-continuous backing on one edge and a point formed at one end but which do not fulfil the criteria of a Gravette point.

Part-backed pieces (n=19). (33% sample). These are pieces, very miscellaneous in

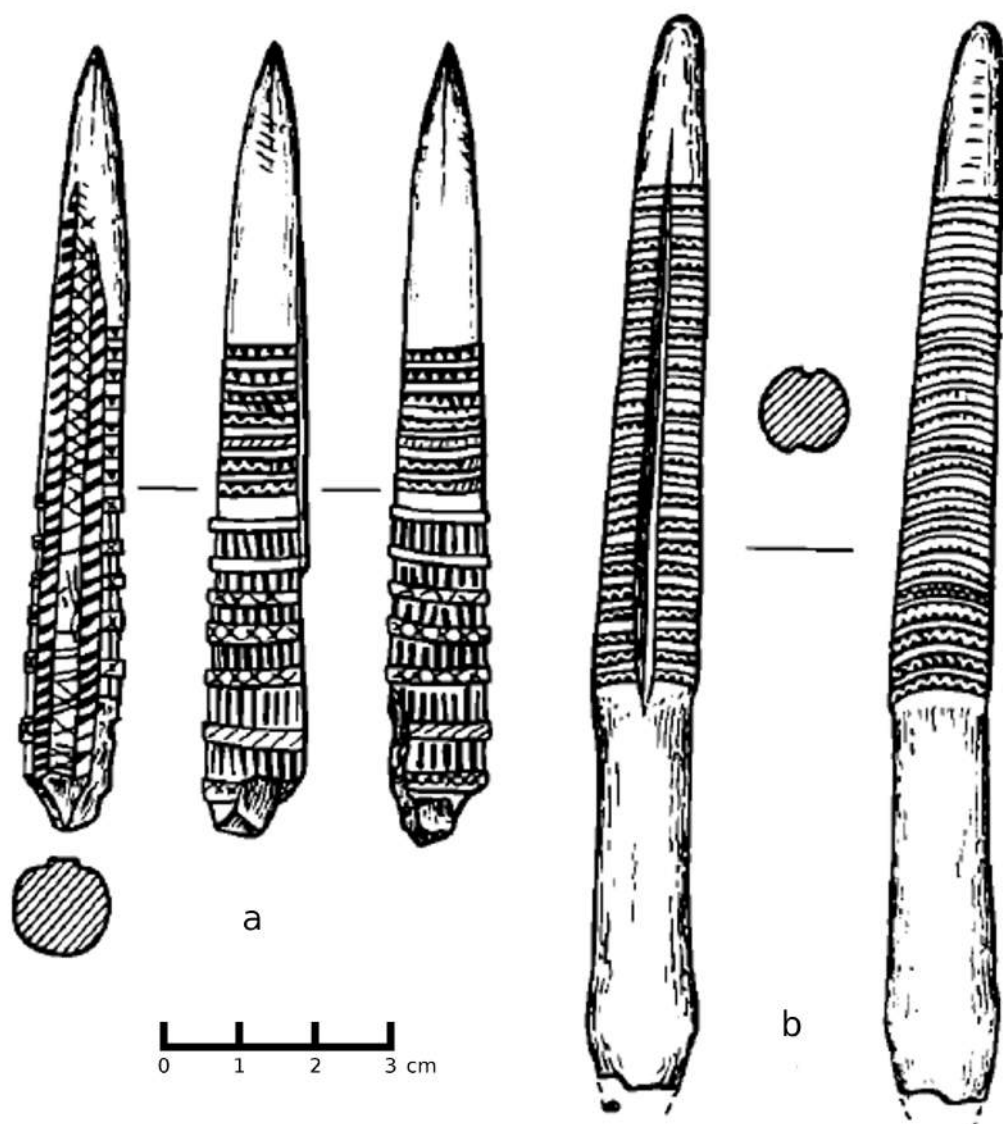


Figure 8.4: Mammoth ivory artefacts from Khotylëvo 2 (after Zaverniaev, 1987, Fig. 9)

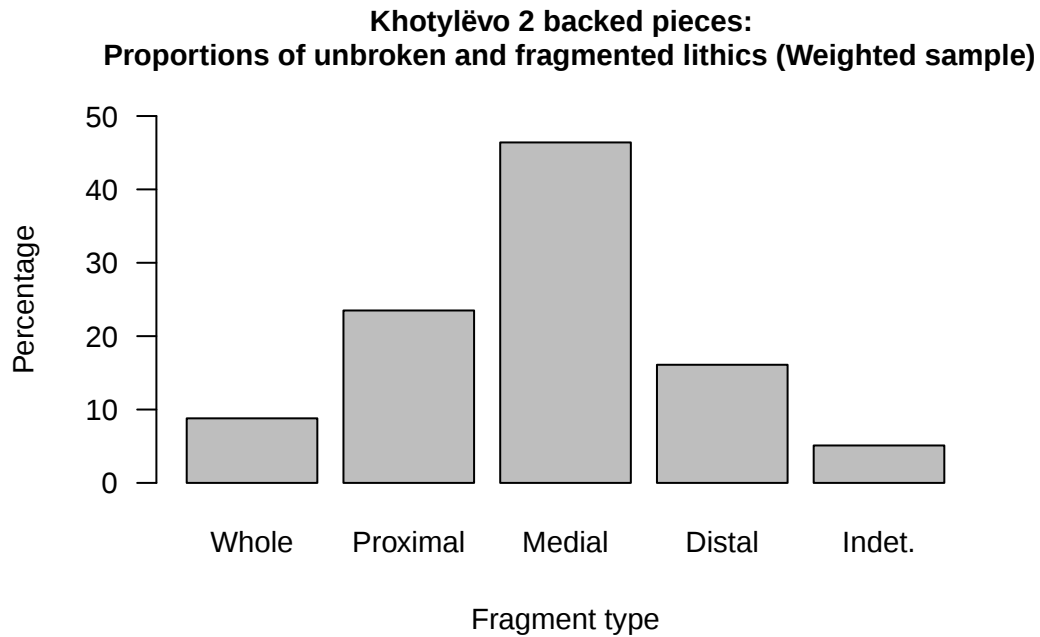


Figure 8.5: Backed lithics from Khotylëvo 2: counts of whole examples and fragments (weighted sample; n=315)

form, which only have incomplete backing on one or both edges. This backing does not form a shoulder (or they would be included with the shouldered pieces). It does not include pieces with a definite point (these are included in “Miscellaneous points”).

Irregularly backed pieces (n=15). (33% sample). This group relates to pieces whose backing is not straight in plan, but rather markedly sinuous or irregular. Their form varies widely.

8.4.2 General remarks

A striking feature of this assemblage is the surprisingly high representation of medial fragments, at 46% of the weighted sample (Fig. 8.5 and Table 8.3). The representation is so high that it in fact raises the question of whether some pieces have been misidentified as medial fragments and were in fact deliberately broken to truncate the pieces (Movius, 1968 discusses a similar possibility for the Abri Pataud Proto-Magdalenian assemblage).

Sub-category	Whole	Prox.	Medial	Distal	Indet.	Total
Khotylëvo-type						
Gravette points	0.5%	0.7%	0.0%	1.2%	0.0%	2.4%
Gravette points	1.0%	1.5%	0.0%	2.5%	0.5%	5.5%
Microgravettes	0.5%	0.2%	0.0%	0.0%	0.0%	0.7%
Straight backed bladelets	4.0%	16.9%	36.8%	9.5%	3.5%	70.7%
Shouldered pieces	0.0%	0.3%	1.7%	0.7%	0.0%	2.7%
Miscellaneous points	0.3%	0.0%	0.0%	0.8%	0.2%	1.3%
Part-backed pieces	2.0%	3.0%	3.5%	1.0%	0.0%	9.5%
Irregularly backed pieces	0.5%	1.0%	4.5%	0.5%	1.0%	7.5%
Total	8.8%	23.6%	46.5%	16.2%	5.2%	100%

Table 8.2: Backed lithics from Khotylëvo 2: counts of whole examples and fragments by sub-category (weighted sample)

Element	Raw count	Raw percentage	Weighted percentage
Whole	27	11%	9%
Proximal fragment	58	23%	24%
Medial fragment	100	40%	46%
Distal fragment	53	21%	16%
Indeterminate (prox./dist.) fragment	13	5%	5%
Total	251	100%	100%

Table 8.3: Backed lithics from Khotylëvo 2: counts of whole examples and fragments

Many of the breaks, particularly on the straight backed bladelets, are very straight and perpendicular to the main axis of the lithic.

Interestingly, medial pieces are strongly represented among *all* the non-point groups. Table 8.2 shows the (weighted) percentages of each fragment type by sub-category. (The reason for the absence of medial fragments among the non-point categories is trivial: medial fragments cannot be identified as deriving from points, because they lack the ends that would demonstrate this). The part-backed and shouldered sub-categories appear to relate in large part to unfinished backed bladelets (as explained below); if we believe that they are deliberately broken to form truncations, then the high proportion of medial pieces implies they were broken before the backing was finished. This provides a possibility for testing the hypothesis that pieces were deliberately broken: very close examination of the intersection between the backed edge and the broken edges might show whether breakages in all or most cases occurred before backing was carried out. This would be strong support for the idea of deliberate breakage of pieces to form truncations.

Another explanation for the high representation of medial fragments in this collection could be to do with the recovery of artefacts during excavation. If medial fragments were, on average, larger than proximal and distal fragments, perhaps they were collected more often. This is, however, contradicted by the data on the mean lengths of each fragment type: the average length of the medial fragments is in fact shorter than that of the proximal and distal fragments (Table 8.4).

A final possible explanation concerns selective study of lithics. As noted above, (Gavrilov, 2008) gives a count of 914 backed lithics in the collection; I only found 603 during this study. It could be that medial fragments are overrepresented in the part of the collection that I studied, and that end fragments are relatively more numerous among the lithics that could not be located. This would be especially possible if groups of end fragments had been separated from the rest of the collection.

As a result, the high representation of medial fragments in this assemblage has not been satisfactorily explained. The possibility of deliberate breakage to form truncations

Fragment type	n	Mean length	SD
Whole	27	46.1 mm	15.4
Proximal	58	35.4 mm	12.7
Medial	100	30.2 mm	10.3
Distal	53	40.2 mm	11.8
Indeterminate	13	29.7 mm	7.2

Table 8.4: Backed lithics from Khotylëvo 2: mean lengths by fragment type (raw sample)

is worth pursuing in any future study.

Despite the numerous sub-categories of backed lithic, the widths and thicknesses of the lithics both form unimodal distributions (Figs. 8.6 and 8.7). There is a moderate correlation between these two variables: Pearson's $r=0.61$ for the entire (weighted) sample. This correlation can also be clearly seen in Fig. 8.8. When only the straight backed bladelets (raw sample) are considered, r rises to 0.68. The reasons for this strong correlation will be further explored in the discussion of bladelet production methods below.

When plotted, the lengths of the whole backed lithics do not form a natural distribution. Rather than giving them as a histogram, the lengths are shown in the box plot in Fig. 8.9. Here we can see that the different sub-categories often seem to form separate length groupings. The small numbers of unbroken pieces in each sub-category means, however, that this is not a particularly robust observation.

Unlike at other sites, when the collection is taken as a whole there is not a strong preference for backing one particular edge: of the weighted sample, 48.3% of pieces are backed on the right edge and 41.1% on the left (10.1% are backed on an indeterminate edge and 0.5% on both edges) (Fig. 8.10). If we look at the percentages by sub-category, we can see that no single sub-category has a very high proportion of pieces backed on a particular edge, especially when groups with very small sample sizes are excluded (Table 8.5).

A particular feature of the Khotylëvo 2 assemblage is the relatively frequent use

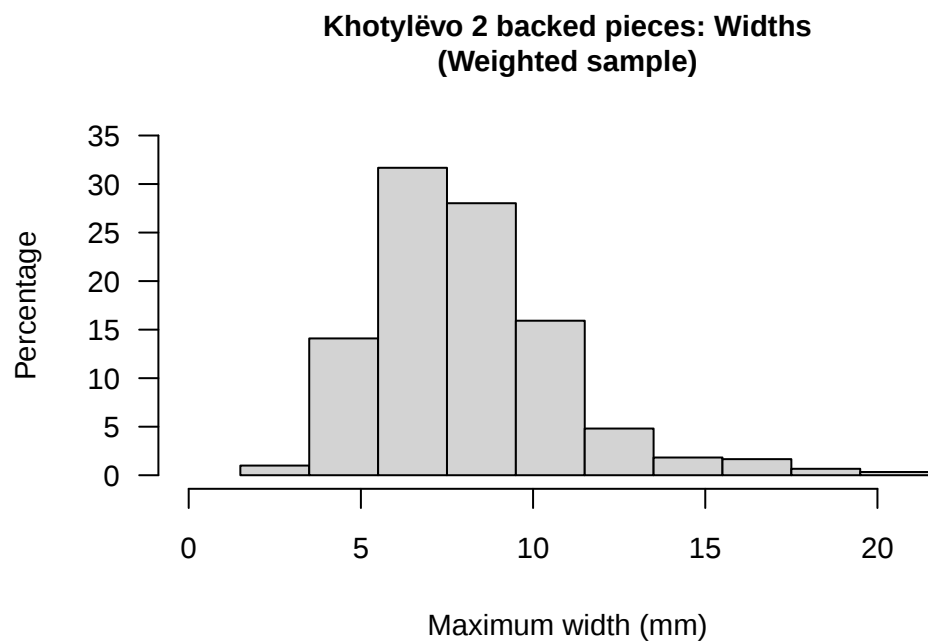


Figure 8.6: Backed lithics from Khotylëvo 2: histogram of widths (weighted sample; n=315)

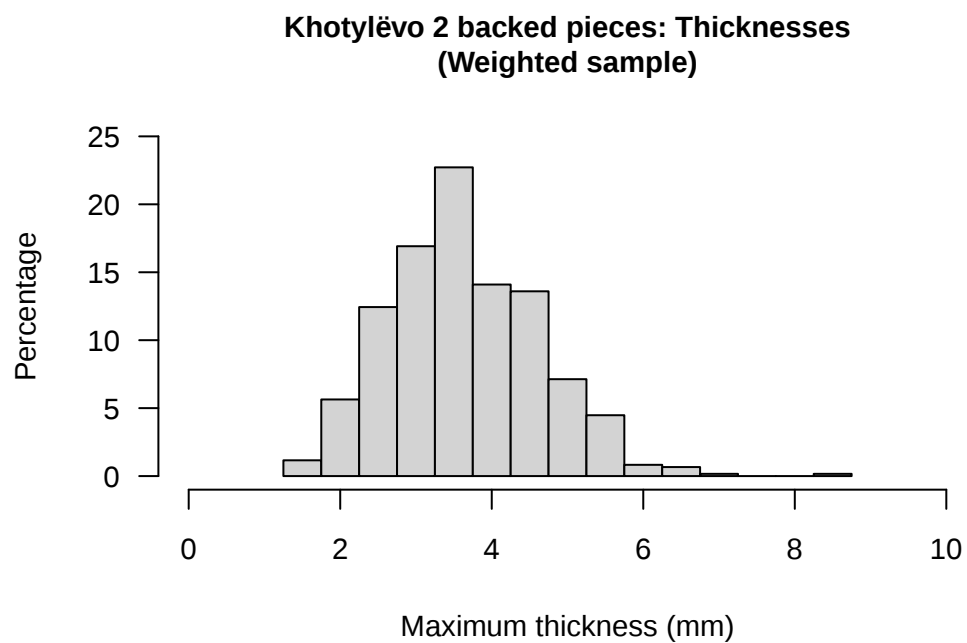


Figure 8.7: Backed lithics from Khotylëvo 2: histogram of thicknesses (weighted sample; n=315)

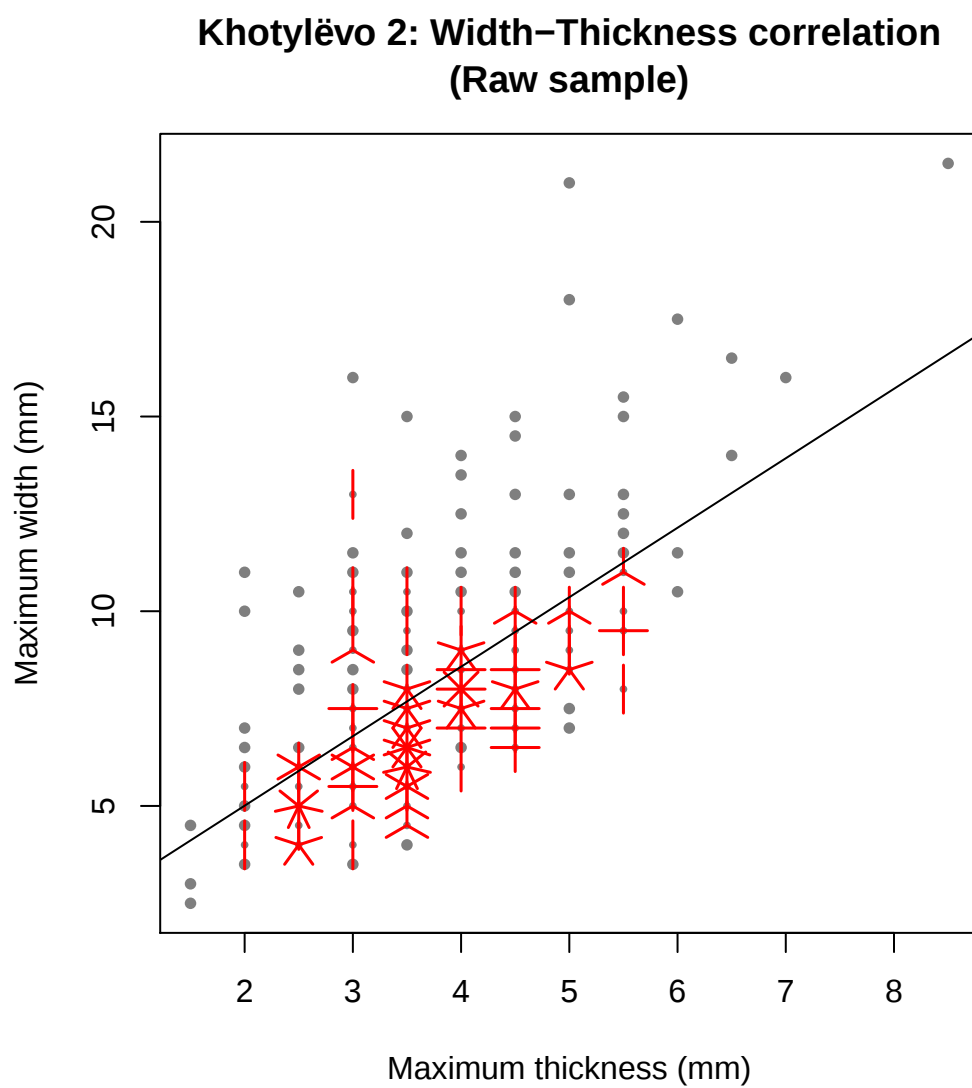


Figure 8.8: Backed lithics from Khotylëvo 2: sunflower plot of width vs thickness (raw sample).
Pearson's $r=0.61$ (for weighted sample)

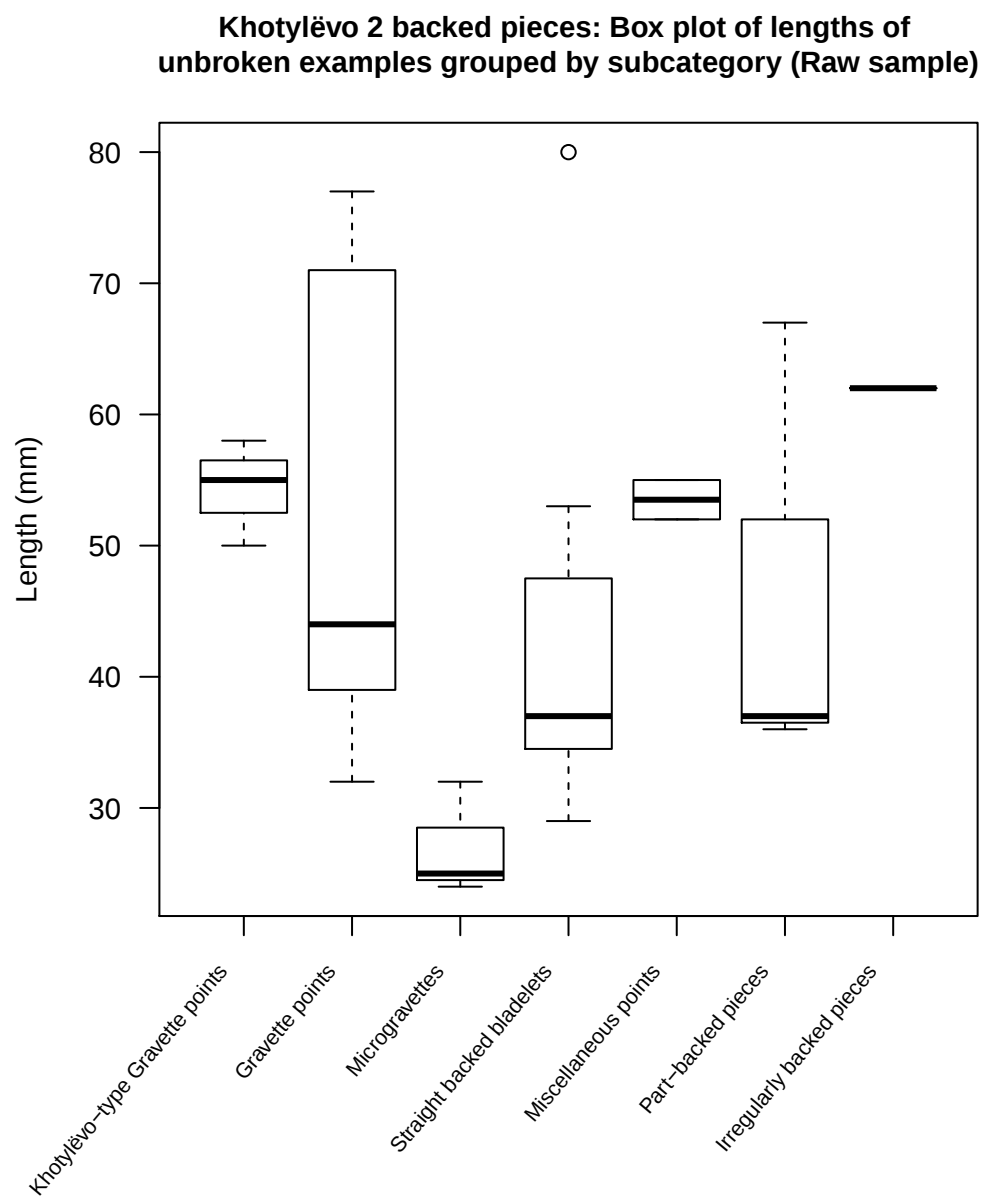


Figure 8.9: Whole backed lithics from Khotylëvo 2: box plot of lengths (n=27; raw sample)

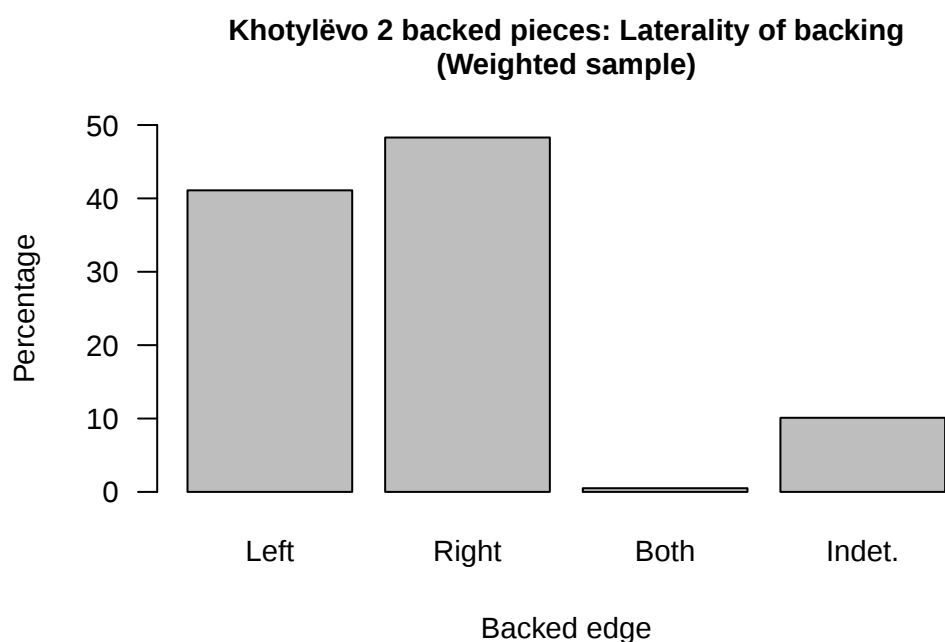


Figure 8.10: Backed lithics from Khotylëvo 2: backing by edge (weighted sample; n=315)

Sub-category	n	Backed edge				Total
		Left	Right	Both	Indet.	
Khotylëvo-type Gravette points	16	56.2%	43.8%	0.0%	0.0%	100%
Gravette points	31	38.7%	51.6%	0.0%	9.7%	100%
Microgravettes	4	25.0%	75.0%	0.0%	0.0%	100%
Miscellaneous points	8	62.5%	25.0%	0.0%	12.5%	100%
Straight backed bladelets	142	38.7%	48.6%	0.7%	12.0%	100%
Part-backed pieces	19	63.2%	36.8%	0.0%	0.0%	100%
Irregularly backed pieces	15	26.7%	60.0%	0.0%	13.3%	100%
Shouldered pieces	16	50.0%	50.0%	0.0%	0.0%	100%

Table 8.5: Backed lithics from Khotylëvo 2: backed edge by sub-category (raw sample). Key: n: total number of pieces in sub-category.

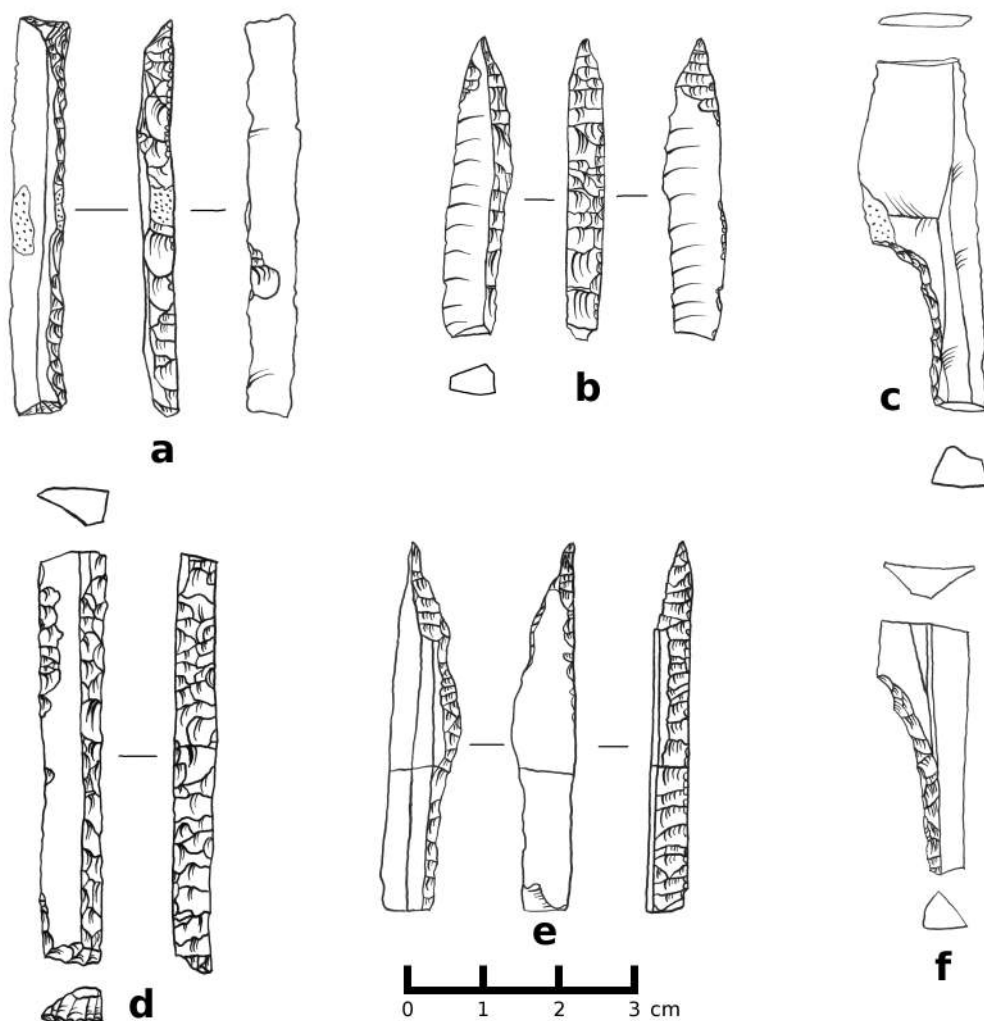


Figure 8.11: Selected lithics from Khotylëvo 2. a, d: truncated backed bladelets; b, e: Khotylëvo-type Gravette points; c, f: shouldered pieces (Drawings N. Reynolds)

of crossed-abrupt backing. When the weighted sample is considered, 19.6% of pieces have crossed backing along their entire backed edge and another 14.1% have partially crossed backing, while 0.2% have inverse backing: 33.9% in total. This is a very high proportion of all pieces. This type of backing is strongly associated with removal of all arrises on the blank, as will be further discussed in section 8.5.

8.4.3 Khotylëvo-type Gravette points

Fourteen pieces in the collection were assigned to this category (2% of the weighted sample): three unbroken points and eleven fragments. The lithics included here have usually previously been described as shouldered points (Gavrilov, 2008; Zaverniaev, 1991) (Fig. 8.12). I believe that this categorization is incorrect and that the pieces are better described as a type of Gravette point. Shouldered points found at other sites do not bear continuous backing along one edge, and they are far less slender in their overall form (see Section 2.5.5 and Fig. 2.9). The presence of a gibbosity and the frequent straight truncation of the non-pointed end lead me to propose that these pieces represent a new index fossil for the Russian Gravettian: Khotylëvo-type Gravette points. Photographs of all the pieces studied are given in Figs. 8.13 and 8.14; two are drawn in Fig. 8.11 (b, e).

Eight of the points have a ventral surface which is flat to within 1 mm tolerance. The remaining points are slightly sinuous (n=3), concave (n=2) or convex (n=1). Where a stem is present for any substantial length, it is rectilinear or sub-rectilinear in form. The three unbroken points are 50 mm, 55 mm and 58 mm in length. However, another three broken pieces exceed 50 mm in length; the longest is 68 mm long. Zaverniaev (1991, p. 176), who noted the presence of 24 “shouldered points”¹ in the collection, writes that the longest complete example was 7.5 cm long (Fig. 8.12: f); the shortest, 4 cm. In the seven cases where the proximal part of the blank is present, the bulb and platform have both been fully removed.

Over half (n=8) of the points are backed on the left edge of the blanks, with the remainder backed on the right. However, if we rotate them so that the point is placed distally, we find that almost all of them are backed on the right-hand edges. The only exception to this is shown in Fig. 8.14: c.

The pointed tips are generally located on or near the central longitudinal axes of the pieces. The shaping of the tips was mostly achieved by backing. Further treatment of

¹“наконечники с боковыми выемками”

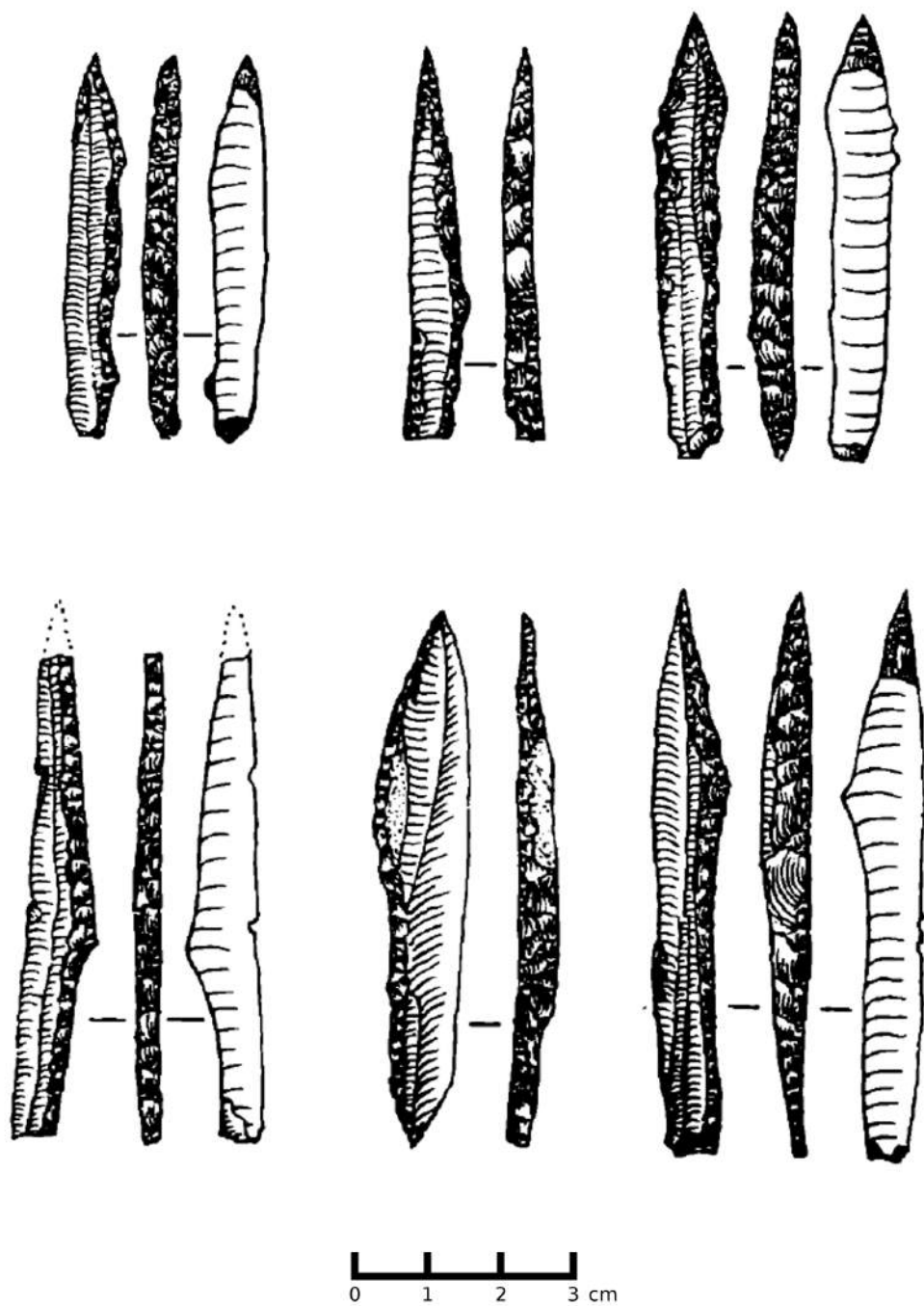


Figure 8.12: Lithics from Khotylëvo 2 described as shouldered points by Zaverniaev, 1991 (after Zaverniaev, 1991, Fig 7: 7–12, p. 174). From left to right: a–f

the tips was frequently applied in the form of low-angle retouch: either inverse (n=4), bifacial (n=4) or direct (n=1). In almost all cases, this retouch covered the entire width of the piece for some of its extent. Five points did not have any such low-angle retouch. In a couple of cases, the points of the pieces without flat retouch are instead shaped by marginal semi-abrupt retouch. In one case (Fig. 8.14: d) the backing does not continue all the way to the point; here, a flat edge deriving from the blank creates the back.

One point has continuously crossed backing, while nine more have partially crossed backing. Often, but not always, the backing is only crossed to form the point. The gibbosities are simply formed by backing and, on the whole examples, have their widest parts between 20% and 28% of the length of the piece from the point. Looking at the points as a whole, the gibbosities are located between 10 mm and 27 mm from the point (mean: 17.5 mm, median: 17 mm, SD: 5.3).

There are only three cases where the bases of the points are present rather than broken off (Fig. 8.13: a & f, 8.14: a). The bases are all different from one another but are all shaped into blunt ends, either rectangular or sub-rounded, with either direct or inverse abrupt or semi-abrupt retouch.

In summary, this type of point can be defined as follows. It is generally at least 50 mm long, and made on a small blade blank. The proximal or distal end of the blank can equally be used to form the base of the point. The ventral surface of the piece is flat or nearly flat, and the bulb and striking platform are removed. In almost all cases, the right edge of the piece (when the pointed end is placed distally) is backed, usually with direct backing along most of its edge and frequently with crossed backing shaping the point of the piece and sometimes other areas. The pointed tip is usually, but not always, located centrally or near-centrally relative to the axis of the piece. This tip is frequently shaped with flat inverse, bifacial or direct covering retouch. A gibbosity is located on the backed edge, towards the pointed end. The medial and basal sections of the piece are rectilinear in form. The base of the piece forms a blunt truncated or rounded end.

These points are overall very similar to ordinary Gravette points, which are also

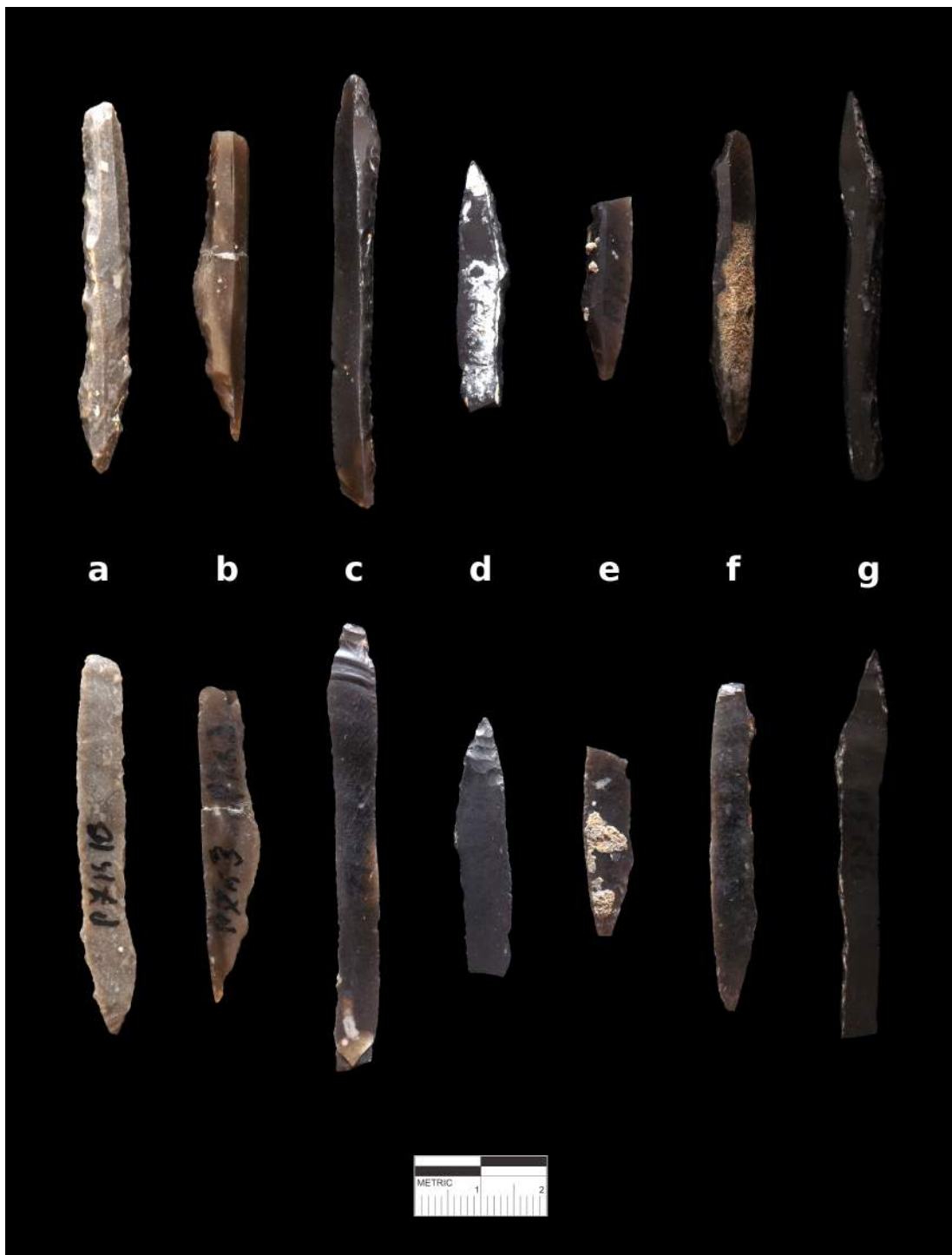


Figure 8.13: Khotylëvo-type Gravette points from Khotylëvo 2 (1): dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph



Figure 8.14: Khotylëvo-type Gravette points from Khotylëvo 2 (2): dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph

found in this collection (see below). Their morphology appears consistent with usage as axially-hafted projectiles: the gibbosity could have assisted in hafting the pieces.

A possible objection to the establishment of this index fossil concerns whether the creation of the gibbosity was deliberate or not. The possibility exists that the gibbosities simply represent incomplete backing of the edges, and that Khotylëvo-type Gravette points are simply unfinished Gravette points. However, this does not seem likely. First, the points are complete in every other way: their pointed and basal ends are well-formed and retouched. Furthermore, the location of the gibbosity in relation to the overall length of the point is very consistent among all the lithics studied. There are *no* points with a gibbosity located medially or basally. Finally, as discussed below, very similar points have also been found at the site of Gagarino.

8.4.4 Gravette points

This group of 33 lithics (6% of the weighted sample) includes Gravette points and fragments of points which are consistent with being classified as such. The pointed ends are always clearly defined and carefully retouched. The medial sections of the lithics are various in form: they may be rectilinear, taper towards one end, be curved on the non-backed edge, etc. The bases of the points, where present, vary in form.

Six whole Gravette points were identified within the collection, with the remainder represented only by distal or proximal points (Table 8.6). Medial fragments of Gravette points could not be confidently identified due to the absence of a point, and have probably been included in the “straight backed bladelets” sub-category.

The profile of the ventral faces of the pieces is generally flat and straight. Fifteen (46%) of the Gravette points studied have a ventral face which is flat to within 1 mm tolerance. The remainder have a slightly sinuous (n=10, 30%), concave (n=4, 12%) or convex (n=4, 12%) surface. No bulbs of percussion or striking platforms were found on any of the pieces. In all cases where the proximal end of the blank was present, the bulbs and platforms had been deliberately removed.

Crossed-abrupt backing was used very frequently, either continuously along the

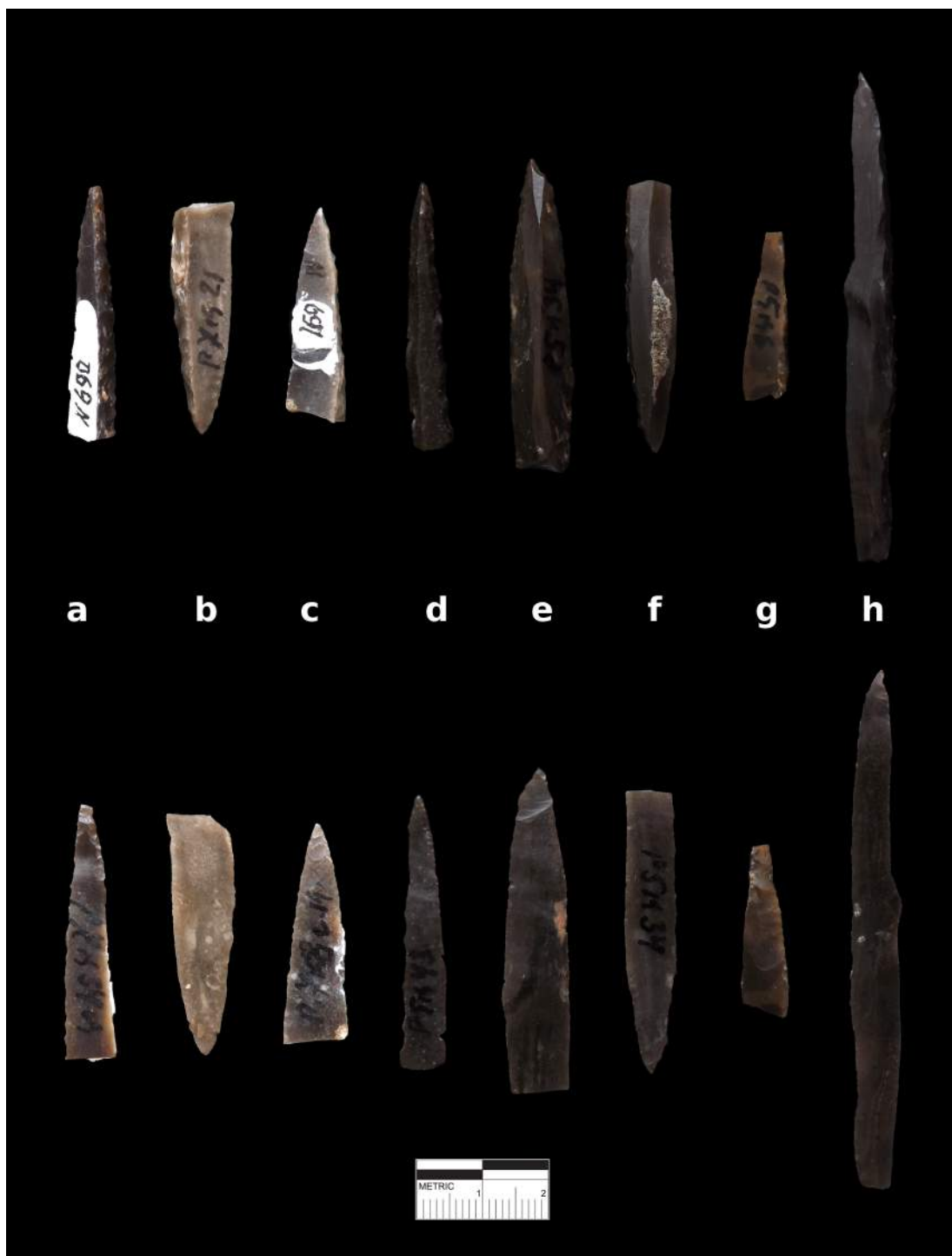


Figure 8.15: Gravette points from Khotylëvo 2: dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph

Element	Count	Percentage
Whole	6	18%
Proximal fragment	9	27%
Medial fragment	0	0%
Distal fragment	15	46%
Indeterminate (prox./dist.) fragment	3	9%
Total	33	100%

Table 8.6: Gravette points from Khotylëvo 2: counts of whole examples and fragments (raw sample)

backed edge (n=15, 45%) or partially (n=7, 21%). The pieces with continuous crossed backing had no arrises remaining. Similarly to the collection as a whole, pieces were backed on the right edge of the blank slightly more often (n=17, 52%) than on the left edge (n=13, 39%). Three (9%) were backed on an indeterminable edge. However, when we consider the right and left edges of the lithics by orientating the pointed end of the artefacts distally, rather than by relation to the orientation of the blank, there is a strong preference for backing on the right edge of the point. Of the 33 pieces, 26 (79%) are backed on the right edge of the tool, four (12%) on the left edge, and three (9%) on an indeterminable edge.

In overall plan the pieces are elongated and straight. In five cases (15% of the Gravette points) only a pointed tip, with straight edges and triangular in plan, was preserved. Where the stem of the piece was preserved, it was most often rectilinear or sub-rectilinear in plan (n=18, 55%), and less often had two straight edges which tapered somewhat towards the point (n=10, 30%)

The points were frequently shaped with inverse (n=16, 48%) or bifacial (n=2, 6%) retouch. The inverse retouch was usually low-angle and covered the entire width of the ventral surface (n=13, 39%), and could be applied from one or both lateral edges. A significant length of the ventral surface could be covered with retouch: up to 19 mm.

Neither the widths nor the thicknesses of the Gravette points are normally distributed (but the sample size is rather low). There is, however, a very strong correlation between widths and thicknesses: Pearson's $r=0.85$.



Figure 8.16: Microgravettes from Khotylëvo 2: dorsal and ventral views. Proximal ends oriented towards bottom of photograph

Only six pieces are whole or nearly whole; of these, one is broken at the basal tip so its original form cannot be discerned and the end of another is obscured by concretions. The retouch on the other four varies. Two were truncated with semi-abrupt direct retouch; one had a sub-rounded, inversely backed end; another was directly retouched to an end which curved towards a right-angle with the backed edge.

The Gravette points at Khotylëvo 2 are rather homogeneous in their dimensions and morphology; they are very similar to Gravette points found elsewhere in Europe. Their reasonably significant numbers mean that they are a defining feature of the backed assemblage of this site. The technology used to produce them is in line with the general lithic technology strategy employed at the site, as also seen for the Khotylëvo-type Gravette points and the “straight backed bladelets” described below.

8.4.5 Microgravettes

A very small number ($n=4$, 1% of the weighted sample) of microgravettes were found in the collection (Fig. 8.16). Of these, Fig. 8.16: d is clearly different in general shape and dimensions from the other three lithics, but does meet the formal criteria for description as a microgravette.

They are very small in size: the unbroken lithics are 24 mm, 25 mm and 32 mm long. The mean width and thickness of the pieces are 5 mm and 2.5 mm respectively.

The ventral surfaces are flat or slightly concave in form.

The first three (Fig. 8.16: a–c) have points at both their proximal and distal ends, where present; inverse or bifacial retouch was applied to shape all the extant ends of these three points. All striking platforms and bulbs of percussion were removed. Two bear crossed-abrupt backing and have had all their arrises removed. These three pieces form an extremely homogeneous group in their dimensions and morphology.

The fourth (Fig. 8.16: d) is clearly different, in that it is larger than the others, and although both its ends have been shaped by marginal direct retouch, no inverse retouch has been applied. The bulb of percussion and striking platform remain, and it bears obvious damage to its unbacked edge (visible in the photograph). It is likely that it was created and used for a different function from the other three pieces.

Given the known concerns over artefact recovery in the excavation of the collection, they are perhaps underrepresented. If we take their numbers at face value, they form a tiny part of the assemblage, and are numerically much less important than the ordinary and Khotylëvo-type Gravette points. However, their presence is still rather important for the interpretation of the site.

8.4.6 Shouldered pieces

There are 16 of these lithics (7% of the weighted sample), which bear direct abrupt or semi-abrupt backing forming a shoulder on one edge (Fig. 8.17; Fig 8.11: c, f). Only one of them appears to be a shouldered point comparable to the classic shouldered points of the Eastern European Late Gravettian. The others are all best understood as unfinished backed lithics. This classification disagrees with the assessments of these pieces as, or as related to, shouldered points (e.g. Gavrilov, 2008).

The main reason for rejecting the notion that these lithics are to do with shouldered points is the absence of any evidence for the creation of pointed ends. Of the shouldered pieces, some lithics simply could not have formed shouldered points even with further retouching: the section of the lithic which would have formed the point is clearly unsuitable for this, often being either a thick proximal blank end or a very thin

distal blank end. In other cases the non-shouldered section is long and rectilinear and shows no evidence of having been retouched into a point.

It seems most likely that these pieces simply represent lithics whose backing was abandoned for some reason. Fig. 8.18 shows a comparison between the widths of the stems of the shouldered pieces (excluding the single shouldered point) and the maximum widths of the straight backed bladelets sub-category: the widths of the shouldered piece stems fall entirely within the range of the backed bladelet widths.

Bulochnikova (1998, p. 71) relates the pieces to waste from segmenting of pieces. This is a very interesting idea but the evidence for it does not seem strong: often the end of the shoulder is located around the medial part of the blank.

The single convincing shouldered point is worth describing (Fig. 8.17: g). It is a distal fragment, 39 mm long and 10.5 mm wide at maximum. The stem itself also reaches 10.5 mm in width proximally. The point segment is 21 mm long and the extant stem is 17 mm long. The backing forming a shoulder continues around the corner of the point for several millimetres: i.e., it shapes the proximal corner of the point segment of the lithic as well as forming the shoulder. The piece bears slightly irregular marginal direct retouch on the distal 20 mm of the left edge as well as low-angle covering inverse retouch applied from the left edge. The lithic is made on opaque fine-grained black flint believed to have been imported to the site (see Section 8.5). The fact that the backing clearly deliberately shapes the intersection between the stem and the point segment is good evidence that this is not simply an unfinished Gravette point; furthermore, the inverse retouch flattening the ventral surface of the distal end is common to classic Eastern European shouldered points (Demars & Laurent, 1992, p. 138).

8.4.7 Straight backed bladelets

This sub-category constitutes the most numerous group of backed lithics at Khotylëvo 2 (n=142, 71% of the weighted sample). The group includes bladelets with straight or nearly straight backing, which are usually rectilinear in overall form. As in the rest of the collection, medial fragments constitute by far the largest category of fragment type



Figure 8.17: Shouldered pieces from Khotylëvo 2: dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph

**Khotylëvo 2: Comparison of widths
of straight backed bladelets and shouldered piece stems (Raw sample)**

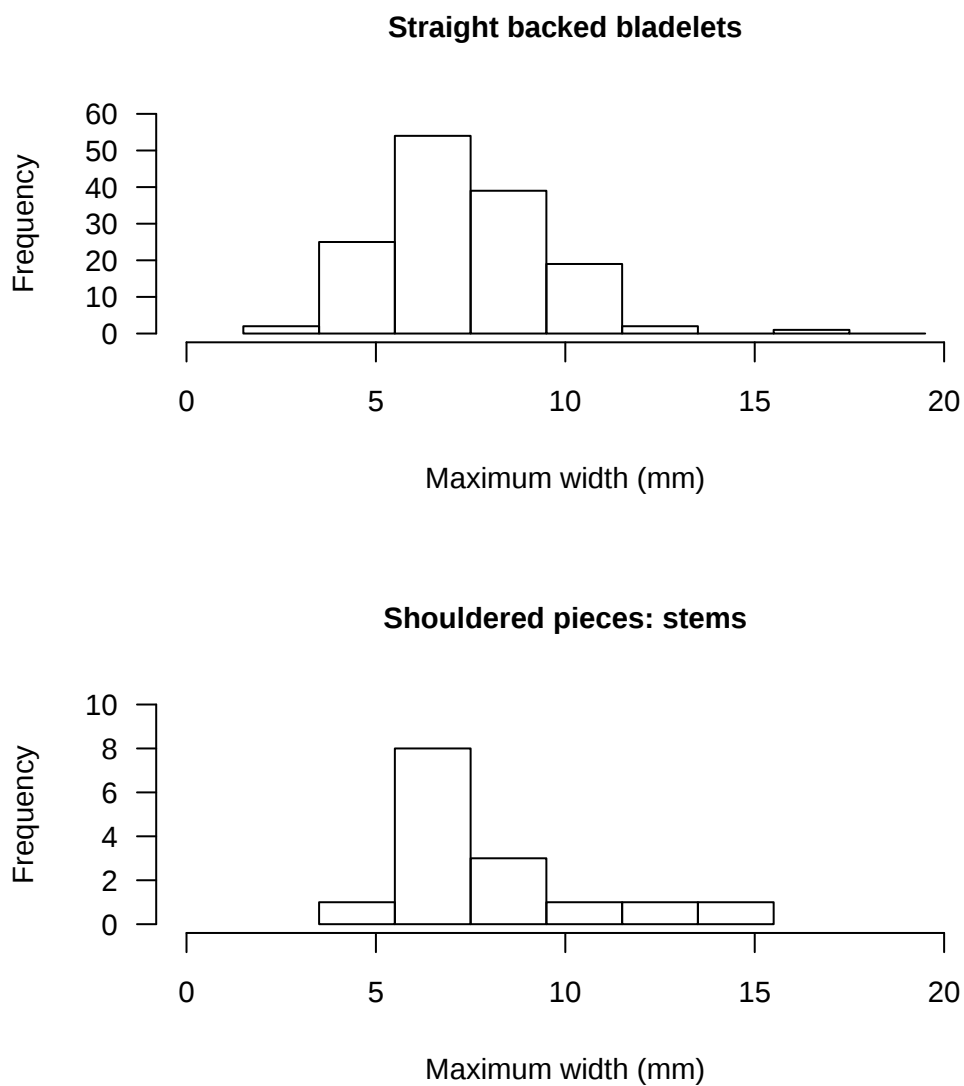


Figure 8.18: Straight backed bladelets and stems of shouldered pieces (not including the shouldered point) from Khotylëvo 2: histograms of widths (Straight backed bladelets: n=142; Khotylëvo-type Gravette points: n=15; raw sample).

Element	Count	Percentage
Whole	8	6%
Proximal fragment	34	24%
Medial fragment	74	52%
Distal fragment	19	13%
Indeterminate (prox./dist.) fragment	7	5%
Total	142	100%

Table 8.7: Straight backed bladelets from Khotylëvo 2: counts of whole examples and fragments (raw sample)

(Table 8.7).

The majority of these lithics have a ventral face which is flat to within 1 mm (n=96, 67.6%). A significant number are slightly concave (n=30, 21.1%), while the remainder are sinuous, concave, convex and/or twisted. The proximal end of the blank is present and observable in 41 cases (in 94 cases it is broken off; in 6 the proximal and distal ends cannot be distinguished and it is not clear whether the proximal end had been broken off or removed; one proximal end is obscured by concretions). Of these 41 pieces, in six cases a platform is present. In nine cases a bulb is partly or completely intact. Therefore, the bulb and platform were usually, but not universally, deliberately removed (n=32, 78% of unbroken and observable proximal ends).

Crossed-abrupt backing was frequently used. The crossing could be either continuous (n=32, 23%) or just cover part of an otherwise directly backed edge (n=17, 12%). This proportion, 35% in total, is close to the proportion of backing in the entire weighted backed lithic sample (34%). As with the rest of the assemblage, a fairly similar proportion of bladelets were backed on the right-hand (n=69, 49%) or left-hand (n=55, 38%) edge of the piece (17 were backed on an indeterminable edge and one was backed on both edges).

In most cases the sides of the lithics were rectilinear (n=113, 80%). In others they were straight but tapered from one end to the other (n=21, 15%). In the remainder of cases they were slightly sinuous, lunate or irregular in form.

The widths and thicknesses of these pieces are shown in Figs. 8.19 and 8.20. The his-

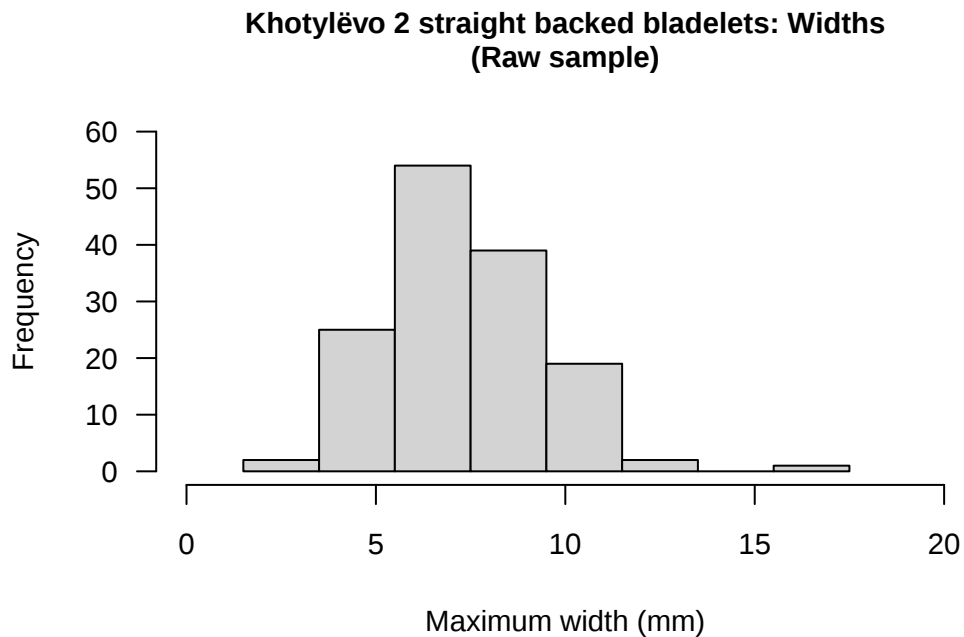


Figure 8.19: Straight backed bladelets from Khotylëvo 2: histogram of widths (n=142; raw sample)

tograms show that this group gives a normal distribution for both width and thickness. There is a moderate correlation between these two measurements: Pearson's $r=0.68$.

The following discussion takes the proximal and distal ends (as defined by the blanks) in combination, as there is no obvious difference between the treatment of each of these. Of the 284 ends under study (raw sample), most were broken (n=208, 73%), while another 9 (2%) had breaks of their very tips, so that the exact shapes of the original ends could not be determined. Of the remaining ends (n=67), the most common treatment was rectangular truncation (Fig. 8.11: a, d), while rounded and pointed ends were also present (Table 8.8).

The treatment of the ends is consistent with at least some of these pieces being in fact fragments of the stems of Gravette points, including Khotylëvo-type Gravette points. Further supporting evidence is provided by the widths of the pieces when compared to the widths of the stems of the Gravette points and Khotylëvo-type Gravette points (Fig. 8.21). The distribution of widths of the Gravette point stems falls within, and at

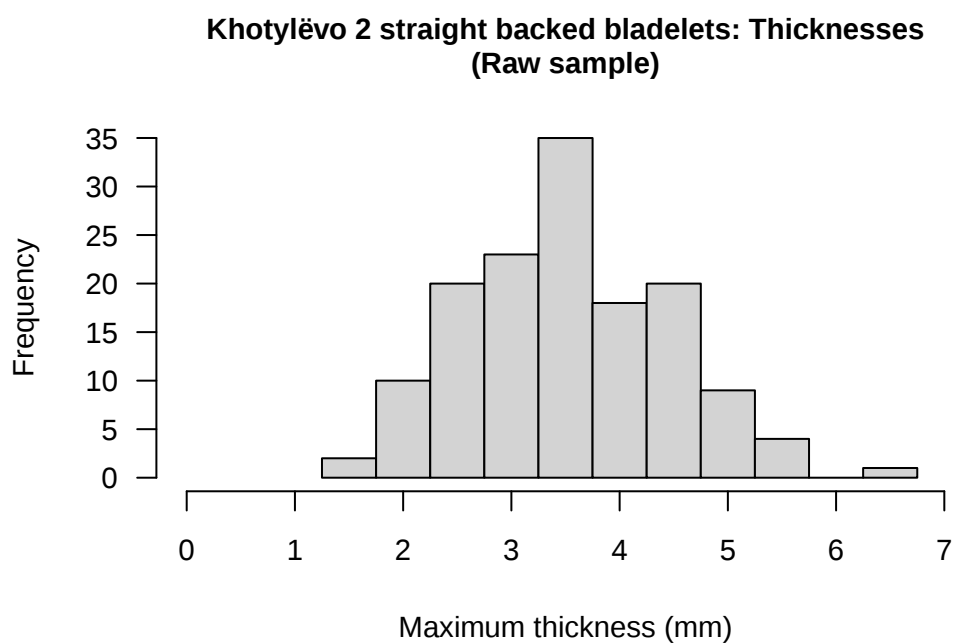


Figure 8.20: Straight backed bladelets from Khotylëvo 2: histogram of thicknesses (n=142; raw sample)

Type of end	Frequency	Percentage
Unretouched	8	12%
Rectangular truncation	26	39%
Sub-rectangular truncation	8	12%
Rounded	2	3%
Sub-rounded	10	15%
Rounded with right-angled corner	6	9%
Point	7	10%
Total	67	100%

Table 8.8: Straight backed bladelets from Khotylëvo 2: treatments of ends where present (raw sample)

the centre of, the distribution of widths of the straight backed bladelets.

This is by no means the explanation of *all* the straight backed bladelets: the unbroken lithics (n=8) are clearly not Khotylëvo-type Gravette points; rather, they usually have truncations or other retouch at both ends.

The function of the straight backed bladelets is not obvious. There are probably multiple unidentified functional sub-groups present within the category. This includes the ends of points and double-truncated backed bladelets. The lengths of the whole pieces mostly cluster between 29 mm and 42 mm (Fig. 8.9), but with an obvious outlier (which is truncated at both ends): more than one length of backed bladelet was present here. There are multiple possible functions for the straight backed bladelets, including as cutting tools, either hafted or not, and as part of composite weapons. However, this sub-category consists of pieces which are homogeneous in their general morphology. The technology of blank production and retouching, discussed in Section 8.5, is key to this consistency.

8.4.8 Other backed pieces

The remaining backed lithics (18% of the weighted sample in all) are classified either as “miscellaneous points” (n=8), “part-backed pieces” (n=19) and “irregularly backed pieces” (n=15). These are all heterogeneous and small groups. “Miscellaneous points” refers to pieces which have a definite point but which are not classified as Gravette points, because their form is not generally elongated and/or because their bases are not modified. They could include incomplete Gravette points, awls, and cutting tools. The “part-backed pieces” have incomplete backing on one or both edges. Like the shouldered pieces discussed above, some of them could relate to unfinished backed pieces, but they also include lithics of very diverse morphologies. The “irregularly backed pieces” have backing which is not straight, but markedly sinuous or otherwise irregular. They are also diverse in terms of their overall morphology, other retouch, blank form, etc., and their function is unknown.

Khotylëvo 2: Comparison of widths of straight backed bladelets, Gravette points and Khotylevo-type Gravette point stems (Raw sample)

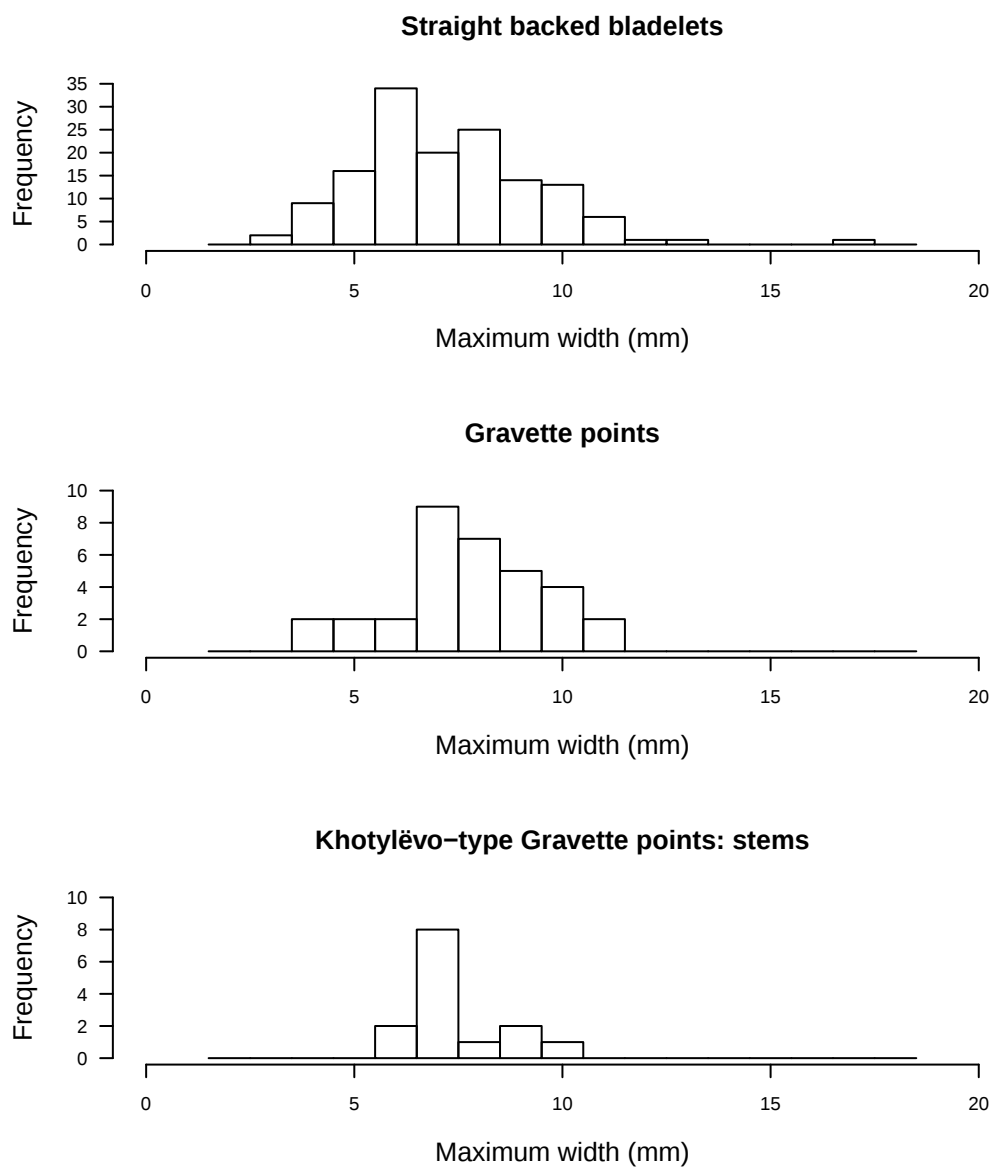


Figure 8.21: Straight backed bladelets and Gravette points from Khotylëvo 2: histograms of widths (Straight backed bladelets: n=142; Gravette points: n=31; Khotylëvo-type Gravette points: n=16; raw sample).

Sub-category	Number made on opaque black flint	Percentage of sub-category made on opaque black flint
Khotylëvo-type Gravette point	2	14%
Gravette point	2	6%
Microgravette	0	0%
Straight backed bladelet	15	11%
Shouldered piece	5	31%
Miscellaneous point	1	13%
Part-backed piece	2	11%
Irregularly backed piece	3	20%

Table 8.9: Backed lithics from Khotylëvo 2: numbers and percentages made on opaque black flint (raw sample)

8.5 Bladelet blank production techniques

The technology used must be understood in the context of the local availability of flint. Good quality tabular flint can be found in the immediate vicinity of the site—it is dark grey or, more rarely, black or brown in colour, and patinates to white. Most stone tools found at Khotylëvo 2 were made from this flint but some pieces made on imported higher-quality black nodular flint were also found (Gavrilov, 2008, p. 43). About 12% of the backed lithics studied were made on black fine-grained opaque flint, with the remainder of lithics being dark grey or brown in colour, in line with the description of the local flint. The proportion of opaque black flint remains more or less consistent between different sub-categories (the small sample sizes for each sub-category mean that the differences between them should not be over-interpreted) (Table 8.9). This indicates that specific sub-categories of tool were not obviously preferentially made on imported flint.

The vast majority of backed lithics studied during this project were made on prismatic blade blanks that were heavily reduced laterally by backing. The only exception to this is presented by the microgravettes, which are more likely to have been made on

small bladelet blanks. A single lithic was made on a *lame sous crête*; all the remainder were apparently made on the products of *plein débitage* although the heavy reduction of the blanks means this is not definite.

The blade cores from the site have been studied by Seleznev (1998), who found a variety of technological approaches to core reduction and management. Only five of the studied pieces (raw sample) had bipolar removal scars on their dorsal surfaces, but bipolar knapping and multiple striking platforms were fairly common among the studied cores. There is no evidence for bladelet production on prismatic cores at the site; however, there are a significant number of “multi-faceted burins”² which could have acted as bladelet cores, for example for blanks for the microgravettes (Seleznev, 1998, p. 224).

The use of blade blanks and heavy reduction by backing and removal of the ends of the blank gave the makers of the tools found at Khotylëvo 2 a great deal of control over the final dimensions of the pieces. This helps to explain the very high correlation between width and thickness observed for this collection.

Complete removal of arrises was also common, especially using crossed-abrupt backing as discussed above (Section 8.4.2, p. 221). In all cases with continuous crossed-abrupt backing of one edge, the arrises were completely removed. It seems that direct backing was generally used for cases where widthwise reduction did not require the removal of all the arrises; where the final arris had to be removed, crossed-abrupt backing was used. This has been observed for other backed assemblages (Christensen & Valentin, 2004); it is also a very effective technique for achieving a back at near right-angles to two flat dorsal and ventral surfaces. Taken as a whole, 29% (n=73) had more than one arris left, 49% (n=124) had a single arris extant and 22% (n=54) of the pieces studied had no arrises remaining (raw sample). This indicates the high degree of widthwise reduction of the blanks.

There is a very high degree of consistency between different sub-categories in the blanks and type of backing used for their production. This is the case for the straight

²“многофасеточные резцы”

backed bladelets, ordinary Gravette points, Khotylëvo-type Gravette points and the shouldered pieces (most of which are probably unfinished, often broken, representatives of the first three groups). These were all made on blade blanks of fairly consistent form and dimensions, which were backed and truncated until the required form was achieved. This often involved heavy reduction of the original size of the blank. The microgravettes were perhaps produced using a different *chaîne opératoire*, similar to that used at Kostënki 8 Layer 2, but the evidence for this is not conclusive.

8.6 Discussion

The backed assemblage from Khotylëvo 2 can be summarized as follows. Straight, regular backed bladelets of unknown function constitute the most numerous sub-category of backed lithics. This sub-category almost certainly includes medial and basal fragments of Gravette points, which are indistinguishable from much of the rest of the backed assemblage when the point is not present. The assemblage has an important Gravette point component, including the newly defined Khotylëvo-type Gravette points, which have been categorized by other authors as shouldered points. A very small number of microgravettes are present; these pieces may be under-represented due to the excavation conditions. There is only one convincing shouldered point in the assemblage, which exists as a fragment. The rest of the shouldered assemblage (excluding the Khotylëvo-type Gravette points) is made up of miscellaneous incompletely backed lithics.

The backed lithics were produced on regular blades, created on prismatic cores. The width of the blanks was usually heavily reduced during retouching, so that often no arrises remain. Crossed-abrupt backing was employed where retouching removed all arrises, including in the formation of pointed ends, where the crossed backing was often only partial.

Khotylëvo-type Gravette points also appear to exist in the collection from Gagarino, based on the available illustrations (Fig. 8.22). Gagarino has previously been linked with Khotylëvo 2 by some authors (Sinitsyn, 2007; Zaverniaev, 1991; see Section 8.2).

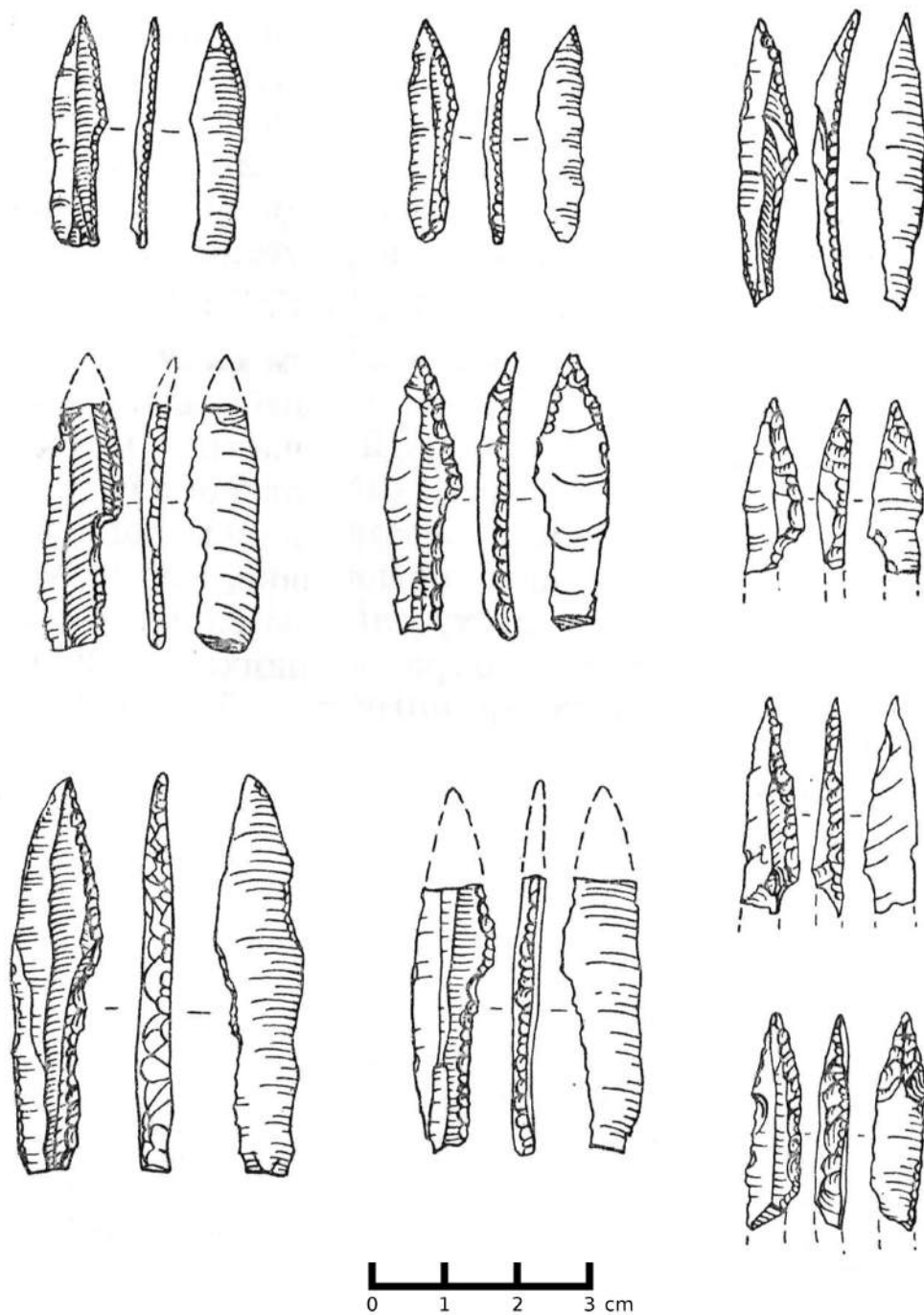


Figure 8.22: Khotylëvo-type Gravette points from Gagarino (after Tarasov, 1979, Fig. 35, p. 77)

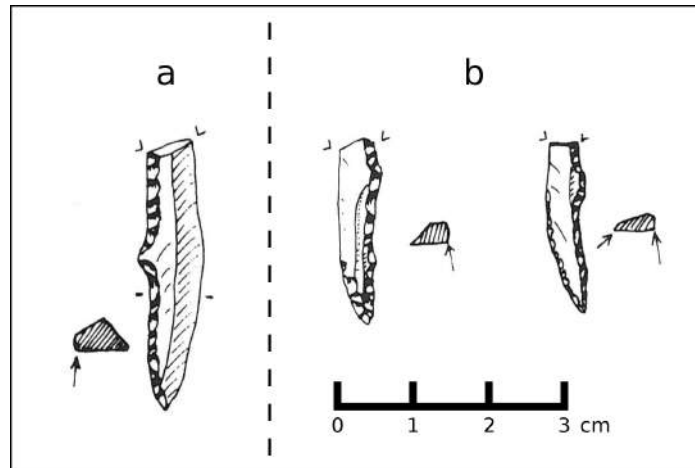


Figure 8.23: Gravette points with gibbosities on their backed edges from Central Europe. a: Willendorf II Level 6 (after Otte, 1981, Fig. 107: 8, p. 269); b: Wójcice (after Otte, 1981, Fig. 203: 7–8, p. 428)

Beyond Gagarino, any kind of Gravette point with a gibbosity appears to be very rare in Eastern and Central Europe. There is a lithic from Level 6 of Willendorf II described as a “*base de gravette à dos gibbeux*”³ which could be comparable (Otte, 1981, p. 269) (Fig. 8.23: a). If it is truly the basal fragment then the gibbosity is in the wrong position for it to be classified as a Khotylëvo-type Gravette point, but the extant end is clearly pointed. The assemblage from Wójcice (Poland) is described as containing 22 backed bladelets of which three basal fragments and two medial fragments bear gibbosities (Otte, 1981, p. 429). The illustrated lithics are small in comparison with those from Khotylëvo 2 and Gagarino, but are nonetheless interesting (Fig. 8.23: b). Peyrony (1948) describes the points from Gagarino as “*pointes à cran atypiques ou à gibbosités*”⁴ and finds their analogy in the Périgordien III of Laugerie-Haute.

In terms of the backed assemblage, the best comparison for Khotylëvo 2 is provided by Gagarino. Other than the Khotylëvo-type Gravette points, Khotylëvo 2 is a rather generalised Gravette point and straight backed bladelet assemblage. Previous comparisons with Moravian sites and various other European sites seem groundless if only the evidence from the backed assemblage is considered.

³“base of a Gravette point with a gibbous back”

⁴“atypical shouldered points or shouldered points with gibbosities”

Chapter 9

Kostënki 21 Layer 3 (Gmelinskaia)

9.1 History of excavation and investigation

The site of Kostënki 21 was located on the first terrace above the Don on the very edge of the river itself, ca. 200 m downstream from Popov Log (Fig. 2.2). It was discovered in 1956 by N. D. Praslov and excavated in 1957, 1958, 1960, 1964, 1971 and 1976–1979. As the site was being actively eroded by the Don during the twentieth century, investigations at the site took the form of rescue excavations (Praslov & Rogachëv, 1982, p. 198).

The assemblage is quite well-published in Russian, with numerous publications devoted to it, including some focusing on its fauna, decorative artefacts, and the evidence for dwelling structures (e.g. Ivanova, 1981; Ivanova et al., 1987; Praslov & Ivanova, 1982). It also receives discussion in some comparative works (e.g. Amirkhanov, 1998; Anikovich et al., 2008c; Sinitsyn, 2013; Zhëltova, 2008). The most extensive discussion of the assemblage in a Western European language is in Sinitsyn (2007) but it is also mentioned briefly in some reviews of the Russian Gravettian (e.g. Djindjian et al., 1999; Hoffecker, 2002; Kozłowski, 1986).

Three cultural layers were discovered at the site, of which the third was by far the richest. Layer 3 was discovered in association with a poorly pronounced buried soil with cryogenic deformations (Praslov & Ivanova, 1982). This soil has been correlated

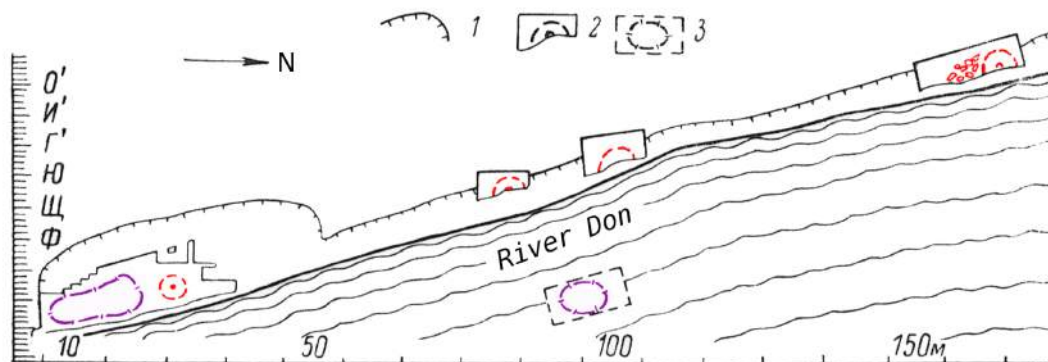


Figure 9.1: Plan of Kostënki 21 Layer 3 (modified from Praslov & Ivanova (1982, Fig. 68)). Key: 1: cut bank; 2, 3: borders of dwellings and accumulations. Red: northern complex. Purple: southern complex

with buried soils at other sites at Kostënki, and is known as the “Gmelin soil” (Holliday et al., 2007, p. 220) (see Chapter 4). The third cultural layer was found at a depth of several metres, buried under a series of colluvial and alluvial deposits and loess-like loams (Praslov & Ivanova, 1982). The cultural layer and buried soil were deformed by permafrost-related processes (Fig. 4.13, p. 101). The vertical distribution of the cultural layer sometimes reached 30 cm as a result of this, although its average thickness was 5–7 cm (Praslov & Ivanova, 1982).

The following summary of the site’s layout is based on Anikovich et al. (2008c), Praslov & Rogachëv (1982) and Zhëltova (2008), which generally agree with each other. The site is spatially complicated, including six different concentrations of material, including possible dwelling structures (Fig. 9.1). The site extended for ca. 160 m along the bank of the Don; more than 510 m² were excavated. Due to the erosion of the site into the Don, several accumulations were only partially excavated. The accumulations have been separated into two groups, often called the “northern” or “dwelling” complex, and the “southern” or, sometimes, “manufacturing” complex. The northern complex consists of four possible dwelling structures, three of which are described as having hearth pits at their centres. Altogether fewer than 3,000 flints were collected from these accumulations. Two large concentrations of finds—40 m² and 70 m²—make up the southern complex. The first of these has been interpreted as a circular dwelling with a

Kostënki 21 Layer 3			
Species		NISP	MNI
<i>Mammals</i>			
<i>Mammuthus primigenius</i>	Mammoth	298	3
<i>Bison priscus</i>	Steppe bison	4	1
<i>Equus ferus</i>	Horse	21	3
<i>Rangifer tarandus</i>	Reindeer	36	1
<i>Canis lupus</i>	Wolf	23	1
<i>Alopex lagopus</i>	Arctic fox	11	2
<i>Lepus sp.</i>	Hare	214	6
<i>Marmota sp.</i>	Marmot	2	1
Total		609	18

Table 9.1: Fauna from Kostënki 21 Layer 3 (from Vereshchagin & Kuz'mina, 1977)

hearth; the limits of the latter were less clearly defined, and it lacked an obvious hearth (although there were concentrations of burnt material). Huge amounts of lithic material were found within these two concentrations: ca. 7,500 lithics in the smaller accumulation and ca. 24,000 in the larger one. Importantly, the two groups of concentrations are described as differing in the typological composition of their lithic assemblages.

The faunal collection from the site contains material from possible prey animals—reindeer, horse, bison, and mammoth—as well as the remains of fur-bearing animals. The site lacks large bones which might have been argued to have been used for the construction of dwelling structures (Zhëltova, 2008). Unfortunately, no information is available on the spatial distribution of the faunal remains, for example according to dwelling complex.

9.2 History of interpretation

The site is universally described as Gravettian. It is not usually included in the Kostënki-Avdeevo Culture despite the presence of lithics described as shouldered points: these have been recognised as different from the shouldered points found at Kostënki 1 Layer 1 and Avdeevo. The main differences in interpretation over the years have concerned the

importance of the apparent similarity with the assemblage of Kostënki 11 Layer 2. Some authors have stressed the closeness of the lithic assemblages from these sites, while others have maintained that Kostënki 21 Layer 3 is very different from any other site. Comparisons have also been made with Kostënki 5 Layer 2, sites on the Dnieper, and Western European sites.

Praslov & Ivanova (1982) see some similarity with the assemblage from Kostënki 11 Layer 2, but do not draw any conclusions on this matter. They highlight the importance of what they see as different activity areas within the site for creating differences with other sites on the Russian plain.

Kozłowski (1986, pp. 166, 183, 190) mostly stresses the idiosyncrasy of the site, but finds similarity between the “convex, backed points with rounded blunted bases” from Kostënki 11 Layer 2 and those from Kostënki 21 Layer 3 and Kostënki 5 Layer 2. He emphasises the uniqueness of the engravings of animals on stone pebbles (which he writes are also found at Předmosti) and of features of the habitation structures.

Sinitsyn (2007, p. 197) treats the assemblage as representing one of his four *faciès* of the Kostënki-Borshchëvo Gravettian. He sees all aspects of the assemblage as having idiosyncratic traits within the Gravettian of the region. Like others authors, however, he sees some similarity with Kostënki 11 Layer 2, describing some points as belonging to a “*groupe de federmesser*” alongside those from Pushkari 1 and Klyusy in the Dnieper basin.

In a later article, Sinitsyn (2013) again emphasises the uniqueness of the site within the Russian MUP. He writes that the shouldered points are different from the shouldered points of the Kostënki-Avdevo Culture, but close to Western European shouldered points. He also describes some points as being reminiscent of Federmesser points (these are the “convex, backed points with rounded blunted bases” described by Kozłowski). He sees this as evidence of the influence of common European cultural processes at Kostënki, which he contrasts with the Kostënki-Avdevo Culture sites and Kostënki 11 Layer 2, which he sees as “*variantes propres à l’Europe de l’Est*”¹ (Sinitsyn, 2007,

¹“variants specific to Eastern Europe”

p. 198).

Anikovich et al. (2008c) also compare the round-based backed points (which they call “modifications of Azilian points”² with the assemblage from Kostënki 11 Layer 2. They include rectangles, often truncated, in this comparison. For them, the significant number of small backed bladelets constitutes a difference from Kostënki 11 Layer 2. They consider the northern and southern complexes separately: according to them, the southern, larger complex has a significant microassemblage, including backed bladelets, and shouldered points and the few stemmed points. They write that the Azilian-type points and rectangles are completely absent from the southern complex. The northern complex, on the other hand, contains Azilian-type points and rectangles, and shows other differences in its typological composition, for example in the proportion of burins and scrapers. They regard the two complexes at Kostënki 21 Layer 3 as very different from one another, but maintain that they belong to a single site. In Anikovich’s opinion, strong differences between two areas of a single site are logically possible, and reflect a complex social structure (e.g. the presence of people from different cultural traditions, or of separate areas for men, women, children, etc.) or activities relating to different types of hunting having taken place in different areas.

They stress the similarities with Kostënki 11 Layer 2, writing that if the osseous industries and decorative material from the two sites were as similar as the flint material, there would be no doubt that they belonged to the same culture. It is suggested that Kostënki 11 Layer 2 represents a winter settlement and Kostënki 21 Layer 3 is a summer settlement and flint knapping workshop. Both sites are included in the “Anosovsko-Gmelinskaya archaeological culture,” and contrasted with Gravettian sites that they believe are chronologically close, such as Kostënki 1 Layer 1, Kostënki 4 Layer 1, Kostënki 9, and Borshchëvo 5 Layer 1.

²“модификации азильских острий”

9.3 Collections and sampling

The extensive collections from the excavations at this site are held at the IIMK in Saint Petersburg. A total of 1,245 backed lithics were counted in the collections here, including 1,165 ordinary backed bladelets and points, 15 entire shouldered points, and 65 fragments of shouldered points. Due to the nature of the curatorial situation, it is not possible to be certain whether material was missing from the studied collection. A 25% random sample (see Section 3.2.4) of the backed bladelets, backed points, and broken shouldered points was studied (307 altogether), and all 15 of the entire shouldered points were studied: 322 lithics in total. Of 28 cores found in the collection, 14 were examined and recorded.

Since two different types of sampling were used here, modification of the dataset was sometimes necessary for analysis. In most cases a raw dataset was used (for example when looking at sub-groups either excluding, or entirely made up of, the unbroken shouldered points). In other cases, especially when the entire assemblage was being considered, a weighted dataset was used, which gives the pieces sampled at 25% a quadruple weighting. When the weighted dataset was used, results of analyses are given as percentages rather than as raw counts. In the following sections the dataset used (raw or weighted) is always clearly stated.

According to the literature, more than 31,000 knapped flints were found in total at the site. The following description is based on the information in Praslov & Ivanova (1982, pp. 202–209).

The “northern complex” provided 2,760 lithics, including 271 which were retouched. The assemblage from this part of the site included backed microliths, retouched and backed blades, burins, a few scrapers, backed points, and other lithics.

The collection from the larger accumulation in the “southern complex” of the site numbered ca. 23,860 flints, including 1,020 retouched pieces. The other yielded ca. 7,500 lithics. These included modest numbers of scrapers and burins, and larger numbers of retouched blades and bladelets. There were many backed bladelets, of which almost all

had full backing along one edge. The shouldered and stemmed points made on bladelet blanks represent another significant group of artefacts. The distal end of the point was often retouched. Other, unshouldered points, also made on bladelets, were represented, but in smaller numbers. They have one or two backed edges and sometimes oblique truncation of the distal end.

Osseous material from the southern complex includes pendants made of bone and teeth, bone points, a needle, awl, a pierced osseous artefact described as a *bâton percé* and a possible handle of some type (Figs. 9.2 and 9.3). There is also an engraving of an animal on a sandstone disc and some decorated hematite. For the northern complex, the non-lithic industry includes a fragmented bone point, and worked and decorated pieces of ivory, hematite, bone and shell.

9.4 Backed lithic assemblage

9.4.1 Sub-categories

The backed collection from Kostënki 21 Layer 3 includes several lithic categories, some of which are much more homogeneous than others. The figures in brackets in the following list indicate the number of pieces studied, not the number in the entire collection.

Shouldered pieces (broken) (n=16). (25% sample). Any broken pieces bearing a clearly backed *cran* or shoulder.

Shouldered pieces (unbroken) (n=15). (100% sample). These are as the previous group, but unbroken.

Points (n=17). (25% sample). Pieces which have a clear point on one or both ends, which has been formed by retouch on one or both edges.

Backed bladelets (n=274). (25% sample). Bladelets without a clear point or shoulder but with backing of some description: either straight, concave, convex, etc. or irregular. The overall form of the bladelets, as well as the treatment of the ends and any other retouch, varies widely.

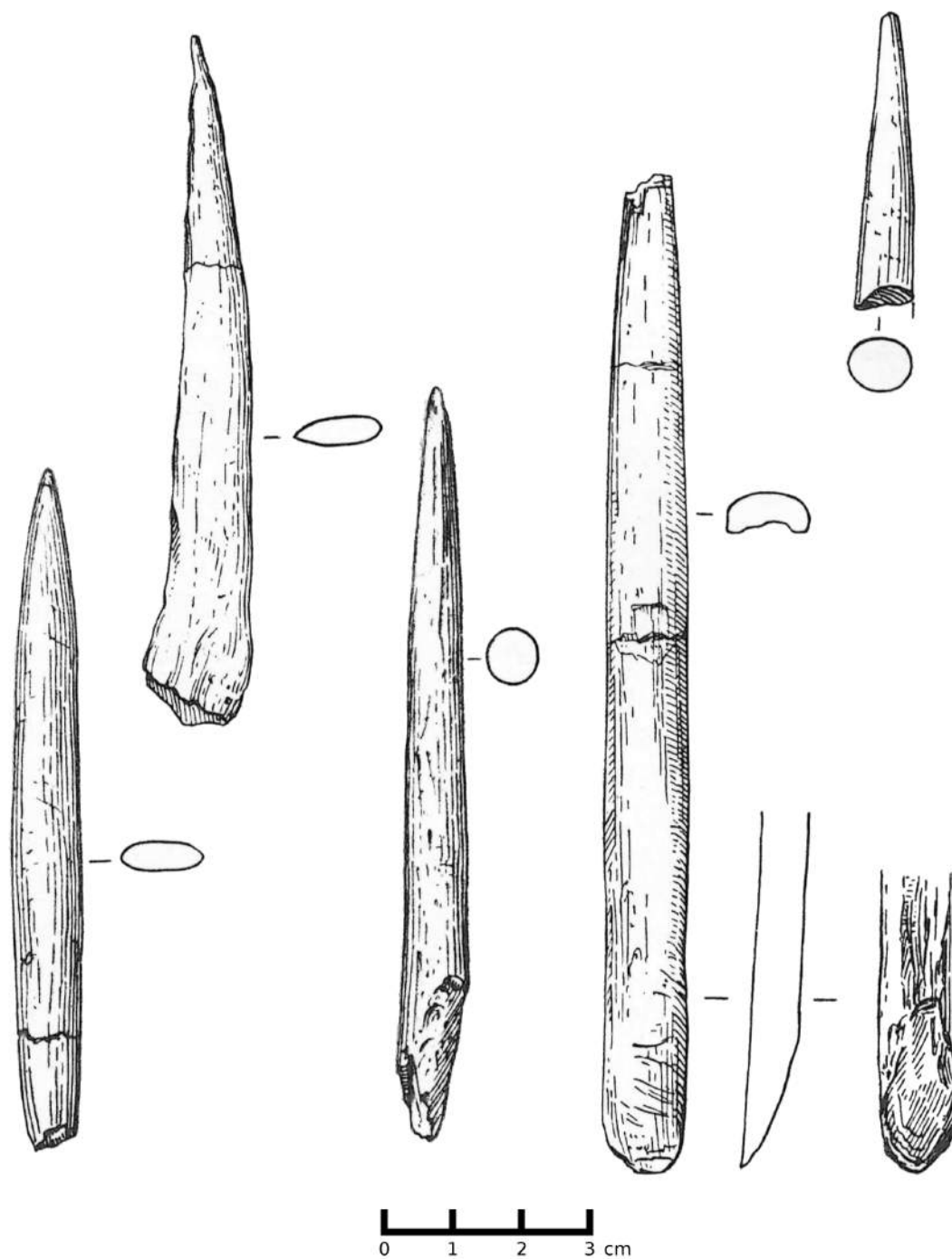


Figure 9.2: Bone points from Kostënki 21-3

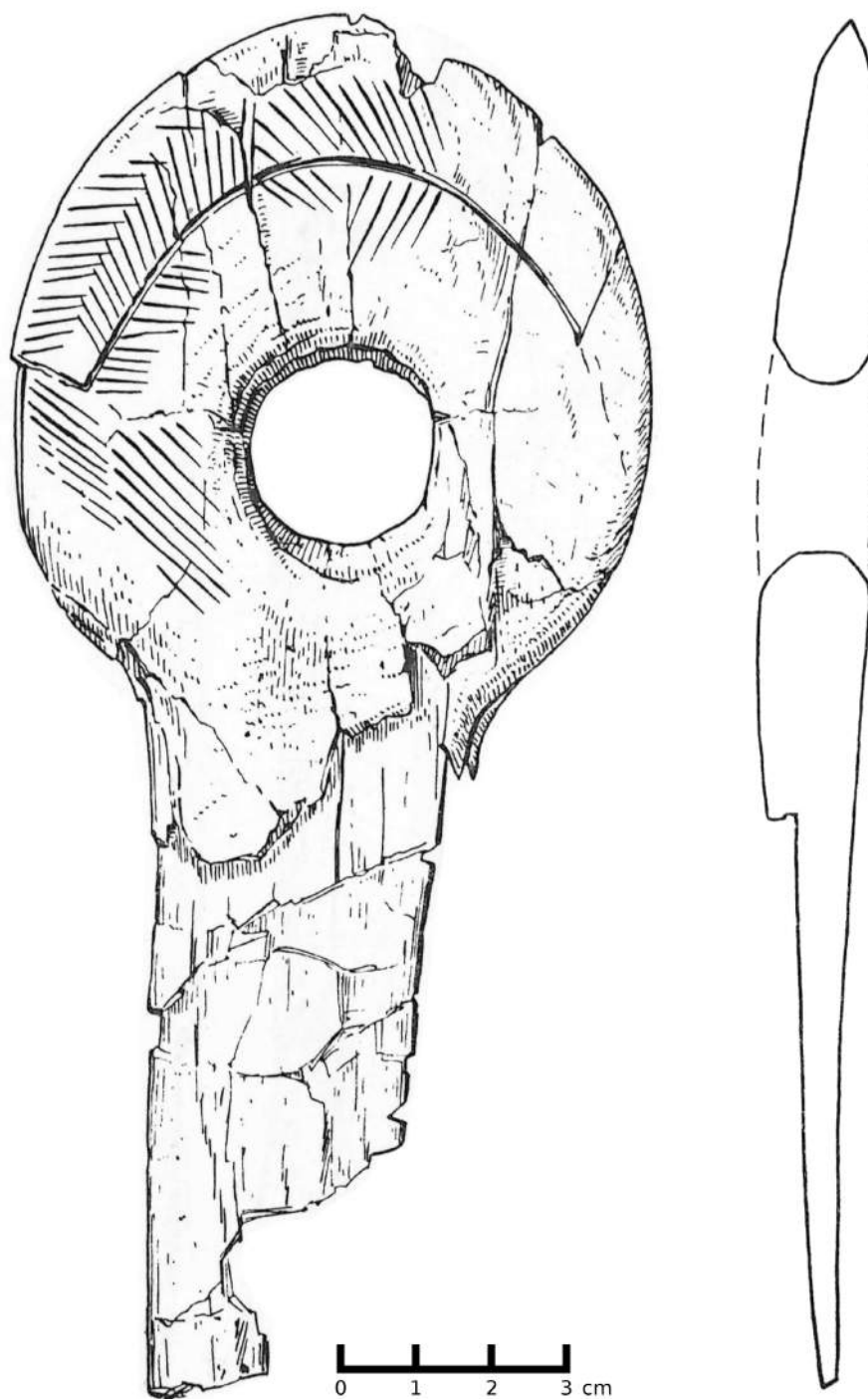


Figure 9.3: A “*bâton percé*” from Kostënki 21-3

Element	Raw count	Raw percentage	Weighted percentage
Whole	54	17%	14%
Proximal fragment	123	38%	40%
Medial fragment	93	29%	30%
Distal fragment	52	16%	17%
Total	322	100%	101%

Table 9.2: Backed lithics from Kostënki 21 Layer 3: counts of whole examples and fragments

9.4.2 General remarks

The collections from the northern and southern complexes were analysed separately, because previous work had suggested that there were clear typological differences between them (Section 9.2). Only 30 pieces (9% of the raw dataset) from the northern complex were studied and 292 (91% of the raw dataset) from the southern. Numerous typological differences were noted between the two collections; for example, no shouldered pieces were found in the northern complex, but 31 were found in the southern. Unfortunately, the small size of the assemblage from the northern complex means that this observation is not statistically robust. However, the studied points from the northern and southern complex are also very obviously different, as will be discussed further below. In the following sections dedicated to various typological groupings, the differences between the assemblages from the northern and southern complexes will be made clear.

The site's assemblage contains a few recognisable typological groups, which vary in their level of homogeneity. However, these only make up a small minority of the collection as a whole. The remainder of the assemblage is made up of quite simple and variable backed bladelets. It is very difficult to discern typological groups within this mass of bladelets: the sub-categories outlined here, based on the type of backing and the shape of the unbacked edge, only represent a first attempt to identify any sub-groups within the backed bladelet assemblage. They are not necessarily reflective of functional or other categories.

As is usually the case, proximal fragments outnumber medial, distal and unbroken pieces (Fig. 9.4 and Table 9.2). The frequency of backing on the right edge is almost

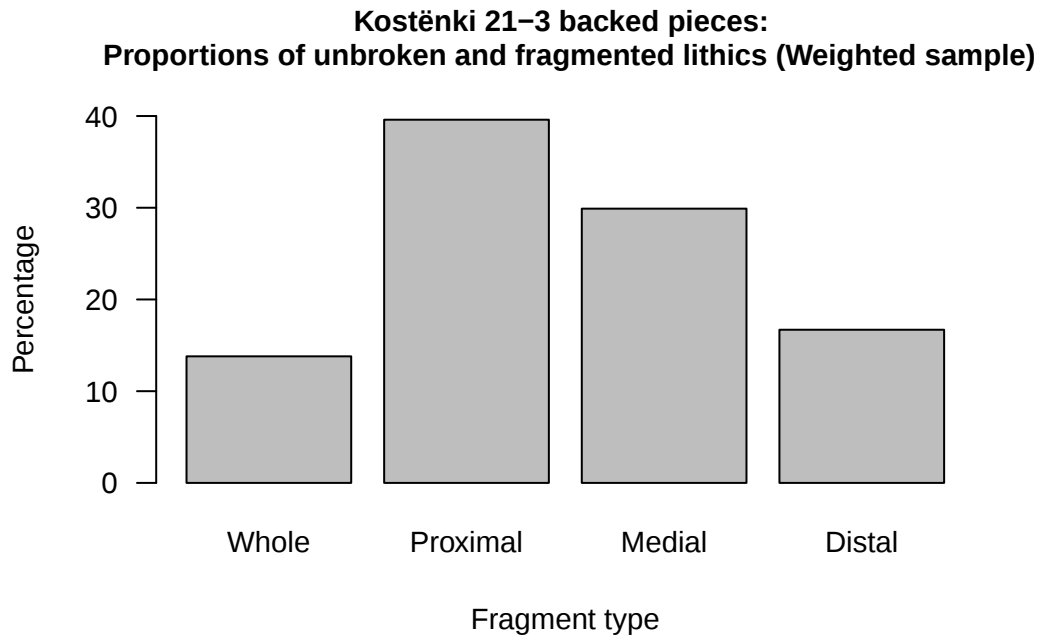


Figure 9.4: Backed lithics from Kostënki 21 Layer 3: counts of whole examples and fragments (n=322; weighted sample)

exactly the same as that on the left edge, in clear contrast with several other sites included in this research (Fig. 9.5). For the weighted sample, 46% of pieces are backed on the right edge and 46% on the left edge (6% had substantial backing on both edges and 2% were backed on an indeterminable edge). There was no significant difference between the northern and southern complexes in these respects.

The distribution of widths of the collection considered as a whole is unimodal and right-skewed (Fig. 9.6). The widths of the pieces vary between 3 mm and 17 mm, with a mean value of 7.5 mm and a median of 7 mm (SD: 2.6). The thicknesses of the pieces are usually modest, with few reaching 5 mm (mean: 2.5 mm, median: 2 mm, SD: 0.8) (Fig. 9.7). There is a moderate to strong correlation between width and thickness for the collection taken as a whole: Pearson's $r=0.49$ (weighted sample).

One marked difference between this collection and others under study is the relatively low rate of removal of striking platforms and bulbs of percussion. Of the entire weighted sample, 50% were suitable for determining the presence/removal of a strik-

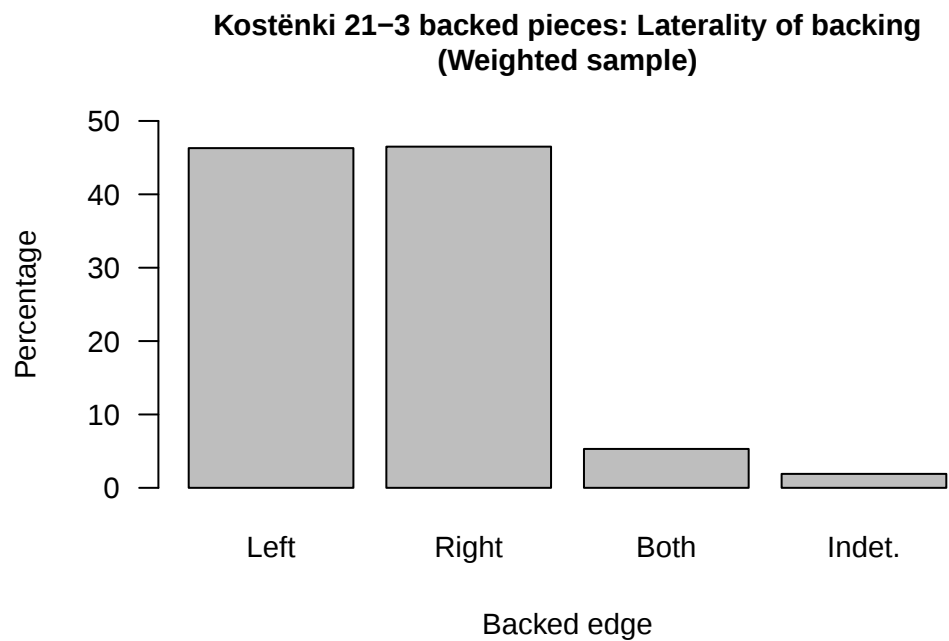


Figure 9.5: Backed lithics from Kostënki 21 Layer 3: backing by edge (n=322; weighted sample)

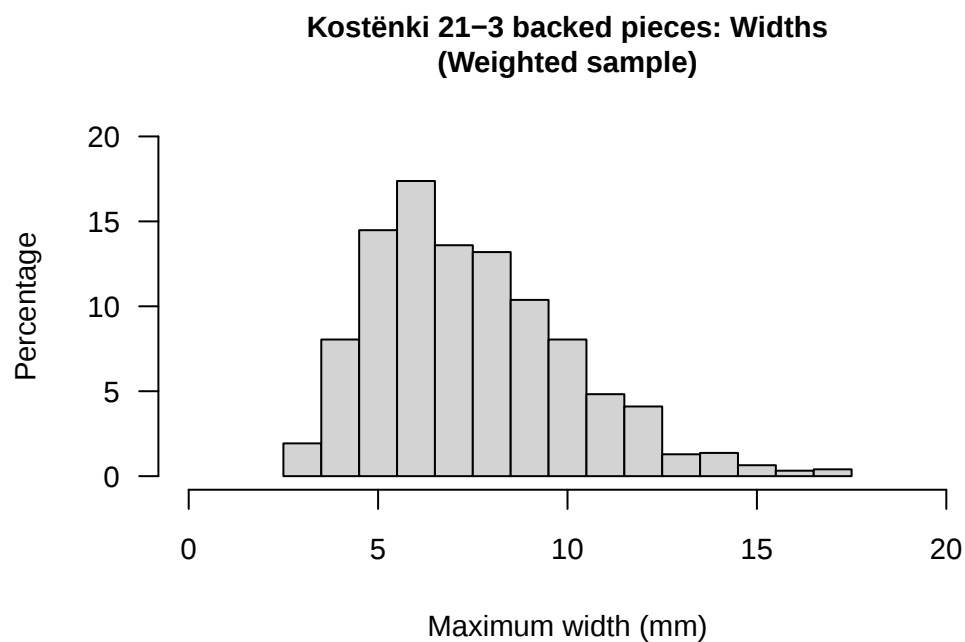


Figure 9.6: Backed lithics from Kostënki 21 Layer 3: histogram of widths (n=322; weighted sample)

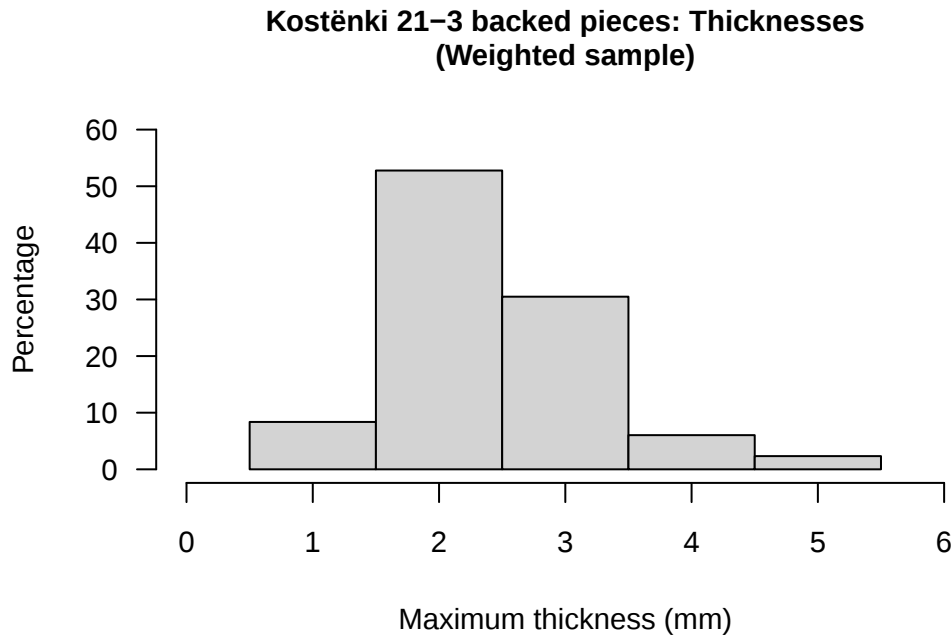


Figure 9.7: Backed lithics from Kostënki 21 Layer 3: histogram of thicknesses (n=322; weighted sample)

ing platform and 51% for the presence/removal of a bulb of percussion (the rest were broken). Of the weighted sample with intact proximal tips, only 29% had had their platforms removed. The other 71% had extant striking platforms. Of the weighted sample with unbroken proximal ends, 7% had completely undisturbed bulbs of percussion. The majority, 71%, had partially removed bulbs (> 50% extant) and 13% had mostly removed bulbs (< 50% extant). 10% had had their bulbs completely removed.

In almost all cases direct backing was used. Only in a tiny number of cases was crossed (n=2, raw sample) or inverse (n=8, raw sample) backing used. One of the pieces with inverse backing derived from the northern complex; all the rest, as well as both the lithics with crossed-abrupt backing, were found in the southern complex.

9.4.3 Shouldered pieces

Lithics with a well-defined backed shoulder (or two, creating a tang), most of which are shouldered points, make up a small but important part of this assemblage. *All*

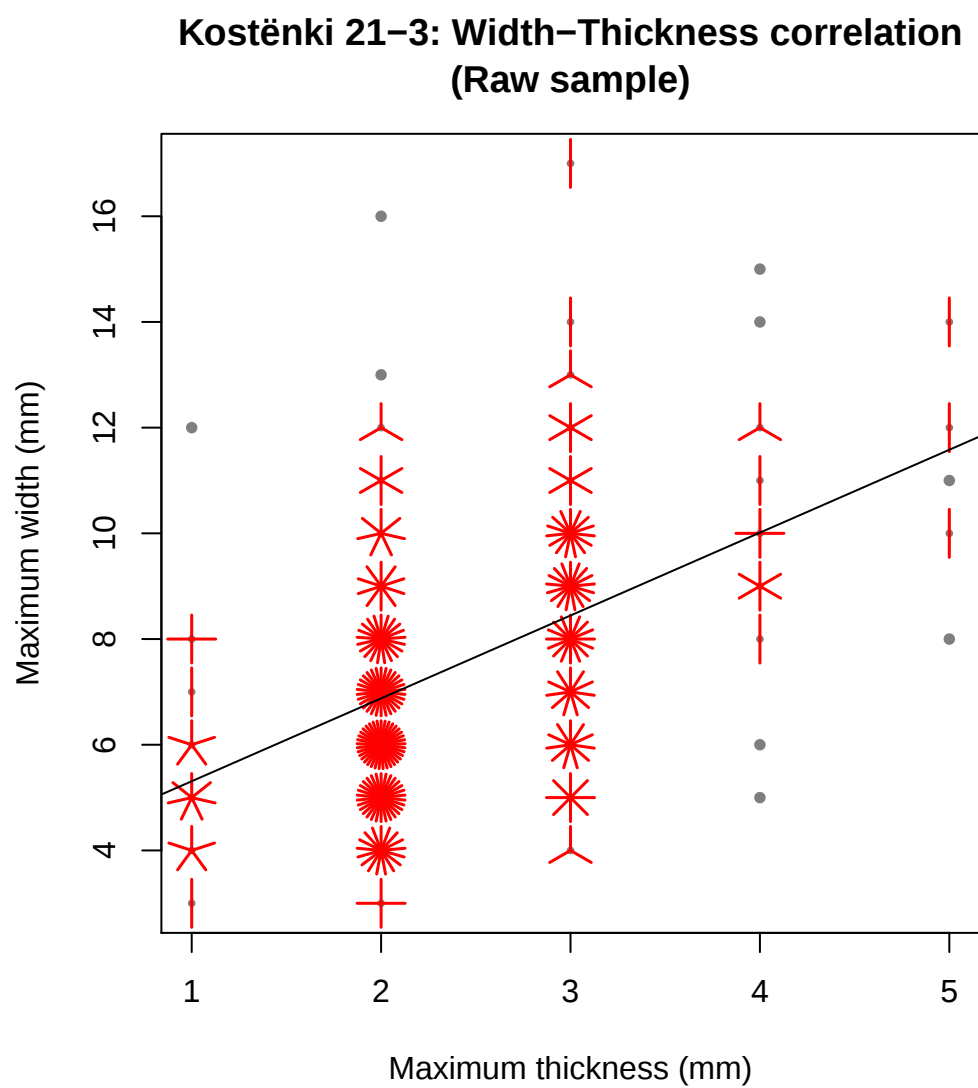


Figure 9.8: Backed lithics from Kostënki 21 Layer 3: sunflower plot of width vs thickness with regression line (n=322; raw sample). Pearson's $r=0.49$ (for weighted sample)

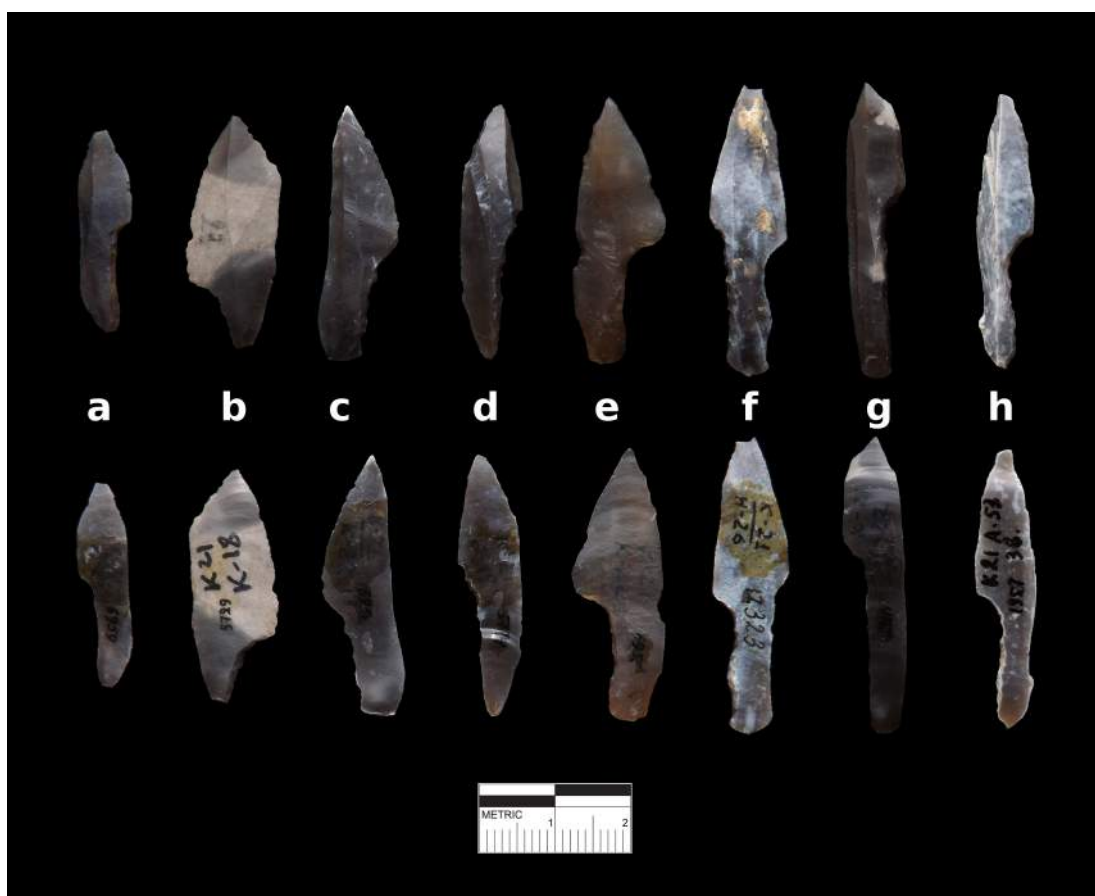


Figure 9.9: Unbroken shouldered pieces from Kostënki 21 Layer 3 (1): dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph



Figure 9.10: Unbroken shouldered pieces from Kostënki 21 Layer 3 (2): dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph

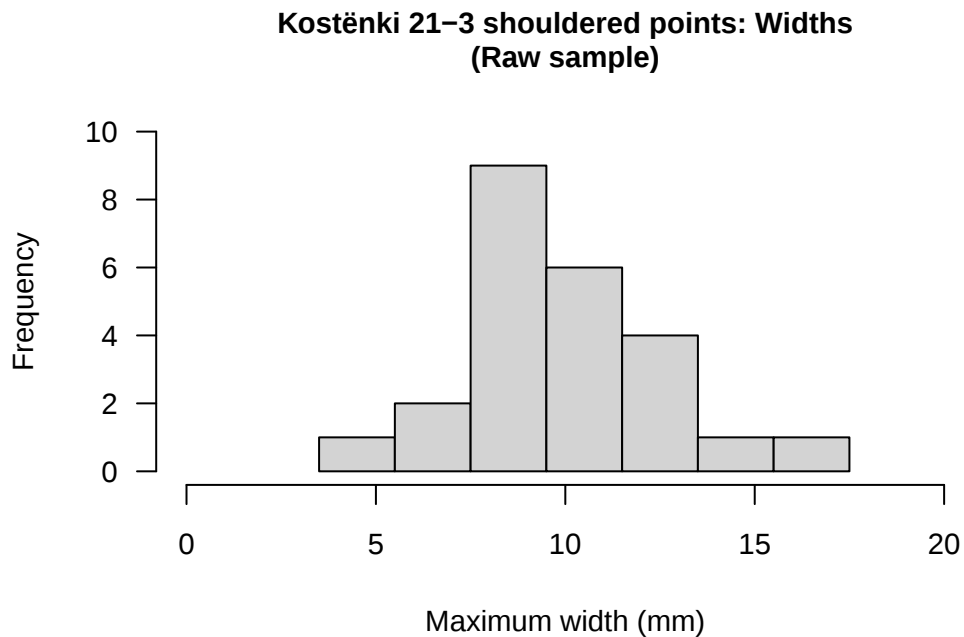


Figure 9.11: Shouldered points from Kostënki 21 Layer 3: histogram of maximum widths (n=31; raw sample)

the studied pieces were found within the southern complex. A 100% sample of the unbroken pieces (n=15) and a 25% sample of the broken pieces (n=16) were studied. The unbroken pieces are all shown in Figs. 9.9 and 9.10.

All of the unbroken shouldered pieces have points at their distal ends. Of the 16 broken shouldered pieces studied, nine appear to be fragments of the same type of point as the unbroken points, two are definitely not, and five fragments are too small to draw conclusions. Including the unbroken points, this gives us a sample of 24 shouldered points. The two shouldered lithics which are not shouldered points could perhaps be unfinished points of other kinds, or unfinished backed bladelets.

The lengths of the unbroken points range from 27 mm to 76 mm, with 46 mm the mean length (median: 40 mm, SD: 14.8). The widths of the broken and unbroken points cluster between 8 and 14 mm (Fig. 9.11). Perhaps surprisingly, there is only a weak correlation between the maximum widths and the thicknesses of the pieces (Pearson's $r=0.26$).

Ventral surface morphology	Count	Percentage
Concave	8	33%
Flat	7	29%
Sinuuous	5	21%
Concave twisted	2	8%
Convex	1	4%
Twisted	1	4%
Total	31	100%

Table 9.3: Shouldered points from Kostënki 21-3: ventral surfaces

The shoulder is created using direct abrupt and/or semi-abrupt backing. The lengths of the stems vary in relation to the points as a whole, but are usually about half the total length of the piece, and sometimes even longer. The vast majority of points (n=22, 92%) have some kind of retouch to their distal points, which can be marginal retouch or backing. This is almost always direct, varies in its extent and can be on one or both edges. The blanks appear to have been selected so that little retouch was necessary to create a sharp point.

Ventral retouch is rare among the shouldered points, being found on only three of the 31 lithics. In two cases, this constitutes low-angle invasive retouch shaping the distal point, either from only one edge or from both edges, and continuing for about 15 mm of the length of the piece. In the third case, it is low-angle retouch from the proximal end covering the proximal 5 mm of the piece (Fig. 9.9: e).

The ventral surfaces of the shouldered points are mixed in form: only 7 of 24 are flat to within 1 mm tolerance. The others are often concave or sinuous (Table 9.3).

The majority of shoulders are located on the right edge of the lithic (n=15, 63%), with a smaller number located on the left edge (n=8, 33%) or on two edges forming a tang (n=1, 4%). None of the shouldered points or pieces are worked with crossed-abrupt backing, and only one point has inverse backing forming the shoulder. The latter is somewhat different from the other studied points in its general morphology (Fig. 9.9: b).

Of the 16 identified shouldered points with intact proximal ends (i.e. all the unbroken

pieces and one fragment), only eight (50%) have had their striking platforms removed. Two (13%) have had their bulbs of percussion completely removed: the rest have had them partly (n=10, 63%) or mostly (n=4, 25%) removed. In the few cases where there is a retouched proximal end (n=8), there are a variety of forms: pointed or tapering (n=5), sub-rectangular (n=2), and sub-rounded (n=1).

To summarize, the shouldered points form a fairly homogeneous typological series. The majority of them are similar in shape; two pieces which are not (Figs.9.9: b and 9.10: g) are perhaps unfinished or relate to different uses from the rest of the points. The shoulders and distal points were generally shaped with some care. However, the blanks as a whole are usually not straight; the most common type of ventral surface is concave. The points almost always lack the ventral retouch that could have corrected this curvature. The striking platforms were removed in only half of cases, and little attention was paid to removing the bulbs of percussion. Little control was exerted over the relationship between the widths and thicknesses of the lithics. In many cases, damage and use-wear is visible on the edges of the pieces. It seems unlikely that these lithics relate to projectile points. It is far more plausible that they were created for use as knives, probably hafted.

9.4.4 Points

Lithics defined here as points, most of which are shown in Figs. 9.12 and 9.13, were found in both the southern and the northern complex at the site. The collections from each of the complexes clearly differ strongly.

The points from the southern complex (n=9), all of which are shown in the photograph, are generally narrow, elongated, and sometimes rectilinear in form. However, they nonetheless vary strongly in the details of their morphology and retouch, for example, the positioning and treatment of the points, the removal or not of the platform and/or bulb, and the type of blank used and the degree of its reduction. None of the points strictly meet the criteria used for defining a Gravette point (specifically, the criterion that the basal end be retouched) (Demars & Laurent, 1992, p. 100). This is often



Figure 9.12: Points from the southern complex of Kostënki 21 Layer 3: dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph

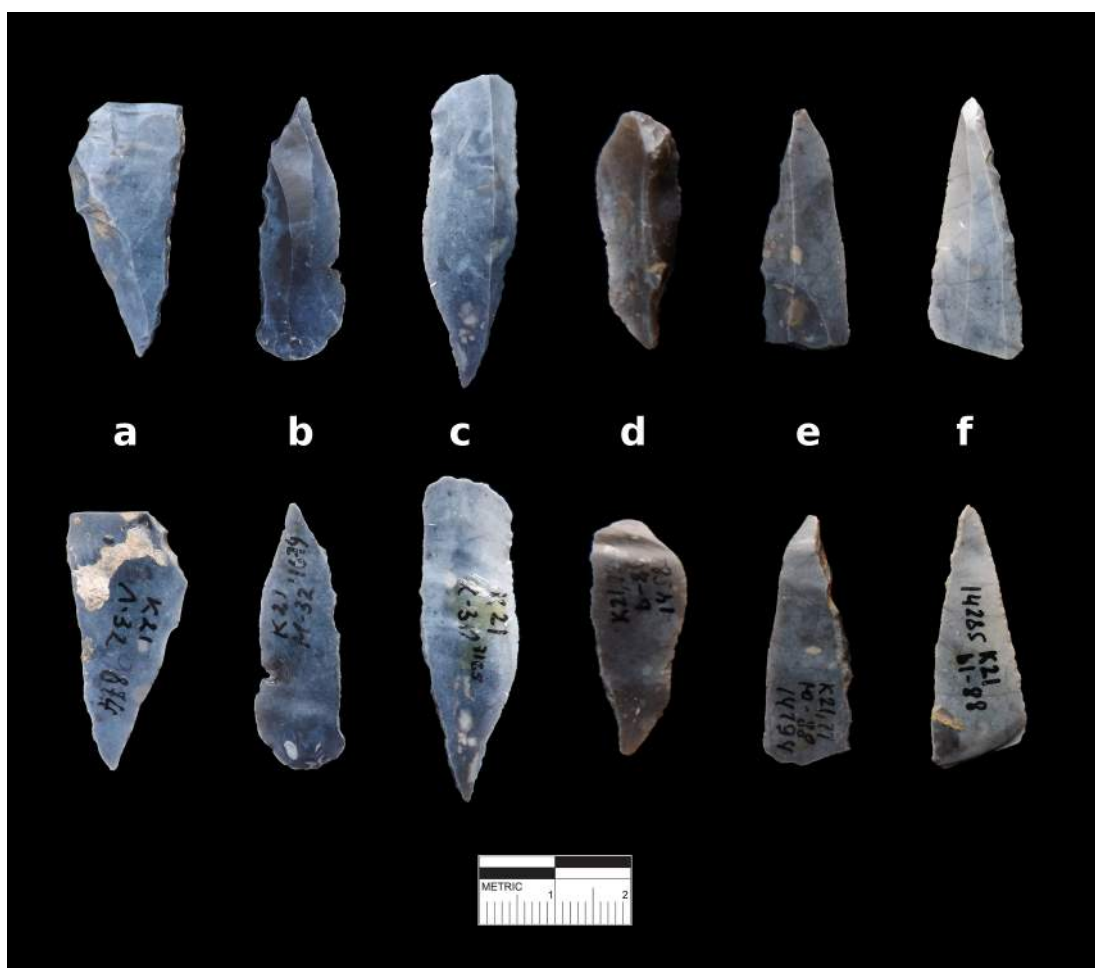


Figure 9.13: Points from the northern complex of Kostënki 21 Layer 3: dorsal (top) and ventral (bottom) views. Proximal ends oriented towards bottom of photograph

because one end is missing; however, there are also two unbroken points which do not meet the necessary criteria. Several fragments, however, could plausibly derive from Gravette points. Three narrow points (Fig. 9.12: b, c and i) perhaps form a series of broken microgravettes. Apart from this speculative categorization, the points are too diverse to find any other groupings, or to find significant unifying details other than the general characteristics of elongation and narrowness. The small number of points studied must obviously be taken into account when considering the importance of this diversity. However, in comparison with other sites studied, and in comparison with the group of points from the northern complex (see below), the level of diversity does seem high and significant.

The points from the northern complex (n=8) are mostly very different from those in the southern complex. These are presumably the points described as “modifications of Azilian points” by Anikovich et al. (2008c), as “convex, backed points with rounded blunted bases” by Kozłowski (1986) and as similar to Federmesser points by Sinitsyn (2007, 2013) (Section 9.2). Seven of them (six of which are shown in the photograph) are rather similar to one another. (The eighth point could well be a part of the same type of point as the other seven but the fragment is too small to be certain.) They are less elongated than the points from the southern complex, and often triangular or close to triangular in form. They are markedly wider than those from the southern complex (Fig. 9.14). Four are unbroken and three are fragments missing the basal end. The pointed end can be found towards either the proximal (n=4, 57%) or distal (n=3, 43%) end of the blank. When the pointed end is oriented distally, the backed edge is usually the left edge (n=6, 86%); only once is the right edge backed. There is no deliberate inverse retouch on any of the points. The basal end, where present, is sub-rounded: this shape is either achieved by backing (n=3) or by leaving the end unretouched (n=1). In all cases apart from the one just mentioned with an unretouched basal end, the striking platform has been removed and bulb of percussion has been fully or mostly removed. The ventral surfaces of the lithics are varied: concave (n=3), sinuous (n=1), flat (n=1), convex (n=1) or twisted (n=1).

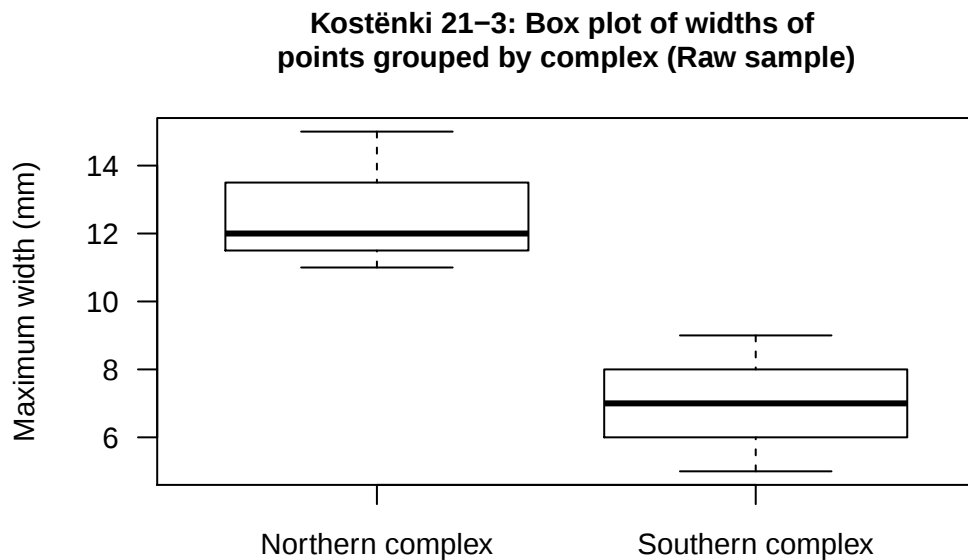


Figure 9.14: Points from Kostënki 21 Layer 3: box plot of widths by complex (n=16; raw sample)

As further discussed below (p. 281), for the backed assemblage as a whole there are also very obvious differences in patination between the points from each complex. Those from the northern complex all bear substantial white patina, while those from the southern complex are only lightly patinated. This is very obvious in Figures 9.12 and 9.13.

9.4.5 Backed bladelets

Backed bladelets form by far the largest group of backed lithics found at this site: 274 were studied (a 25% sample), making up 88% of the weighted dataset. Of these, 252 (92%) derive from the southern complex and 22 (8%) from the northern. These will be examined separately.

Backed bladelets from the southern complex

Several sub-categories were established during this study, based on the shape in plan, and regularity, of the backing, as well as the rectilinearity and regularity of the bladelet as a whole. This was done in an attempt to discern any robust groupings within the backed bladelet assemblage, and are as follows:

Rectilinear backed bladelets (n=97). Bladelets with one straight backed edge and an unbacked straight edge parallel to the backed edge.

Straight backed bladelets with regular second edge (n=105). Bladelets with one straight backed edge and a regular, but not straight, second edge (e.g. concave, sinuous).

Straight backed bladelets with irregular second edge (n=45). Bladelets with one straight backed edge and an irregular second edge.

Straight backed bladelets with missing second edge (n=2). Bladelets with one straight backed edge and whose second edge is entirely or almost entirely missing due to a break.

Regularly backed bladelets (n=9). Bladelets with a regular, but not straight, backed edge (e.g. convex).

Irregularly backed bladelets (n=16). Bladelets with a backed edge which is irregular in plan.

Apart from the criteria used to separate these sub-categories, there are not many differences evident between the groups. This does not strengthen any argument for their reflecting functional or other groupings.

Crossed and inverse backing are rare, being present on, respectively, only two and five backed bladelets from this complex (raw sample). In these cases the crossed or inverse backing does not always relate to the main backing of the lithic.

	Southern complex		Northern complex	
Sub-category	Count	Percentage	Count	Percentage
Rectilinear backed bladelets	90	36%	7	32%
Straight backed bladelets with regular second edge	97	38%	8	36%
Straight backed bladelets with irregular second edge	42	17%	3	14%
Straight backed bladelets with missing second edge	2	1%	0	0%
Regularly backed bladelets	8	3%	1	5%
Irregularly backed bladelets	13	5%	3	14%
Total	252	100%	22	100%

Table 9.4: Backed bladelets from Kostënki 21-3: subcategories by complex (raw sample)

	Southern complex		Northern complex	
Ventral surface morphology	Count	Percentage	Count	Percentage
Flat	118	47%	6	27%
Concave	74	29%	8	36%
Concave twisted	14	6%	2	9%
Convex	3	1%	1	5%
Sinuuous	8	3%	2	9%
Sinuuous twisted	5	2%	0	0%
Twisted	30	12%	3	14%
Total	252	100%	22	100%

Table 9.5: Backed bladelets from Kostënki 21-3: ventral surfaces (raw sample)

There is an almost equal distribution between backing on the left and right edges of the blanks: 119 (47%) are backed on the left and 117 (46%) on the right. 10 (4%) are backed on both edges and 6 (2%) on an indeterminable edge. Among the sub-categories of backed bladelets outlined above, the only grouping which departs substantially from this distribution is that of the “regularly backed bladelets”: 6 are backed on the left edge, one on the right and one on an indeterminable edge. However, given the small number of pieces concerned, this is not necessarily a significant observation.

The ventral surfaces of the backed bladelets are rather varied (Table 9.5). Just under half are flat to within 1 mm tolerance; the rest are concave, sinuous, twisted, etc.

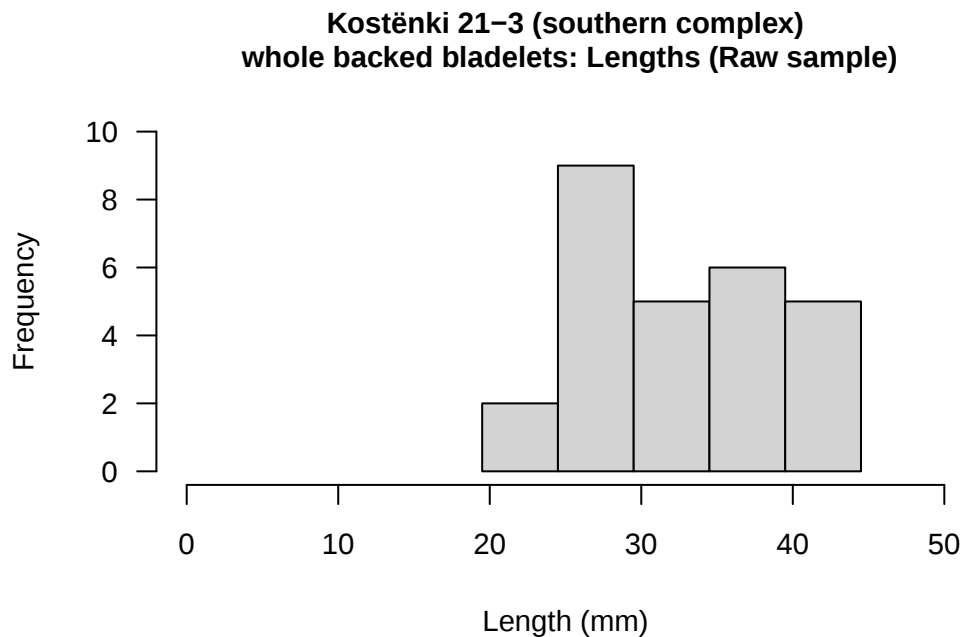


Figure 9.15: Whole backed bladelets from Kostënki 21 Layer 3 (southern complex): histogram of lengths (n=27; raw sample)

Removal of the striking platform and bulb is less frequent than among the other sites studied. Of 125 backed bladelets which have their proximal tips intact, only 29 (23%) have had their striking platforms removed. In all other cases (n=96, 77%) the striking platform is extant. Of the 127 lithics suitable for judging the presence of a bulb of percussion, only in 8 cases (6%) is it totally removed; in 12 cases (9%) it is mostly removed (> 50%) while in the other 107 cases (84%) at least 50% of the bulb is extant.

The lengths of the unbroken backed bladelets are given in Fig. 9.15. There are no obviously significant differences between the defined sub-categories. The widths of all the backed bladelets are shown in Fig. 9.16.

One possibly meaningful sub-category that could be established here is among the “regularly backed bladelets”: bladelets with a regular convex/sinuuous/concave etc (but not straight) backed edge. There are eight deriving from the southern complex. These pieces, although they are few in number, have a much higher rate of removal of the platform and bulb than the rest of the backed bladelet sub-categories examined here

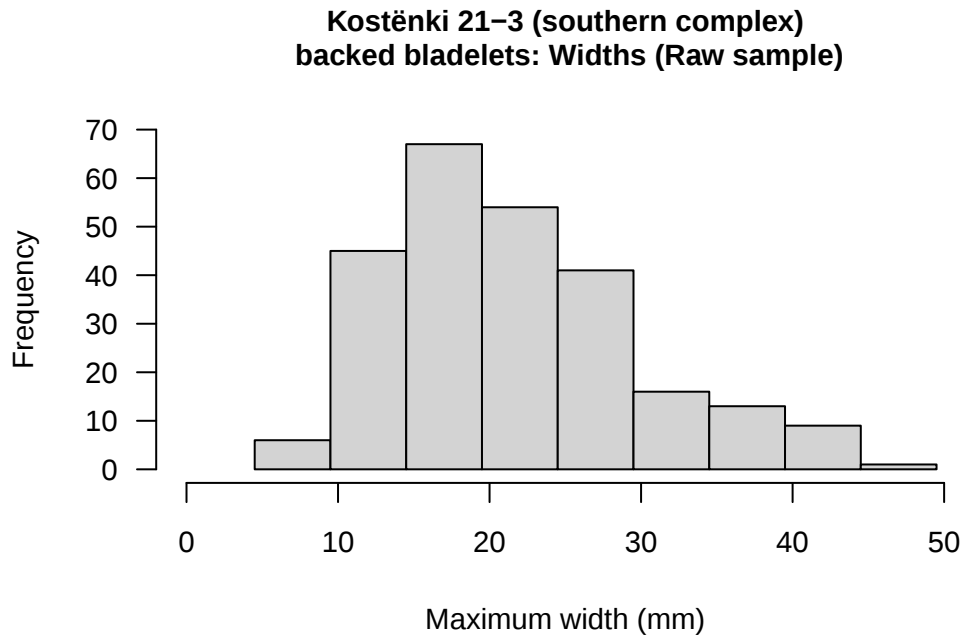


Figure 9.16: Backed bladelets from Kostënki 21 Layer 3 (southern complex): histogram of widths (n=252; raw sample)

(of 5 pieces not broken proximally, 4 had their platforms removed). This removal is sometimes achieved with backing forming an oblique and/or curved end. The whole pieces are also much shorter on average than the rest of the backed bladelets. However, although some of these pieces do seem to have important features in common, they vary widely in their dimensions, their shapes and in the specifics of their creation. The large amount of variation within the small number of lithics concerned means that this is not a convincing typological group.

If we consider all the pieces with retouched ends, we have a bigger sample group to work with but again, there is a high level of variability in all aspects of technology and typology. The bladelets can have rounded, pointed, rectangular or irregular ends, or variants thereof. There is no obvious patterning to this retouch and it is not dominated by any one particular form.

Backed bladelets from the northern complex

Only 22 backed bladelets derive from the northern complex of the site. On the whole, the small assemblage from this area is similar to that from the southern complex. The same sub-categories used for defining the backed bladelets from the southern complex were used on this complex and have a very similar rate of representation in both complexes (Table 9.4). One regularly backed bladelet is perhaps a basal fragment of one of the points described above.

The backing edge is again almost equally distributed between left and right: 11 (50%) are backed on the left and 9 (41%) on the right, while 2 (9%) are backed on both. The ventral surfaces are, like those of the backed bladelets from the southern complex, quite varied (Table 9.5). The majority are either concave or flat in form.

The widths of the pieces do not form a normal distribution but given the small sample size this is not necessarily significant (Fig. 9.17). However, it is also possible that two functional groups are included within this single typological group.

Again, a relatively low proportion of the striking platforms and bulbs have been removed: of 14 completely intact proximal ends, only 4 (18%) have had their platforms removed and of 15 pieces suitable for identifying the presence of a bulb, 11 (73%) have at least 50% of the bulb extant. Like the assemblage from the southern complex, there is no obvious patterning to the treatment of the ends of the lithics, and various shapes are represented, none of which dominate.

9.5 Bladelet blank production techniques

The majority of backed lithics in this assemblage seem to have been made on bladelet or small blade blanks. A small number of pieces were made on burin spalls or spall-like blanks: eight lithics were identified as probably or possibly having been made on such blanks.

Scars of bipolar removals on the dorsal surfaces of the studied pieces were rare, with only 13 (raw sample) pieces having such removals. This amounts to 4% of the weighted

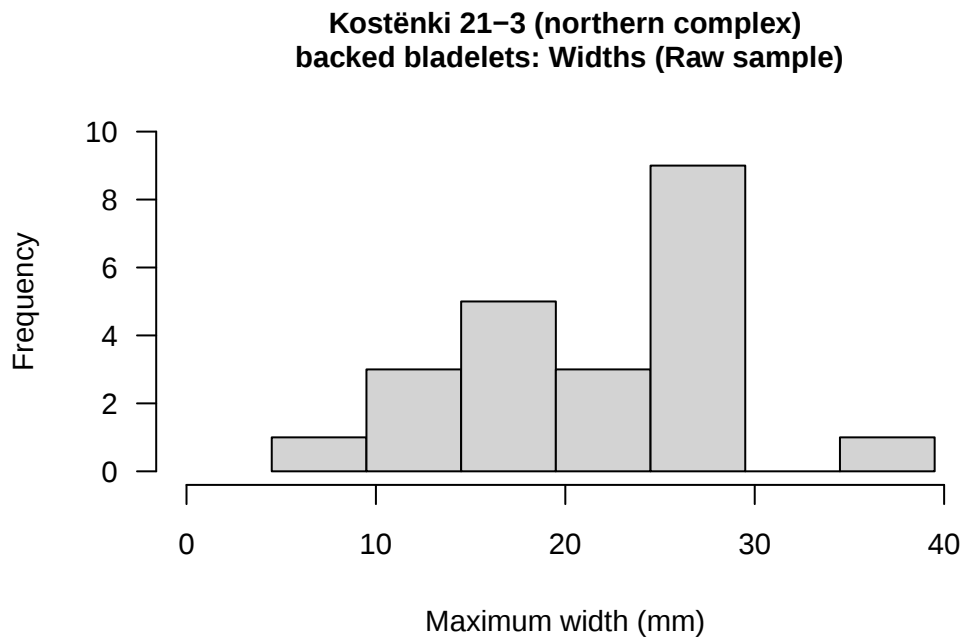


Figure 9.17: Backed bladelets from Kostënki 21 Layer 3 (northern complex): histogram of widths (n=22; raw sample)

sample.

As discussed above, striking platforms were present in a significant number of cases. In almost all cases these were plain in form (a very small number, n=3 of the raw sample, had *possibly* faceted platforms). Of the bulbs of percussion that were intact enough to be studied, the vast majority (97%) were diffuse in form, with a small number being more protruding or irregular.

According to the principal excavator, prismatic blade production using cores with one or two parallel platforms predominated at the northern complex of the site, and a number of small exhausted cores were found (Praslov & Ivanova, 1982, p. 202). Within the southern complex, there was evidence for prismatic blade production using one or several platforms with removals on several planes or opposing platforms. Alongside this “secondary nucleuses of the multifaceted burin type”³ were found (Praslov & Ivanova, 1982, p. 204). The latter type of core was indeed found in the collection during this

³“вторичные нуклеусы типа многофасеточных резцов”

study. However, as noted above, only a tiny number of backed lithics were made on recognisable burin spalls or possible spalls. Most bladelets are too wide to have been produced on anything but prismatic bladelet or small blade blanks (Fig. 9.6). Hence, the vast majority of backed lithics studied could not have been produced on blanks from such cores.

9.6 Discussion

The backed bladelet assemblage from both complexes of Kostënki 21 Layer 3 is heterogeneous and was produced with relatively little attention to the removal of platforms and bulbs, the obtaining of straight bladelets, etc. Although it is likely that there are sub-categories in the assemblage which relate to particular functions, it was not possible to pick these out from the mass of undifferentiated bladelets. However, the backed bladelets form by far the most significant category of backed lithic in numerical terms at this site. The group probably includes pieces related to cutting tools, but there could well be a few lithics which relate to use in composite weaponry.

The backed assemblage from the southern complex should be considered as a collection containing shouldered points and various elongated points, including a few possible microgravettes, but dominated by undifferentiated backed bladelets.

The studied collection from the northern complex lacks shouldered or elongated points, but does contain a homogeneous group of backed points as well as similar backed bladelets to the southern complex.

Based on the information from the backed assemblage, there is a strong possibility that the site of Kostënki 21 Layer 3 should in fact be treated as two sites: Kostënki 21 Layer 3 (North) and Kostënki 21 Layer 3 (South). Study of the rest of the lithic assemblage would be necessary in order to confirm or reject this.

Proceeding from the results of this research, there are two main arguments for the site being treated as two sites and one against. The first concerns the clear typological differences between the two complexes, which have been noted before (Anikovich et al.,

2008c; Praslov & Ivanova, 1982). The unambiguous difference between the groups of points from each complex is outlined above. The existence of two spatially discrete typological groups has previously been explained in terms of differing functional areas or social groups at the site, as described in Section 9.2. This is despite the fact that, in the words of Anikovich et al. (2008b, p. 205): “The [northern and southern] complexes, apparently relating to a single site, differ between themselves to a greater degree than those originating from different sites”⁴. Although it is certainly possible that the patterning seen could have been created within the context of a single site as a result of functional differences, it is also entirely plausible that it reflects the existence of two chronologically separate uses of the area.

The second argument for the presence of two discrete sites in Layer 3 of Kostënki 21 is based on the possible difference in raw materials used at each of the two areas. The vast majority of the flint used for the backed assemblage of Kostënki 21 Layer 3 is dark brown and fine-grained. However, the flint from the northern complex usually has a thick white patina (n=25 of 30, or 83%), while that from the southern complex most often has only a light to medium amount of glossy patina (n=244 of 292, or 84%). The patination of flint is a complex process, affected by numerous factors, including the physical characteristics of the flint itself, its burial conditions, and the length of time the patina has had to develop (Hurst & Kelly, 1961). In the case of Kostënki 21 Layer 3 it could be argued that differing burial conditions created the spatial patterning we see in the type and degree of patination. However, if this is so, it would be an unusual coincidence that the distribution of patination types exactly follows the distribution of typological groupings. This is especially the case given how close one of the northern complex accumulations is to the main southern complex (Fig. 9.1): the differences in patination remain strong even when these adjacent concentrations are compared on their own. Hence, it is more likely that the difference in patination reflects variation in raw material sources or differing ages of the accumulations. The latter has been

⁴“Комплексы, относящиеся, по-видимому, к одной стоянке, различаются между собой в большей степени, чем происходящие из разных стоянок”

suggested as explaining the existence of a series of patinated artefacts within a mostly unpatinated collection from the Mesolithic site of Thatcham III (UK) (Reynier, 2000). There, the proposed chronological difference is rather small: only a few hundred years. If slight differences in deposition ages can indeed produce such strong differences in patination, then this is an obvious candidate to explain the situation at Kostënki 21 Layer 3. Surprisingly, the differing patination patterns are not noted in any of the works consulted during this research, which include all major reviews of the site from the last few decades.

As discussed in Section 4.9.7, a relatively wide distribution of dates has been obtained for Kostënki 21 Layer 3. The site was not selected for radiocarbon dating as part of this project, because it has recently been sampled as part of another project (K. Douka pers. comm.). However, as the dates obtained for the site fall within a bracket of ca. 2,100 years (when calibrated at 95.4% confidence) it is possible that there was a rather considerable time interval between the deposition of different parts of the archaeological layer.

One argument against the establishment of two discrete sites at Kostënki 21 Layer 3 rests on the remainder of the backed assemblage: the backed bladelets. The backed bladelets, although they show the same difference in patination as the rest of the studied assemblage, are similar in both complexes. The rather heterogeneous, little-modified backed bladelet assemblages are similar to one another and, although they lack clear defining features, are obviously different from any of the other assemblages studied during this research. If, however, it becomes apparent that there are other contemporary assemblages with the same type of backed bladelet assemblage and *either* shouldered and narrow elongated points *or* sub-triangular backed points, then this argument will weaken. It could be that for some period of time during the MUP in Eastern Europe, assemblages with little-modified backed bladelets are typical, and that sites with only one or other type of point are found during this time. Conversely, if another site can be found with similar shouldered points, small elongated points, *and* backed sub-triangular points, then it will appear much more likely that Kostënki 21 Layer 3 does contains only

one site, albeit with unusual spatial patterning.

The shouldered points found here have important and obvious differences from most of those found at Kostënki 1 Layer 1, Avdeevo, Zaráisk, and other sites. The frequent comparison with the site of Kostënki 11 Layer 2 is interesting. Based on the published descriptions and illustrations, the site does indeed appear to include points similar to those found in the northern complex of Kostënki 21 Layer 3. However, the site completely lacks shouldered points and there is no microindustry (Rogachëv & Popov, 1982). The site of Pushkari (Ukraine) also seems to have yielded quite similar points (Sinitsyn, 2007).

Further afield, in Central Europe, there are actually rather few sites dated to the period 22–21,000 ^{14}C BP, particularly in comparison with the richness of the earlier Gravettian record (Verpoorte, 2009). Lubná I (Bohemia, Czech Republic), has been dated to ca. 22–21,000 ^{14}C BP (Verpoorte, 2003). Verpoorte notes that “the presence of shouldered bladelets (Otte, 1981, fig. 88: *lamelles à cran*) is interesting because it could relate the occupation to the shouldered point horizon of the Willendorf-Kostienkian in Central Europe”. I do not, however, find these shouldered bladelets to be convincing evidence of a connection to the sites with shouldered *points*.

The site of Kostënki 21 Layer 3 stands in obvious contrast to the other sites studied during this research. There does seem to be a serious possibility that the layer is best understood as being the remains of two separate sites. The typology of the backed lithics poses challenges for the site’s attribution to the Gravettian. This is particularly the case for the northern complex, which lacks shouldered points and any points which could be fragments of Gravette points. The dating of the site puts it quite late in the MUP of Russia: this means the assemblage has potential significance for our understanding of the end of the Gravettian and the development of the Epigravettian.

Chapter 10

Discussion

In the previous chapters I set out the results of new dating work in combination with critical treatment of previous chronological data, followed by the presentation of the lithic analyses undertaken during this research. The purpose of this chapter is to bring that evidence together, alongside discussion of other sites which were not directly studied during this research. Considerations of the broad dynamics of cultural change are an important part of this chapter, as I endeavour to integrate the Russian archaeological record into a larger picture of variation and development during the European Gravettian.

In the first section, each chronological phase of the proposed culture history is explored in turn. Summaries of the archaeology of each of these groups are given. The dating and chronology of the sites are discussed briefly with reference to the palaeoenvironmental record (see Chapter 4 for full details). We then turn to wider comparisons, and to examinations of change through time.

In the latter sections of this chapter, a few points of interest concerning the sites and assemblages studied as part of this thesis are expanded upon. These are: the importance of microliths in the Early Gravettian; the preferential backing of certain lithic types on their right edges; the presence of long lines of hearths at several Russian Gravettian sites; the significance of female figurines as indicators of cultural similarity or communication during the Late Gravettian; and the presence of *bâtons percés* at several Late Gravettian

sites in Eastern Europe. The final section critically discusses the different approaches to archaeological taxonomy that have been applied to the European Gravettian (first introduced in Chapter 2).

10.1 The Mid Upper Palaeolithic of Russia: a proposed culture history

10.1.1 The Streletskayan and Gorodtsovian (ca. 30,000 to 28,000 ^{14}C BP)

The typical view of Upper Palaeolithic culture history for most of Europe is that the Gravettian followed directly on from the Aurignacian (Conard & Moreau, 2004; Djindjian et al., 1999; Moreau, 2011), although there are some areas of disagreement with this model, e.g. the debate on the Bayacian in southwest France (Pesesse, 2008a). As discussed in Chapter 2, Gravettian sites appear in Central Europe by 29,000 ^{14}C BP at the latest, and perhaps a millennium or so earlier; the timing and nature of the Aurignacian to Gravettian transition is a subject of active research. However, the beginning of the MUP in Russia appears to have been host to two completely different archaeological traditions to those found elsewhere in Europe: the Streletskayan and the Gorodtsovian. Only after ca. 28,000 ^{14}C years ago do we have evidence for the Gravettian there. In Russia, where we lack the sort of near-continuous archaeological sequences found in some other areas of Europe, we do not have complete stratigraphies at single sites showing the succession of these industries. This means that their relative chronology is very difficult to evaluate.

The Streletskayan

The Streletskayan, found only in Eastern Europe, is an archaeological industry which appears to have developed and existed entirely independently from the Gravettian and the Aurignacian. It is characterised by the presence of highly recognisable bifacially-

worked triangular points and the absence of typical Aurignacian or Gravettian index fossils (see Section 2.5.2). The Streletskayan spans a very long time range, with an extremely wide range of radiocarbon dates from the beginning of the Early Upper Palaeolithic (EUP) to the MUP. Several Russian Streletskayan sites have been dated to the MUP or the EUP/MUP boundary: Sungir', Biriuch'ia Balka, Garchi, and two sites at Kostënki: 11 and 12. As discussed in Chapter 4, they all arguably date to before 28,000 ^{14}C BP. If we take the older dates for each assemblage as being indicative of their actual ages (excluding Garchi, with its single radiocarbon date), then it is most likely that the Streletskayan disappeared by ca. 30,000 ^{14}C years BP, placing its end at the very cusp of the MUP as defined in this research.

The presence of the Streletskayan demonstrates a remarkable deviation from the general scheme of development of the European Upper Palaeolithic. The geographical distribution of the sites, extending from the southern Don basin to the Urals, is clearly different from either the Aurignacian, the Gravettian or the Gorodtsovian in this region. The question of the origins of the Streletskayan and of its possible co-existence with the Aurignacian and the Gorodtsovian within Russia cannot be addressed here. However, what should be noted here is that at the beginning of the MUP, the archaeological record of Russia looks completely different to that found anywhere else in Europe.

The Gorodtsovian

The Gorodtsovian is found at Kostënki 15 and Kostënki 14 Layer 2, as well as perhaps other sites; there is little consensus on which assemblages should be attributed to it (see Section 2.5.3). It currently lacks lithic index fossils and further direct study of the relevant assemblages would be useful to clarify the status of this grouping.

What is most pertinent to the current discussion is that the Gorodtsovian appears distinct from the Aurignacian, Streletskayan and Gravettian. The dating of this industry remains ambiguous, but, if we consider only the most probably reliable radiocarbon dates and the chronostratigraphic sequence at Kostënki, the industry seems to be older than 28,000 ^{14}C BP. The chronological relationship between the Streletskayan

and Gorodtsovian is not yet clear. At Kostënki 15, the Gorodtsovian cultural layer was described as being found at the bottom of the Upper Humic Bed. As discussed in Section 4.8, the radiocarbon dates for this site seem inconsistent with the stratigraphic information. The description of the stratigraphic position of the site *could* indicate a date of Greenland Stadial (GS) 9 or Greenland Interstadials (GI) 8–7: this is considerably earlier than some of the dates for the Streletskayan sites mentioned above. The consensus view is that, at least at Kostënki, the Streletskayan entirely precedes the Gorodtsovian (Chabai, 2003; Sinitsyn, 2010). However, I would suggest that further work is necessary to test this proposition.

Sinitsyn (2007) places the Aurignacian as co-existing with the Streletskayan, and the Gorodtsovian as co-existing with the Early Gravettian. I would reject this idea on a priori grounds: I do not believe that two very different material culture traditions could have co-existed in the same very small area (at Kostënki, within a few kilometres of each other) for millennia without any apparent influence on each other. It seems to me more likely that these traditions replaced or displaced each other, perhaps repeatedly. In any case, although the chronological relationships between the Streletskayan, Gorodtsovian and Aurignacian are currently unclear, all sites attributed to these three industries arguably pre-date the Gravettian in Russia.

10.1.2 The Early Gravettian: Kostënki 8 Layer 2 (ca. 28,000 to 27,500 ^{14}C BP)

The Early Gravettian is represented at a single site in Russia: Kostënki 8 Layer 2. The new radiocarbon dates obtained during this project support an early age of the assemblage of ca. 28,000–27,500 ^{14}C BP, but also substantiate the probability that it postdates the beginning of the European Gravettian by 1–2 millennia: a significant time lapse. These radiocarbon dates place the assemblage near the beginning of GS 5.

The backed bladelet assemblage is best characterised as a homogeneous micro-gravette assemblage, with a nanogravette component. As emphasised in previous studies (Anikovich, 2005; Sinitsyn, 2007), Kostënki 8 Layer 2 is indeed rather isolated within

Eastern Europe. However, it clearly belongs to an archaeological tradition which was distributed across Central and Mediterranean Europe at this time. Moreau (2010) compares Geißenklösterle, dated to between 29,000 and 27,000 ^{14}C BP, with several other approximately contemporary sites from across Europe. These include Willendorf II (Layer 5), Weinberghöhlen (Germany), Molodova V (Layers 9 and 10), Abri Pataud (Layer 5) (France) and Kostënki 8 Layer 2. The backed assemblages from Geißenklösterle, Weinberghöhlen and Willendorf II Layer 5 all appear very similar to that from Kostënki 8 Layer 2, especially in the numerical domination of microgravettes. Willendorf II Layer 6 may in fact be closer in date than Layer 5 to Kostënki 8 Layer 2 (Nigst et al., 2008b): this layer has also yielded backed microliths that may be comparable to those from the Kostënki site (Otte, 1981). As already discussed in Chapter 5, the traditional comparisons with Grotta Paglicci seem robust, and there are also clear similarities to the assemblage from Grotta de la Cala. The main difference between Kostënki 8 Layer 2 and the other European sites mentioned lies in the absence of *fléchettes* at the Russian site (the significance of the *fléchette* as an index fossil will be further discussed in Section 10.3 below).

Kostënki 8 Layer 2 very likely represents an eastwards expansion of an Early Gravettian lithic and cultural tradition which had already been in existence in Central Europe for a thousand years or more. The strong similarities with sites across Europe are unique for the Russian Gravettian: in later periods, as we shall see, there is apparent regionalisation in backed lithic traditions. The reason for the relatively late appearance of the tradition in Russia may well be to do with the presence of the Streletskayan and Gorodtsovian: if populations using those technologies were already present in Russia, they could have blocked the expansion of the Gravettian tradition which was otherwise so very successful all over Europe. Perhaps it took the onset of the cold stadial conditions of GS 5 for the weakening or extinction of these populations to occur, and allow the arrival of the Gravettian in Russia.

The isolation of Kostënki 8 Layer 2 within the archaeological record is itself interesting. Not only is it the only known site dating to this period in Russia, but the

archaeological record of Eastern Europe during this time appears rather sparse, with mostly very small assemblages. Although the density of the archaeological record cannot be expected to be a true or even close representation of the relative amounts of human activity through time (see Section 2.4), the difference between the Early Gravettian and later MUP periods in the richness of the record is remarkable. A similar pattern is seen at sites such as Mitoc Malu-Galben (Romania) and Molodova V (Ukraine), where the collections from the layers dating to the early MUP are tiny in comparison with the layers dating to the second half of the MUP (particularly those where shouldered points are found). One obvious possible reason for this difference is that the density of human settlement of the region was lower than in the later period. Other possibilities are that human activity during the early MUP created mostly only small archaeological sites, which are less likely to be preserved and found, or that human occupation followed a different geographical pattern to what came later and sites were located in areas that have been the subject of less investigation.

10.1.3 A hiatus in occupation or a lack of evidence? (ca. 27,500 to 25,250 ¹⁴C BP)

After Kostënki 8 Layer 2 and before the appearance of Middle Gravettian settlements at Kostënki 4 and Borshchëvo 5/Kostënki 9, described below, there is a ca. 2,000 year period to which no Russian sites are dated. Sinitsyn (2013) has suggested that there was a hiatus in human occupation following the Early Gravettian. This is plausible and could also help explain the marked change in technology between the Early and Middle Gravettian in Russia, but the data does not *require* this explanation. The archaeological record for the Early and Middle Gravettian, as defined here, is extremely sparse. As only three sites in Russia are directly dated to this period, their chronological patterning is not necessarily a true reflection of past activity: the gap could simply be the result of chance.

However, the hiatus in the record does hint at a possibly important factor for human occupation. This is because it coincides with the second part of the long Greenland Sta-

dial 5. At loess-paleosol sequences in the Carpathians and Siberia, ice wedge and frost wedge formation has been noted around this time, indicating severely cold conditions (Haesaerts et al., 2010b), while multiple other proxy records also contain evidence for a downturn in climatic conditions in various areas of Europe at ca. 30,000 calBP, which has often been associated with Heinrich Event 3 (e.g. González Sampériz et al., 2006; Soulet et al., 2011; Stevens et al., 2011). The very cold conditions associated with Heinrich Events are widely thought to have had important repercussions for past human populations (e.g. Banks et al., 2013; Weniger, 2011). Although there is no hard link between climatic cooling and local extinction of populations, the possible connection between the gap in the Russian archaeological record and a climatic downturn does warrant consideration.

It should be noted that the “Evolved Pavlovian” in Moravia dates to this same period (Svoboda et al., 2000). (That does not contradict the possibility of a hiatus in the occupation of Russia caused in part by climatic conditions: the environmental situation in Central Europe, and human responses to it, could have been very different from further east). Hence, the fact that we do not see analogies in the Russian record to the classic Pavlovian sites should not be surprising; there is no need to seek similarities between the Russian Early Gravettian and those sites, as has previously been attempted (Kozłowski, 1986; Otte & Noiret, 2003).

10.1.4 The Middle Gravettian (ca. 25,250 to 24,750 ^{14}C BP)

At ca. 25,000 ^{14}C BP, the number of sites in the archaeological record suddenly increases. Kostënki 4 and Borshchëvo 5 have both been directly dated to this period for the first time during this project: previously they were thought to be significantly younger. Due to its inarguable close similarity to Borshchëvo 5, it seems appropriate to assume that Kostënki 9 (whose assemblage I studied directly) also dates to this period. Nevertheless, although Kostënki 4 and Borshchëvo 5 cannot be separated chronologically, there are clear differences between the backed assemblages found at the sites. But there are also major commonalities: this period of the Gravettian in Russia can

be described, in terms of its backed assemblage, as a Gravette point phase. It lacks abundant microgravettes, and shouldered points are also apparently completely absent.

The backed collection from Kostënki 4 can be summarised as a Gravette point assemblage with a dominating element of simple backed bladelets. It should be noted that the site is enormous: over 75,000 lithics in total, compared with ca. 2,300 at Kostënki 9. The question of the palimpsest nature of the site is not possible to address fully with the data used in this research but no convincing evidence for the presence of two cultural layers was found in the backed assemblage. The long lines of hearths are intriguing. They are obviously similar to those found in the Late Gravettian, although the significance of this is currently unclear (see Section 10.5). In combination with the large assemblage size, they suggest that Kostënki 4 could have been a place of long or repeated occupation.

The Kostënki 9 assemblage, on the other hand, is overwhelmingly dominated by the presence of “Late Gravettian rectangles” (Wilczyński et al., in press) although many of them have convex rather than rectangular ends. These pieces are rather widespread in Eastern Europe. It is not yet clear how chronologically restricted they were: similar pieces have been found in the later assemblages from Molodova V Layer VII, Kostënki 1 Layer 1 and Avdeevo (Section 7.6). The apparently long duration of production of these pieces does not necessarily undermine the assumption that Kostënki 9 and Borshchëvo 5 were approximately contemporary. This is because the backed lithic assemblages from the two sites are so similar in every way (abundance of very similar rectangles, presence of Gravette points and absence of shouldered points).

It is important to note that the rectangles found at Kostënki 9 could not relate in any way to projectile points or sharp knives: many of them appear deliberately blunted on all four edges. This implies that the distinctiveness of the composition of the backed assemblage mostly reflects functional difference, and not *necessarily* chronological (or cultural) difference. The striking difference in the size of each assemblage underlines the likelihood of differences in site function: Kostënki 9 was probably in use for a relatively short time, and was perhaps the location for a very specific activity, such as processing

of fur or other organic material. To seek chronological or cultural difference between Kostënki 4 and Kostënki 9/Borshchëvo 5 we must consider just the comparable parts of the backed assemblage: the Gravette points.

Here, we do find an important difference. The single Gravette point at Kostënki 9 has a rounded base; those found at the very similar site of Borshchëvo 5 also appear to have rounded or ogival bases (Lisitsyn, 2011). In contrast, at Kostënki 4 the Gravette points have rectangular truncations for their bases. Hence, there is likely some chronological difference between Kostënki 9 and Kostënki 4, but whether this is a few decades or more than 500 years, and which site is earlier, is not presently discernible. However, because Gravette points with rectangular truncations are also found at the later site of Khotylëvo 2, it is perhaps most likely that Kostënki 4 is later than Kostënki 9; i.e., Gravette points with rounded bases went out of use locally in favour of those with rectangular truncations. On the other hand, given that the chronological difference between Kostënki 4 and Khotylëvo 2 was probably around two millennia, there was also plenty of time for different styles to go in and out of use more than once.

When compared with the Early Gravettian, the Russian Middle Gravettian record is richer, and hints at that key concept for the MUP: the “Gravettian mosaic” (Klaric et al., 2009; Mussi & Roebroeks, 1996). Across Europe, certain features of assemblages remain similar: Gravette points and/or microgravettes are seemingly ubiquitous during this time. However, at Kostënki 4 we see the first evidence for archaeological elements that appear unique to the Russian Gravettian. These include the Gravette points with rectangularly truncated bases but also the site layout, with its long lines of hearths. Although there are more Russian sites attributed to this period than to the Early Gravettian (three vs. one), there are still far fewer than in the Late Gravettian. Sites are found only within the Kostënki-Borshchëvo area, in clear contrast with the much wider geographical distribution of sites during the Late Gravettian.

The Russian Middle Gravettian sites appear to date either to GI 4 or perhaps to the end of GS 5 after HE 3. For comparisons elsewhere in Europe, therefore, we shall restrict ourselves to sites dating to this period, either based on chronostratigraphic evidence or

on convincing radiocarbon dating. In contrast to the Early and Late Gravettian, this period has not been the subject of much comparative work on a European scale.

Based on radiocarbon dates and sedimentological evidence, GI 4 has been correlated with Layer 8 of Molodova V and Gravettian II and III of Mitoc-Malu Galben (Haesaerts, 2007, Fig. 16). The tiny handful of backed lithics from Mitoc-Malu Galben include a Gravette point from assemblage II and two microgravettes from assemblage III (Otte et al., 2007a). At Layer 8 of Molodova V (Noiret, 2009, pp. 183–184) the backed lithics from here included two shouldered points, although they lack the ventral retouch common to later shouldered points (Otte, 1981, Fig. 229: 4–5). The assemblages from Mitoc-Malu Galben and Molodova V are small, with only just over 100 retouched lithics found at each site in the relevant layer(s), but they do not contain any obvious rectangles similar to those found at Borshchëvo 5/Kostënki 9 (Noiret, 2009; Otte, 1981; Otte et al., 2007a). Neither do they contain Gravette points with rectangularly truncated bases.

The end of the Pavlovian in Moravia is dated to ca. 25,000 ^{14}C years BP (Svoboda et al., 2000). Moravia does not provide any obvious good analogies for the backed assemblages found in Russia at this time: the Pavlovian is apparently followed directly by the shouldered-point assemblages at ca. 25,000 ^{14}C years BP, and both these industries are obviously different in their overall composition from the Kostënki 4 and 9 assemblages (Otte, 1981; Přichystal et al., 1994; Svoboda et al., 2000).

Willendorf II Layers 7 and 8 both potentially date to ca. 25,000 ^{14}C BP (many radiocarbon dates for Layer 8 are about this age; Layer 7 underlies Layer 8) (Nigst et al., 2008b). The backed assemblages from these levels are clearly different from those found at Kostënki at the same time: they contain microgravettes rather than full-sized Gravette points. However, both layers contained a few truncated backed lithics which could be comparable to the rectangles from Kostënki 9 (Otte, 1981, pp. 271–280).

The difference between the Early and Middle Gravettian in terms of cross-European lithic similarities is remarkable. Sites analogous to Kostënki 8 Layer 2 are found across Europe: it fits into a long-lasting and widespread Early Gravettian microgravette tradition. During the Middle Gravettian, however, there are few obvious comparisons for the

Russian sites. This is despite the fact that the Russian archaeological record continues to be part of a European Gravettian tradition, as shown by the presence of Gravette points. It appears that around this time, there was marked fragmentation of material culture traditions in Central and Eastern Europe. We also see marked diversity among lithic assemblages in a very small area within a relatively short period of time. This instability is very different from what was seen in the earlier period. One possible explanation for this concerns climate. Both Kostënki 4 and Borshchëvo 5 date to GI 4 or the very end of GS 5. It could well be that the environmental upheaval associated with the rapid climate change around this time could have contributed to the movement and/or extinction of human groups. A concentration on this period of the Gravettian as a subject in its own right could be very fruitful.

10.1.5 Another possible hiatus (ca. 24,750 to 23,500 ^{14}C years BP)

Following the Middle Gravettian there is another possible hiatus in the Russian record, coinciding with the cold stadial period of GS 4. Certainly, as with the previous hiatus, no Russian sites have convincing dates falling into this chronological bracket. All the usual caveats concerning the impossibility of proving human absence apply, but it is interesting that this short gap in the record again corresponds to a cold climatic period.

10.1.6 The Late Gravettian (ca. 23,500 to 21,000 ^{14}C BP)

The Late Gravettian, ca. 23,500–21,000 ^{14}C years ago, is the first part of the Russian Gravettian for which we have sites beyond the Kostënki-Borshchëvo area. Furthermore, there are some clear differences between groups of roughly contemporary sites in different areas. There are two obvious discrete groups of sites dating to ca. 23,000 ^{14}C BP: those with Khotylëvo-type Gravette points and those with shouldered points. Female figurines are found at both groups of sites.

10.1.7 Late Gravettian sites with Khotylëvo-type Gravette points (ca. 23,500–23,000 ¹⁴C BP)

The backed assemblage from Khotylëvo 2 can be characterised by the presence of Khotylëvo-type Gravette points and ordinary Gravette points with rectangular truncations. I have proposed the “Khotylëvo-type Gravette point” as a new sub-type of Gravette points to refer to many of the lithics found here and at Gagarino that were previously described as shouldered points (Section 8.4.3). This type of lithic does not currently seem to be known at all in the Kostënki-Borshchëvo area, or anywhere beyond Russia in convincing quantities. The distances between Kostënki and both Khotylëvo and Gagarino are over 300 km. The evidence is most parsimoniously interpreted as reflecting the existence of a geographically restricted lithic tradition. This perhaps reflects the continuing fragmentation of material culture traditions, as already seen in the Middle Gravettian.

The presence of Gravette points with rectangular truncations at Khotylëvo 2 also seems important, because it provides a link with the Middle Gravettian site of Kostënki 4. This particular treatment of Gravette points is not, to my knowledge, known outside Russia. It perhaps indicates some continuity in lithic traditions between the Middle and Late Gravettian in this region.

10.1.8 Late Gravettian sites with shouldered points (ca. 23,500 to 21,000 ¹⁴C years ago)

This is a much larger group of sites, including those attributed to the “Kostënki-Avdeev Culture”. Unlike the first group, it also extends far beyond the borders of Russia. The distributions of the two groups are discrete, and the area in which sites with shouldered points are found is far larger than that with Khotylëvo-type Gravette points.

This is the only period included in my culture history, except perhaps the Early Gravettian, which has previously been defined as a chronologically discrete archaeological phase. It partly corresponds to the “Willendorf-Kostenkian”, “Willendorf-Pavlov-

Kostënki-Avdeevo cultural unity” or “shouldered-point horizon” (Grigor’ev, 1993; Otte & Noiret, 2003; Svoboda, 2007).

Shouldered points are found at many sites, including Kostënki 1 Layer 1, several other minor Kostënki assemblages, Avdeevo, Zaráisk, and Kostënki 21 Layer 3 (which is not included in the Kostënki-Avdeevo Culture). They are also found at many sites across Eastern and Central Europe, including Willendorf II, Dolní Věstonice, Petřkovice (Czech Republic), Molodova and Mitoc-Malu Galben (Djindjian et al., 1999). The collection from Kostënki 21 Layer 3 was the only shouldered point assemblage directly studied as part of this research, so it is not possible to elaborate much on the possible variation among shouldered point sites, and particularly among Kostënki-Avdeevo Culture sites.

At several sites with shouldered points, female (“Venus”) figurines were found. However, female figurines were also found at Khotylëvo 2, which only yielded one possible fragment of a shouldered point despite the large size of its assemblage, and at Gagarino, where many of the “shouldered points” are likely to be Khotylëvo-type Gravette points. There are basically two possible interpretations of this. The first is that sites with and without large numbers of shouldered points were contemporary, and that both groups of people had female figurines, despite the other differences in their material culture. The second is that the sites with shouldered points either precede or follow those without, but that female figurines remained part of the material culture of people living in this area throughout this change in lithic repertoire.

The collection from Kostënki 21 Layer 3 includes shouldered points, round-based backed points, and a large mass of simple backed bladelets; it does not include convincing Gravette points and there are no female figurines (Chapter 9). There is also clear spatial separation at the site between different types of artefacts, which caused the excavators to define a northern and southern complex at the site (Praslov & Ivanova, 1982). Variation in flint patination rates, and thus possibly differences in raw material sourcing, follows the separation between northern and southern complexes. To my mind there is an excellent argument for treating the layer as including two different sites. All

the shouldered points, and the handful of narrow and elongated but otherwise varied points, derive from the southern complex. Meanwhile, the round-based backed points were all found in the northern complex. The latter are probably also found at Kostënki 11 Layer 2, as noted by previous researchers (Sinitsyn, 2007).

The shouldered points from Kostënki 21 Layer 3 seem rather different in their morphology from those found elsewhere. They are much narrower than the classic points, and their stem usually takes up about half of the length of the piece. They also lack the usual extensive ventral working of the proximal ends of the piece. This plausibly relates to chronological difference: Kostënki 21 Layer 3 is most likely several thousand years younger than most of the classic shouldered point sites. The lack of non-ambiguous Gravette points is another difference from the earlier shouldered point sites, which have yielded Gravette points and/or microgravettes (Efimenko, 1958; Gvozdozer, 1995; Sinitsyn, 2007). The southern complex can, therefore, be characterised as an assemblage with atypical shouldered points, abundant ordinary backed bladelets and no Gravette points.

The northern complex of Kostënki 21 Layer 3, with its round-based backed points, is rather difficult to make sense of. If we consider it on its own it does not in fact meet the present definition of Gravettian, because neither Gravette points nor shouldered points are present. Alongside Kostënki 11 Layer 2, it is perhaps better related to the Epigravettian, although the latter term is rather ill-defined, referring to assemblages from before, during and after the LGM in Eastern Europe (Djindjian et al., 1999).

During the Late Gravettian we see evidence for different distributions of different kinds of index fossil. Khotylëvo-type Gravette points are an obviously geographically restricted form, found only at Khotylëvo 2 and Gagarino, and not at Kostënki, but are part of the general broadening of the geographical distribution of sites seen at this time. Sites with shouldered points are also found widely, at Kostënki, Avdevo and Zaráisk, and are also part of a cultural tradition which is known across Eastern and Central Europe. Intriguingly, the relatively wide distribution of sites with shouldered points compared with earlier Gravettian sites is also seen in Moravia (Svoboda et al., 2000). The sites of the Pavlovian are restricted to Pavlov and Dolní Věstonice, just

as in Russia sites of the Early and Middle Gravettian are restricted to the Kostënki-Borshchëvo region. However, in Moravia as in Russia sites with shouldered points have a far wider distribution.

The dating of the Late Gravettian in Russia, and its palaeoclimatic implications, are interesting. It seems most likely that the sites of the Kostënki-Avdeevo Culture, as well as Khotylëvo 2, date to around GI 3. This is also seen for shouldered point assemblages elsewhere in Europe (Haesaerts et al., 2003, 2010a). It could be that the Eastern European shouldered point horizon is entirely associated with this brief period of warming: this perhaps casts some light on the expansion in the distribution of sites that we see during this period. It also undermines any explanation of the existence of female figurines as a response to very cold conditions leading up to the LGM (e.g. Gamble, 1982).

When calibrated, the dates for Kostënki 21 Layer 3, on the other hand, fall *after* GI 3, during GS 3: i.e., in a time of cold and arid climate. Cultural dynamics during the beginning of the LGM, and the nature of the end of the Gravettian tradition in Russia, require further investigation.

10.2 The culture history of the Russian MUP: discussion

The culture history for the Russian MUP set out in the previous sections differs strongly from any previously proposed (see Section 2.6). As well as great diachronic variation between assemblages of different ages, during some periods we see evidence for possible limited co-existence of dissimilar material culture traditions within a single region, and probable rapid transition between traditions in a small area.

It appears that cultural change during the millennia from, say, 32,000 to 28,000 ¹⁴C BP was rather complicated, and, in Eastern Europe at least, involved two lithic traditions which are distinct from the Aurignacian and the Gravettian. The changing distributions of these industries and the timing of their appearances and disappearances have not yet been satisfactorily determined. The Streletskayan appears to have had a

wide distribution at around 30,000 ^{14}C BP, from Biriuch'ia Balka near the Black Sea to Garchi in the the Urals. The Gorodtsovian seems to have had a geographically more limited presence, found (if we exclude Talitsky) only in Kostënki and perhaps Mira in Ukraine. Of course, throughout the Upper Palaeolithic we see the appearance of local industries which diverge from the general continental pattern of cultural change: for example, the Fontirobertian/Maisierian. But it seems fair to say that the Streletskayan and Gorodtsovian represent entirely different lithic traditions from the Aurignacian and Gravettian. The presence of a non-Aurignacian, non-Gravettian industry is mirrored in the earlier existence of the Spitsynian industry at Kostënki (Boriskovskii, 1963; Boriskovskii et al., 1982).

Any investigation into the beginnings of these industries and their dynamics must take into account Russia's geographical position between the rest of Europe, Asia and the Caucasus. The origins of the Streletskayan and Gorodtsovian are intriguing but essentially unknown. They could represent the results of local innovation, perhaps linked to isolation of populations. However, they could also be linked to movements of people into the area of European Russia from the east, south or north, carrying technologies that have not yet been recognised in the region of their origin.

For the Gravettian, the regions immediately to the west potentially provide the most important context for the Russian record. This is because to the east, south and north of European Russia, Gravettian assemblages presently appear to be absent. Unfortunately, the Belarusian archaeological record remains extremely difficult to access and with the exception of the site of Berdzyh, where a shouldered point assemblage was found (Soffer, 1985), the country remains essentially a blank spot on the map of the European Gravettian. In Ukraine, the situation is better, although the site density over much of the country is very low, likely due to the existence of extensive loess deposits post-dating the MUP (this has already been discussed for Russia in Section 2.4 but loess deposition in Ukraine was even more substantial).

It has been argued that there was in fact a hiatus in human occupation of much of Ukraine (including Crimea) for most of the MUP, because of the absence of sites dated

to this period (Demidenko, 2008). Although it is likely that taphonomic processes and problems with dating are substantial factors in the creation of this long gap, there is indeed a dearth of MUP sites in most of Ukraine. The few Ukrainian sites known to us unfortunately do not provide a good basis for chronology building. As already discussed (Section 5.6), the attribution of Mezhygirsy 1 to the early Gravettian seems rather questionable. The recently investigated site of Troyanove 4 (also mentioned in Section 5.6) is potentially important but the lack of dating information makes it impossible to assign to a particular part of the MUP. Molodova V, in the west of Ukraine, does provide a long sequence of well-dated Gravettian cultural layers but all except the latest (Level 7) have yielded very small lithic assemblages, severely restricting their usefulness for comparative work (in Level 10 only 47 retouched lithics were found, while Level 9 provided 75) (Noiret, 2009).

Farther south-west, the Gravettian archaeological record of Romania and Moldova is rich (Noiret, 2007) but many sites are poorly dated and in need of reconsideration. Mitoc-Malu Galben is probably the best-studied Gravettian site in this region, but, as at Molodova V, the early Gravettian assemblages are very small (Otte et al., 2007a) and cannot provide a good framework of change in lithic industries. This geographical lacuna in the archaeological record between European Russia and the substantial, relatively well-understood sites of Central Europe is a hindrance to making sense of social and demographic processes during the Gravettian.

Despite the problems in establishing an Eastern European context for the Russian record, it is clear that the connections between Russia and the rest of Europe were in flux throughout the Gravettian. During the Early Gravettian we see the strong influence of a widespread European cultural tradition in Russia that had developed earlier in other parts of the continent, most likely representing a migration to the area. Later, in the Middle Gravettian and part of the Late Gravettian (up until about 23,000 ^{14}C BP) there is evidence for increasing regionalisation and fragmentation of material culture traditions and hence, possibly, human populations. In the Late Gravettian, however, there is a sudden switch back to a more supra-regional unity, with the appearance of

shouldered points and other artefacts at sites all over Eastern and Central Europe, including much of Russia. Finally, as the MUP comes to an end we see the further development of local traditions in Russia, independently from the rest of Europe.

Climatic change seems to have had important impacts on human societies in Russia, perhaps more so than elsewhere in Europe. In particular, periods of relative climatic stability are associated with apparent cultural stability: the presence of the Gorodtsovian (albeit perhaps alongside the Streletskayan) in GI 5, and the Early Gravettian in the first part of GS 5, before the onset of HE 3. The later periods of very rapid climate change associated with the very end of GS 5 through to GS 3, however, see dramatic cultural transformations, as the multiple phases of the Middle and Late Gravettian appear and disappear in quick succession.

It seems highly plausible that at certain times most of European Russia was abandoned by modern humans, or at least that populations fell significantly in size. This contrasts with most of the rest of Europe, where there is evidence for occupation throughout these periods. It indicates perhaps that European Russia was a more marginal environment for human occupation than elsewhere during this part of the Late Pleistocene. The possible hiatuses form an interesting point of comparison for any examination of human presence in this region throughout the LGM. There is great scope for modelling palaeoenvironments and their likely effects on human groups in this area, as carried out for example by Banks et al. (2013) for Western and part of Central Europe during an earlier period. Unfortunately, the current deficiencies in our knowledge of Russian Late Pleistocene palaeoenvironments and their chronologies make it very difficult at present to further explore the details of human-environment interactions.

10.3 Microgravettes, *fléchettes* and other microliths from the Early Gravettian

As discussed above, the large and homogeneous assemblage of microgravettes found at Kostënki 8 Layer 2 places this site within a very widespread tradition of microgravette

production during the Early Gravettian. However, one notable difference between the Russian site and other approximately contemporary European sites with large numbers of microgravettes is that there are no *fléchettes* in the collection from Kostënki 8.

Fléchettes are found in the assemblages from Geißenklösterle, Willendorf II Layer 5 and Abri Pataud Layer 5 (Moreau, 2010), and in the Grotta Paglicci collection (Wierer, 2013). In the Grotta de la Cala Layer 23 assemblage, there are two possible fragments of lithics similar to *fléchettes* (Borgia, 2006, p. 56).

Fléchettes are given much importance as a (sometimes controversial) index fossil in the early Gravettian of Central, Western and Mediterranean European (Djindjian et al., 1999; Moreau, 2010; Pesesse, 2008b). However, having personally examined the *fléchettes* from the Gravettian site of Aggsbach (Austria) held in the Naturhistorisches Museum, Vienna, I think there is a case for the reassessment of at least some of these pieces. (There are multiple radiocarbon dates for the main cultural layer at Aggsbach of between 26,000 and 25,000 ^{14}C BP, placing the site ca. 2,000 years after Kostënki 8 Layer 2; Otte, 1981, p. 302).

In their morphology and dimensions, many of the Aggsbach *fléchettes* are extremely similar to microgravettes, including those from Kostënki 8 Layer 2. The “forme généralement courbe des deux bords et l’allure foliacée des pièces”¹ described by Otte (1981, p. 306) does not apply to all the *fléchettes* from Aggsbach, including those illustrated by Otte. What we often see, in fact, are pieces with one or two rather straight edges, which are shaped into points at their proximal and distal ends, exactly as is typical for microgravettes. Where they differ is in their retouch: for a lithic to be defined as a microgravette, it must have an unambiguous back. On the other hand the retouch on the Aggsbach *fléchettes* exists on a continuum between light retouch of one or both edges to retouch which slightly blunts one edge through to retouch which is very close to abrupt or semi-abrupt backing (and, in many cases, could arguably be described as backing, perhaps “*bordage*” or “*abattage marginal*” as defined by Christensen & Valentin (2004)).

¹“generally curved form of the two edges and the foliate appearance of the pieces”

Interestingly, in common with the majority of Gravette points and microgravettes (see next section), it is usually the right edge of the Aggsbach *fléchettes* which bears the principal retouch. Indeed, as Otte (1981, p. 306) writes, “la continuité morphologique entre [les micro-gravettes et gravettes] et les fléchettes ne nous permet pas de les en séparer d’une façon tout à fait nette.”² There is a case, therefore, for asking whether at least some of these Central European *fléchettes* are best seen as variants of microgravettes. I do not necessarily extend this to the *fléchettes* of the Bayacian in south-west France, which seem rather different, including in the technology of their creation (Pessesse, 2008b).

As Moreau (2010, p. 90) points out in a discussion of the Early Gravettian in Central and Western Europe, “the presence of *fléchettes* or microgravette points alone does not provide meaningful chronological markers between regions, nor do they give a reliable answer to the question of the cultural affinities between Central and Western Europe.” Moreau argues that the consensus on the culture history of the early MUP of southwestern France, in which the Bayacian (with abundant *fléchettes*) is followed by the *Gravettien indifférencié* (Djindjian & Bosselin, 1994; Djindjian et al., 1999), does not correspond to what is known for southern Germany. If the situation at other sites is like that at Aggsbach, where the division between *fléchettes* and microgravettes is clearly somewhat arbitrary, then it is possible that some of this discrepancy is due to differences in the categorization of microliths.

Furthermore, as already discussed, there are some possible similarities between microlithic material from Kostënki 8 Layer 2 and the Pavlovian sites (Section 5.6). It would be extremely interesting to develop a focused study of the microlithic assemblages of the Early Gravettian from across Europe. There are clearly some strong similarities across the entire continent, as well as differences. It is not currently absolutely clear that some of these differences are not due to inconsistencies in the classification of material. It would be interesting to know whether microgravettes, *fléchettes* and “geometric

²“the morphological continuity between [microgravettes and Gravette points] and *fléchettes* does not allow us to separate them perfectly cleanly”

microliths” do actually form discrete techno-typological and morphological groups, or whether they really reflect aspects of a continuum of microlithic forms during this time period. This is especially the case because all of these pieces are frequently assumed to have had similar functions: as inserts in composite weapons.

10.4 Laterality of backing

An interesting feature of several of the studied assemblages is that among certain groups of lithics there is a clear preference for backing on the right edge of the lithic. This can mean either the right edge of the artefact (e.g. Gravette point) when the pointed end is oriented distally, and/or the right edge of the blank. In many cases there is a clear correlation between the orientation of blanks and the orientation of artefacts with respect to the location of the base. This is probably because blade blanks do tend to be thicker and wider at their proximal ends, making those ends most suitable for creating the bases of tools such as Gravette points. As shall be seen, however, this correlation does not always hold. Both kinds of preference for backing on the right edge—the right edge of the blank and the right edge of the lithic when the point is placed distally—will be discussed here.

The preference for backing the right edge of Gravette points in Western European assemblages (regardless of the orientation of the blank) is well-established—in some collections, 95–100% of the Gravette points are backed on their right edges (Demars & Laurent, 1992; Harrold, 1993). The same pattern can be seen in many of the collections studied during this research, and not only for Gravette points. The relevant assemblages are Kostënki 8 Layer 2 (for the microgravettes), Khotylëvo 2 (for the Gravette points and Khotylëvo-type Gravette points), Kostënki 21 Layer 3 (for the shouldered points) and Kostënki 9 (for the rectangles).

Of the microgravettes from Kostënki 8 Layer 2, where the proximal and distal ends of the blanks were determinable 82% were backed on the right edge of the blank (p. 122). The vast majority of pieces from this collection were found as very small fragments, and

the proximal and distal ends of many of the unbroken pieces were essentially reversible due to their symmetry, making the relationship between the backing on the right side of the blank and the right side of the finished piece difficult to quantify. However, among the unbroken pieces backed on the right edge of the blank, the vast majority of the time the proximal end of the blank forms the base (the less acutely pointed, wider part of the lithic) if one is present. We can see confirmation of this pattern by examining only the unbroken microgravettes backed on the left edge of the blank (p. 122). In these cases, many of the lithics appear to be “reversed” with respect to their blanks compared to those backed on the right edge of the blank. In other words, if the base of the microgravette (where present) is oriented proximally, then it is usually the right side of the lithic that is backed. All of this confirms a very strong preference for creating microgravettes with backed right edges, which usually but not always also correspond to the right edges of the blank.

Of the rectangles from Kostënki 9, most were backed on the right edge of the blank; if we also count the pieces that were backed on both edges but with more invasive backing to one edge, then 67% of the rectangles are backed on the right edge where this is determinable (see Table 7.1). This preference is especially curious given that all the lithics are essentially symmetrical in several dimensions, and because these lithics are very different from Gravette points.

At Khotylëvo 2 there are approximately equal rates of backing on the left and right edges *of the blanks* among all typological categories (Table 8.5). However, if we consider the left and right edges of the lithics with reference to the proximal and distal ends of the tool forms, rather than of the blanks, the picture changes. For the Khotylëvo-type Gravette points, there is a very strong preference for backing on the right edge of the artefact when the point is oriented distally, with only a single exception to this among the 14 identified lithics (see p. 227). A similar pattern was seen among the ordinary Gravette points from this site, with 79% of the lithics backed on the right edge of the artefact (p. 234). The breakdown at this site in the relationship between the orientation of the blanks and the orientation of the finished pieces could be to do with the lithic

technology used here. Many of the finished artefacts were very heavily reduced with retouch from their original blanks (see Section 8.5); furthermore, production of blanks using bipolar cores seems to have been relatively common, perhaps producing blades and bladelets whose proximal and distal ends were more similar in width and thickness than those made on unipolar cores. Finally, the Gravette points from this site tend to have rectilinear stems, rather than widening towards the base. All these factors could have removed the necessity of using the proximal ends of blanks to form the bases of the lithics, meaning that the relationship between blank orientation and final artefact orientation, seen at other sites, is not mirrored here.

At Kostënki 21 Layer 3, although the rates of backing on each edge of the blank are nearly identical for the assemblage at a whole (p. 260), among the shouldered points studied there is a preference for backing on the right edge (63% of the points) (p. 268). However, for the points from the northern complex of this site, there is a strong preference for backing on the left edge when the pointed end is oriented distally, although the sample size is small (p. 272).

The preference for backing on the right hand edge is by no means universal among the backed assemblages studied, even for Gravette points. Among the unbroken Gravette points from Kostënki 4, half were backed on each edge, with a preference for backing on the *left* edge of the blank among the fragments (although this is a small sample) (p. 167). Among the assemblage as a whole, the numbers of lithics backed on the left and right edges of the blank are similar (p. 158).

The reasons for this pattern, which is strong and widespread, are enigmatic. Handedness has previously been suggested as an explanation for this preference among Gravette points, but does not appear to be satisfactory (Harrold, 1993). For both kinds of Gravette points from Khotylëvo 2, we can see the pattern as part of the wider European phenomenon of preferential backing of the right edges of Gravette points, even if the ultimate causes remain unknown. For the shouldered points from Kostënki 21 Layer 3, the preference for backing on the right (which is not as strong as at some other sites) may be best understood as relating to hafting, which use-wear studies could ad-

dress. The preference seen at Kostënki 9 is extremely difficult to understand; as noted earlier (p. 200) it could simply relate to habitual backing on the right hand side of the blanks (Gravette points are present in the assemblages from Kostënki 9 and the very similar site of Borshchëvo 5).

The strong preference for backing the right edge of the microgravettes from Kostënki 8 Layer 2 is interesting. The microgravettes in question are very small, and are presumed to mostly relate to use as part of composite projectile weapons. Many of them are triangular or sub-triangular in section (rather than trapezoidal), due to the removal of all arrises. It is unclear why there should be such a preference for this particular morphology when pieces should have been essentially reversible between left and right.

Some possible light is shed on this problem by the extremely rare find of a bone projectile support, with *in situ* backed bladelet inserts from the site of Talitsky (or Talitskaya) in the Urals (Gvozdozer, 1952). Talitsky was included in the Gorodtsovian by Rogachëv (Sinitsyn, 2010); it is radiocarbon dated to ca. 18,000 ¹⁴C BP but has been estimated to date to 30–24,000 ¹⁴C BP on geological grounds (specifically to the Bryansk interstadial, associated with the Bryansk soil; see Section 4.3) (Pavlov & Indrelid, 2000). It is not examined in depth in this study due to the shortage of available information but is worthy of further examination in the future. The bone projectile point (Fig. 10.1) shows an interesting pattern in the arrangement of its flint inserts which is perhaps of relevance to understanding the strong preference for right-backing seen at so many European Gravettian sites. On the left hand side of the point, both backed bladelet inserts are placed with their dorsal surfaces facing up. On the right hand side, four out of five have their dorsal surfaces facing *down* and the final, lowermost bladelet is described as not being in its original position.

It should be clear from the illustration that there is no obvious reason for this pattern. In many cases, the bladelets could have been inserted with either their dorsal or ventral surfaces facing up, with no substantial effect on the morphology or symmetry of the projectile. I propose therefore that this was a *stylistic* choice, but one that may have

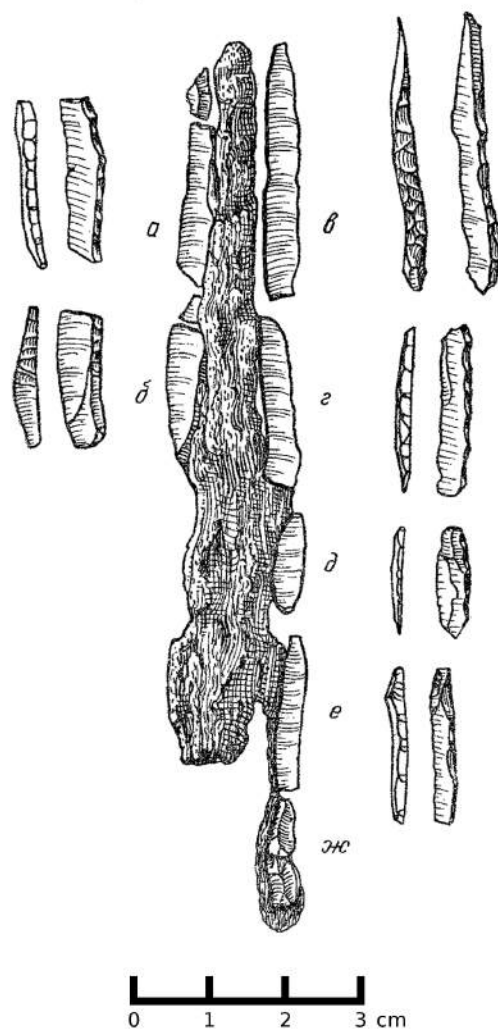


Figure 10.1: Bone point with flint backed bladelet inserts from the site of Talitsky (after Gvozdover, 1952, Fig. 1)

its roots in a widespread human preference for symmetrical arrangements (in this case, rotational symmetry around the long axis of the bone point). This stylistic preference could have been common during the MUP or Upper Palaeolithic. If the microgravettes from Kostënki 8 Layer 2 were laterally hafted in two or more series, similarly to the Talitsky point, then backing of the right edge would be necessary to maintain rotational symmetry with respect to the dorsal faces of the lithics. The proposal cannot, however, explain the preference for right-backing on large Gravette points, as these were probably axially rather than laterally hafted.

10.5 The significance of lines of hearths

The lines of hearths surrounded by pits found at Kostënki 1 Layer 1, Avdeevo and Zaraisk have previously been interpreted as dwelling structures and are frequently referred to as characterizing the Kostënki-Avdeevo Culture (see Section 2.5.5). The lines of hearths are extremely striking features, and do form an obvious point of comparison between sites which share them. There are, however, several issues with the association between the Kostënki-Avdeevo Culture and these features.

The lines of hearths with associated pits found at Kostënki 1 and Zaraisk do seem convincing and similar based on their published descriptions (Amirkhanov, 2009; Efimenko, 1958). However, no line of hearths was in fact found during the early excavations at Avdeevo: only a single hearth was recorded as part of the dwelling structure. Instead, a series of pits and depressions were found which were compared to the pits and depressions described at Kostënki 1 Layer 1, and the existence of an ancient, since destroyed, line of hearths was postulated based on this comparison (Rogachëv, 1953 cited in Klein, 1973, p. 101). At the newer Avdeevo excavations, another dwelling structure bordered by pits has been described (Gvozdozer, 1995, p. 2): it is ca. 28 m by 15 m in size, with a line of five hearths and several smaller hearths not located according to any obvious pattern.

The described dwelling structures are incredibly large. At Kostënki 1 Layer 1 the

feature is approximately 35 m long and 15–16 m wide (Efimenko, 1958). This is a huge area: more than one and a half times the size of a modern tennis court. Doubts over the plausibility of constructing such a huge building have been raised before (e.g. Klein, 1969, pp. 120–121, Klein, 1973, pp. 103–104).

As Soffer (1985) points out, the intellectual climate of Soviet archaeology in the first half of the twentieth century shaped the interpretation of these features as dwelling structures:

“Given Efimenko’s firm and vocal commitment to evolutionary stages, it is not surprising that he unearthed a ‘long-house’ at Kostënki I-1 or that Boriskovskii, his student, found one at Pushkari I in the 1930s. They were, after all, exactly the sort of dwellings that matrilineal clans of the Upper Paleolithic stage would be expected to live in. Small round dwellings, which dominate our literature today and represent the majority of Upper Paleolithic constructions in the study area, did not fit as well into this model—either they were not discovered or, when found, as in Gagarino on the Don and Malta and Buret in Siberia, their implications were not examined . . .”
(Soffer, 1985, p. 11)

The idea that such huge buildings were constructed during the Late Pleistocene is an extraordinary claim, which to my mind requires greater evidence than is currently at our disposal. As discussed in Section 2.3, Soviet archaeology took the identification of prehistoric spatial features, including dwelling structures, as a high priority. This may have led to the over-identification of such structures (Vasil’ev, 2003).

Furthermore, lines of hearths are by no means unique to the Kostënki-Avdeevo Culture. Two long lines of hearths were found at the site of Kostënki 4, which is considerably earlier than the other sites with lines of hearths and did not yield shouldered points (Chapter 6). They are also known from other Upper Palaeolithic sites, for example Abri Pataud in France (including the Gravettian Layer 3) (Movius, 1966). It is also worth noting that evenly-spaced lines of hearths are known in the ethnographic record,

as described by Binford (2002, pp. 160–161). The ethnographic examples Binford describes are smaller than the features found at Kostënki and Avdeevo, being up to ten metres long and including up to seven hearths, but are strikingly similar (Fig. 10.2). The hearths separate single or double sleeping spaces. The ethnographic examples derive from the tropics or sub-tropics but include the use of windbreaks and the creation of depressions in the ground for beds. The finding of such lines of hearths in disparate parts of the world in recent times strongly suggests that the repeated invention of this arrangement is common among hunter-gatherer societies. Indeed, it does logically seem to be one of the most efficient ways of keeping multiple people warm through the night. This provides a possible explanation for the appearance of such lines of hearths at many different sites.

It also to an extent undermines the importance of the lines of hearths as culturally indicative features. The lines of hearths seen at Kostënki 1 Layer 1 and and Zaraïsk do not necessarily represent a unique cultural achievement: rather, they may be examples of a phenomenon which is extremely widespread through space and time.

10.6 Female “Venus” figurines

The distribution of female “Venus” figurines across Europe in the second half of the Gravettian is one of the most fascinating features of the entire Upper Palaeolithic archaeological record. In European Russia they have been found at Kostënki 1 Layer 1, Avdeevo, Zaraïsk, Gagarino and Khotylëvo 2 and at the former three sites have been seen as important elements of the “Kostënki-Avdeevo Culture” (Section 2.5.5). (Amirkhanov & Lev, 2008; Efimenko, 1958; Gavrilov, 2008, 2012; Gvozdovert, 1995; Tarasov, 1971, 1972). The figurines themselves have been the subject of intense investigation for more than a century, and have given rise to a wide range of interpretations (e.g. McDermott, 1996; Mussi et al., 2000; Rice, 1981; Soffer et al., 2000). In recent years, one of the most influential ideas concerning these artefacts has been that they were connected with the maintenance of open social networks, and that at least part of their function related to

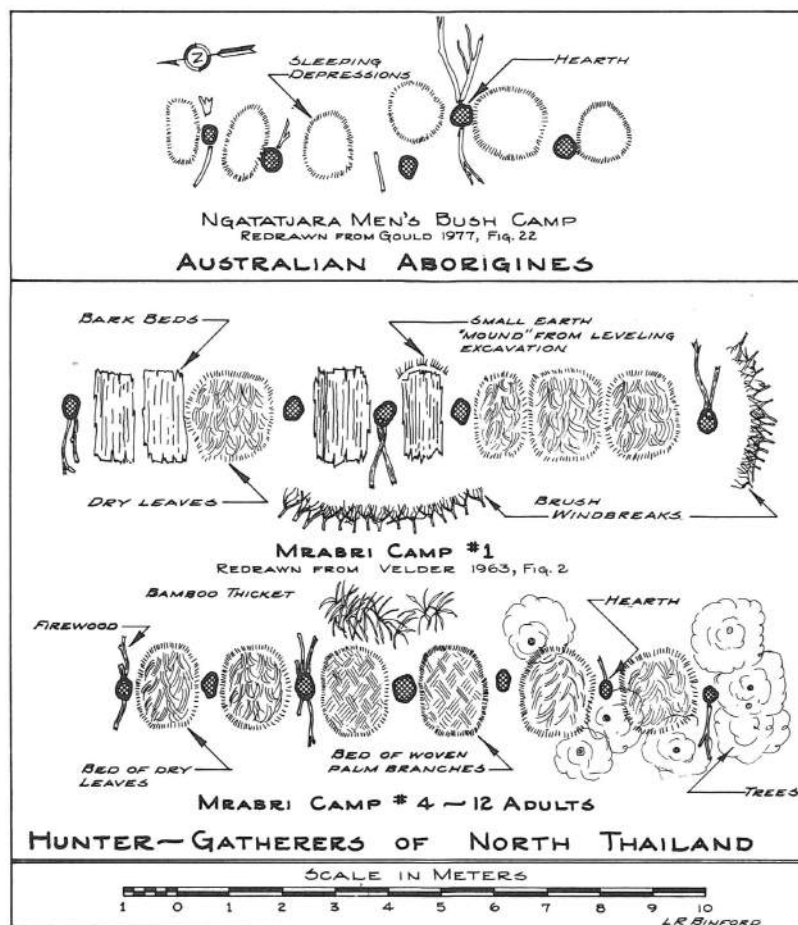


Figure 10.2: Sleeping arrangements documented among the Australian Aborigines and Mrabri of North Thailand (after Binford, 2002, Fig. 96)

information exchange and display (Gamble, 1982).

Interestingly, the similarity seen between the female figurines across huge areas of Europe is not matched by similarity among lithic assemblages. In fact, I would argue that there is greater similarity seen in the Early Gravettian (as represented at Kostënki 8 Layer 2, with its many analogous contemporary sites). This is also perhaps the case for parts of the Aurignacian: the lithic collection from Kostënki 1 Layer 3 is very similar to Aurignacian assemblages from elsewhere in Europe (Vishnyatsky & Nehoroshev, 2004). The Late Gravettian lithic assemblages associated with the female figurines, on the other hand, show clear differences between Eastern and Western Europe. In the East and parts of Central Europe the figurines have often been found together with shouldered points; these lithics are almost entirely absent from Western and Mediterranean Europe during the same period, and (with one possible exception, at Brassempouy; Simonet, 2012) are not found in association with female figurines. The association between female figurines and shouldered points is an important aspect of the characterization of the “shouldered-point horizon” (Section 2.5.6).

However, the present research has shown that the association between shouldered points and female figurines in Eastern Europe is not as strong as it might seem. Female figurines were found at the sites of Khotylëvo 2 and Gagarino, which are not usually included in the Kostënki-Avdeevo Culture. At Khotylëvo 2 I have found that many of the “shouldered points” are better described as a new sub-type of Gravette points (Khotylëvo-type Gravette points) and that of the remaining shouldered pieces, only one is a plausible fragment of a classic Eastern European shouldered point (Sections 8.4.3 and 8.4.6). I have not directly studied the material from Gagarino but it would appear that many of the “shouldered points” are also better described as Khotylëvo-type Gravette points (Section 8.6). At Zaisk (which is included in the Kostënki-Avdeevo Culture and where figurines were found), shouldered points are certainly present but they show great diversity and many of them are rather different from those found at Kostënki 1 Layer 1 or Avdeevo (Lev, 2009). The assemblage from Kostënki 21 Layer 3 further confuses the matter, as it has a particular type of narrow shouldered point but

no female figurines and is not included in the Kostënki-Avdeev Culture (Chapter 9). However, since it seems to be later than the principal Kostënki-Avdeev Culture sites it can be left out of the present discussion.

This means that the association between shouldered points and female figurines in Eastern Europe is far from perfect. At key sites (e.g. Kostënki 1 Layer 1, Avdeev, Willendorf II and Dolní Věstonice) the association seems sound. But at other sites (Khotylëvo 2 and Gagarino) there are female figurines without abundant shouldered points, and at many more Eastern European sites there are shouldered points without female figurines (e.g. Krákov-Spadzista, Předmostí, Mitoc-Malu Galben, Molodova V; Noiret, 2009; Otte et al., 2007b; Svoboda et al., 2000; Wilczyński, 2007). Furthermore, because of the Western European record we already know that the connection between female figurines and particular lithic traditions is not universal. There are a few factors which could have contributed to this confusing picture.

First, chronology. This likely explains the difference between Kostënki 21 Layer 3 and the other sites with shouldered points. However, the difference between Khotylëvo 2 and Gagarino and the sites of the Kostënki-Avdeev Culture could also be explicable through chronological difference, although this is currently impossible to demonstrate. Although the radiocarbon dates for Khotylëvo 2, Kostënki 1 Layer 1 and Avdeev are indistinguishable, all falling around 23,500–23,000 ^{14}C BP, this does not mean that all the sites were perfectly contemporary. Some sites may well be up several hundred years older than others: radiocarbon dating resolution for material of this age does not allow us to be certain.

The most obvious alternative to this possibility is that the sites *were* in fact all closely contemporary (by which I mean contemporary to within one or two hundred years) but the differences in lithic traditions reflect some sort of cultural or ethnic differences. Perhaps in favour of the latter possibility is the fact that Khotylëvo 2 and Gagarino are both located several hundred kilometres from Kostënki and Avdeev (Fig. 2.2): two or more human groups with differing material culture traditions could easily have existed simultaneously in the large area demarcated by these sites.

10.7 *Bâtons percés*

Bâtons percés (or *bâtons de commandement*) are most commonly found in sites post-dating the Last Glacial Maximum (Rigaud, 2001). Intriguingly, *bâtons percés* have been found at Kostënki 1 Layer 1 and Kostënki 13, which are both usually included in the Kostënki-Avdeevo Culture and certainly pre-date the LGM (Fig. 10.3) (Goutas, 2013; Rogachëv & Beliaeva, 1982a). *Bâtons percés* have also been found at Molodova V in Layer 7 (Noiret, 2009). This layer is dated to ca. 24,000–23,000 ^{14}C BP, making it approximately contemporary with Kostënki 1 Layer 1 (Haesaerts et al., 2009), and shouldered points were found there, as at the two Kostënki sites. An artefact described as a *bâton percé* is also found at Kostënki 4 (Fig. 9.3) but it is obviously rather different from the usual form in its shape and manufacture.

It is intriguing that these objects appear so early in Russia and Ukraine. It is also interesting that there appears to be at least a partial association with shouldered points. Many uses of *bâtons percés* have been suggested, and their function remains debated (Rigaud, 2001). The numbers in which they have been found, the often intricate decoration applied to them and their chronological restriction to the latter half of the Upper Palaeolithic all suggest that they were culturally important objects. To my knowledge, the association between them and the “shouldered-point horizon” has not been investigated.

10.8 Taxonomic units and archaeological cultures

One of the greatest challenges for this research and all other research seeking to combine information from both sides of the Iron Curtain lies in integrating the contrasting theoretical approaches that have historically held sway in different areas of Europe. Although there are many aspects to these differences, one of the most important concerns the definition of taxonomic units for the archaeological record. The difference is not immediately obvious to the casual observer, and the fact that very different criteria have been used for creating these units is seldom explicitly discussed. Within Eastern

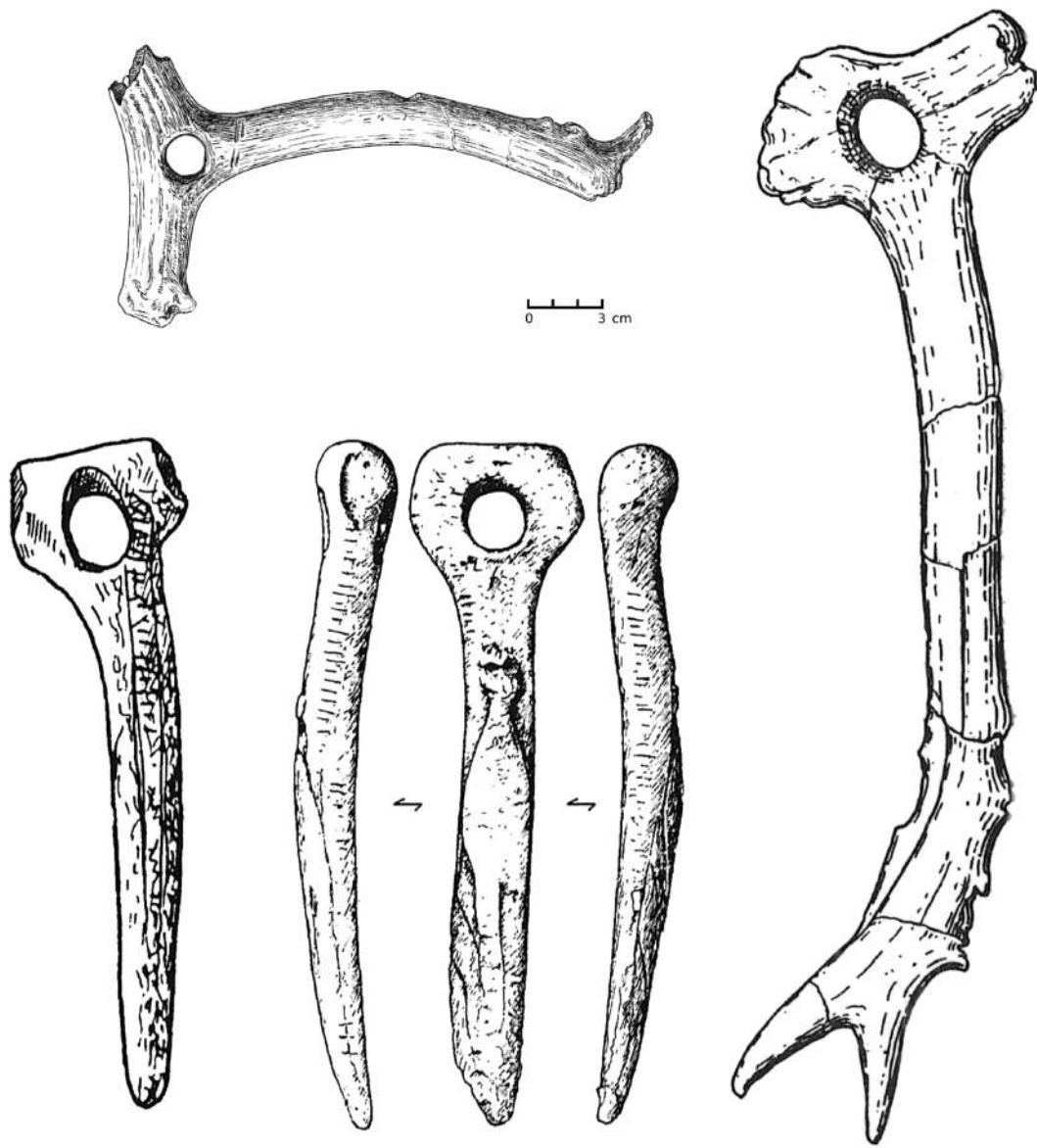


Figure 10.3: *Bâtons percés* from Kostënki 1 Layer 1 (top left), Kostënki 13 (right) and two from Molodova V Level 7 (bottom left) (modified after Goutas, 2013, Fig. 16, Rogachëv & Beliaeva, 1982a, Fig. 45 and Noiret, 2009, Fig. 151)

Europe, there has been little consensus on the specific definitions of various archaeological cultures (in large part because of the considerable theoretical ambiguity in how these cultures should be delineated) (Soffer, 1985, p. 13).

Nevertheless, the importance of these theoretical differences is difficult to overstate. As outlined in Chapter 2, numerous taxonomic units have been defined for the MUP—"the Gravettian," "the Rayssian," "the Kostënki-Avdeev Culture," "the Pavlovian," "the Kostënki-Willendorfian" and so on. But the theoretical assumptions underlying their definitions vary widely, as do the histories of their development and usage.

This research has been undertaken from an explicitly Western European viewpoint. Examining material from across Europe using this single perspective offers an opportunity to integrate information from the entire continent. Although I admire and respect the Soviet and post-Soviet Russian archaeological traditions, I have a very different theoretical stance. In particular, my approach has been shaped by knowledge of the French Upper Palaeolithic record, which in recent years has been studied using very strict techno-typological protocols for evaluating lithic assemblages, and critical evaluation of the relative and absolute chronologies of sites and sequences. A major aim has been to understand individual *faciès*, defined by lithic index fossils, or, where this is not possible, to examine short time periods within a region. In this research I have sought to take the same approach to the Russian material: to break down the entire MUP into shorter, well-defined time periods and to examine synchronic techno-typological variation both regionally and supra-regionally.

The study of the Eastern European record by Eastern European scholars has differed from the Western approach in its relative lack of attention to the study of index fossils (and the techno-typological composition of lithic assemblages more generally) and in its greater focus on small groups of similar sites, which are used in different ways to postulate various prehistoric social structures. The present research has defined a new index fossil (the Khotylëvo-type Gravette point), suggested a reconsideration of another very recently defined one (the Late Gravettian rectangle), and found a hitherto unknown variant of Gravette points (those with rectangular truncations). It is almost certain that

further studies would add to our knowledge of the index fossils of this region.

The definition of taxonomic units based on the presence of index fossils has many advantages. First, the reasoning behind the creation of these units is explicit. It does not preclude disagreement: for example, there are many sites where only fragmentary or atypical examples of index fossils are found, and convergent evolution has often created similar index fossils in different periods. However, it does give us a simple and clear inductive framework. Second, especially where idiosyncratic and chronologically restricted index fossils are concerned, it gives us a direct link to cultural similarity and communication between people at a small scale.

The Kostënki-Avdeevo Culture is defined based on the presence of several index fossils, but all of these index fossils are also found beyond the sites of that grouping (see Section 2.5.5). The most restricted index fossil (both chronologically and geographically) for the Kostënki-Avdeevo Culture is the shouldered point. Such lithics, of course, are found across Eastern and Central Europe at sites of the Willendorf-Kostenkian or shouldered point horizon. The Willendorf-Kostenkian is a robust taxonomic unit according to the criteria used in this research. The existence of the Kostënki-Avdeevo Culture, on the other hand, owes much to a particular set of historical and geographical circumstances. The historical circumstances include the focus, in Soviet archaeology, on identifying social groups and structures in the archaeological record, and the very early identification of this grouping of sites. The geographical circumstances are the fact that the sites, for reasons largely to do with research history and geology, are isolated within Eastern Europe. It is hundreds of kilometres from Kostënki and Avdeevo to the nearest sites with shouldered points (Berdyzh in Belarus, Mitoc-Malu Galben in Romania and Molodova V in Ukraine). If the gap in the archaeological record between those sites were to be filled in, we would likely have a much richer view of variation among sites of the Willendorf-Kostenkian, rather than seeing the geographically isolated group of Kostënki-Avdeevo Culture sites as representative of a unique and bounded cultural entity. In fact, the problems of the coherence of the grouping have been manifest for many years, as Gavrilov (2004) points out:

“Until the end of the 1960s the Kostënki-Willendorf cultural unity was characterised in this region only by the sites of the Kostënki-Avdeevo archaeological culture. After the discovery of Khotylëvo 2 the characterisation of this unity lost its coherence.”³ (Gavrilov, 2004, p. 262)

However, because the Kostënki-Avdeevo Culture had already been defined and very widely adopted as a taxonomic unit, it was impossible to fully revise its status and definition from a fresh perspective after the discovery of new sites.

As discussed in previous sections of this chapter, the associations between the lines of hearths the Kostënki-Avdeevo Culture and between shouldered points and female figurines actually break down rather quickly when analysed. None of this is to say, however, that I do not believe that the similarity between the sites of Kostënki 1 Layer 1, Avdeevo and Zaraisk is not real or important: it is. It is probably indicative of some kind of real shared cultural identity. However, it must be seen within its wider context.

A very similar argument could be applied to the Pavlovian. As with the Kostënki-Avdeevo Culture, it is not strictly defined by the presence of any particular index fossil. Also like the Kostënki-Avdeevo Culture, its elevation to a unit of analysis depended heavily on a particular research history and set of circumstances (Tomášková, 2000). Regarding the term “Early Pavlovian,” Moreau (2010, p. 89) writes: “Due to its geographic exclusivity, this term tends to obscure the uniform character of the Gravettian industries in Central Europe in the time period 30–27 ka BP.”

It would be interesting to try and apply a truly new perspective to the MUP record of Europe, without respect to the taxonomic units already defined and taking into account the full complement of sites now known and the factors that have shaped the geographical gaps and concentrations in the record. In that case it is likely that neither the Kostënki-Avdeevo Culture nor the Pavlovian would be seen as necessary divisions in the record (or, if they were, many other groupings of sites would also be defined).

³“До конца 1960-х годов костёнковско-виллендорфское единство на этой территории характеризовалось только памятниками костёнковско-авдеевской археологической культуры. После открытия Хотылёво II характеристика единства потеряла свою стройность.”

They are artificial groupings of sites that have been reified due to the specificities of their research histories.

This is not a problem just because the inconsistency it brings to our view of the MUP record is inherently unsatisfactory. It also heavily skews research design, as many projects have been focused on the Kostënki-Avdeev Culture or the Pavlovian, without comparison with sites beyond these groupings. Furthermore, interpretations (especially by archaeologists who do not have a thorough first-hand knowledge of the material) have been heavily shaped by the prior definition of these “archaeological cultures.” The Kostënki-Avdeev Culture is often seen rather teleologically, by researchers both outside and within Russia, as the zenith of cultural development within the Russian MUP. The Pavlovian has been subject to similar claims of exceptionality within the European MUP.

The approach taken in this research has been fairly conservative, in that I have not sought to formally define new taxonomic units. This is in large part because more work is necessary before this can be done, focusing on the full range of variability within each potential new *faciès*. The sites of Khotylëvo 2 and Gagarino could, however, form the basis of a *faciès* defined by the presence of Khotylëvo-type Gravette points. If Late Gravettian rectangles (or a particular subset of them) or Gravette points with rectangular bases prove to be chronologically and/or geographically restricted, they could also be used to define a *faciès*. Applying such an approach to the Russian material has great potential for clarifying many of the problems we have in understanding it both independently and in its wider context.

Chapter 11

Conclusions

This chapter summarises the results of this research, beginning with the chronology and culture history of the region, then discussing the reassessments of index fossils carried out. Next, some recommendations for future work are made. Finally, there is a short reflection on the project.

11.1 Summary: culture history and dynamics during the MUP of Russia

The archaeological record of Mid Upper Palaeolithic Russia is an incredibly rich resource for our understanding of Pleistocene human societies. The research undertaken to produce this thesis has confirmed the huge potential of re-examining old museum collections from a new perspective. It has also shown that theoretical issues are unavoidable when seeking to make sense of information deriving from diverse intellectual approaches.

In most of Europe we are now accustomed to thinking of the Aurignacian and Gravettian as being the principal Upper Palaeolithic technocomplexes predating the Last Glacial Maximum. The existence of the Streletskayan and the Gorodtsovian indicate that there were entirely different traditions present on the edges of Europe. The geographical distributions of each of these industries is interesting. Both overlap (at

Kostënki) with the distributions of the Aurignacian and Gravettian, but otherwise differ: the Streletskayan is found widely, in the Urals, at Garchi, south towards the Black Sea at Biriuch'ia Balka and north of Kostënki at Sungir'; the Gorodtsovian, on the other hand, has perhaps been identified in Ukraine and the Urals. The stark techno-typological differences between these lithic traditions and the Aurignacian and Gravettian strongly suggest that these traditions represent separate populations, which would have been recognised as such by people living at the time. It is very interesting to speculate as to whether the presence of these industries in this region is connected with movement of people or communication from the south and/or east of European Russia: from Siberia and the Caucasus or Middle East. The overlapping distributions of all these industries also hints at complex population dynamics during the Early Upper Palaeolithic (EUP) and beginning of the MUP. Without more comprehensive and reliable information on the dating of all the relevant sites, it is not currently possible to evaluate these fully. But based on the data we do have, it appears that the Streletskayan was a mainly EUP industry which disappeared by at the latest 28,000 ^{14}C BP, and plausibly earlier. The Gorodtsovian, which would benefit from further work on the typology and technology of its lithic assemblages, also seems to have disappeared by 28,000 ^{14}C BP. It is possible that the Gorodtsovian fully post-dates the Streletskayan, in which case we have a succession of Streletskayan—Gorodtsovian—Gravettian at the beginning of the MUP. Although this model is tempting in its simplicity, there is certainly more work to be done. Beyond the remit of the present research, the dynamics of replacement and/or interaction between the Aurignacian and Streletskayan during the EUP would be a very interesting topic for study.

Wherever the origins of the Gravettian lithic tradition were, with the evidence we presently have it seems most likely that it was not in Russia. Furthermore, the Gravettian did not appear simultaneously or near-simultaneously across Europe: there was a significant time lag before its appearance in Russia. The argument for this does not simply rest on the absence of evidence for the Gravettian before 28,000 ^{14}C BP, but on the *presence* of a distinctly non-Gravettian tradition in Russia during the period 30–

28,000 ^{14}C BP: the Gorodtsovian (and possibly also the Streletskayan). When we do first have evidence for the presence of the Gravettian in Russia, just after 28,000 ^{14}C BP, it appears strikingly similar to contemporary Gravettian assemblages in Italy and Central Europe. The differences between the microgravette assemblages of this period and other types of microlithic assemblages (e.g., in Moravia) may have been overstated: direct comparative study would be very useful to define exactly what the differences and similarities are between sites of this age.

The Gravettian seems to appear in Russia only after the onset of Greenland Stadial (GS) 5. It is easy to envisage a scenario whereby the disruption and climatic cooling of the end of Greenland Interstadial (GI) 5 was linked to the end of the Gorodtsovian tradition (and, if it had not already disappeared, the Streletskayan). The early Gravettian tradition, on the other hand, seems to have been relatively successful in these cold conditions, and expanded eastwards into European Russia following the onset of stadial conditions. However, it seems likely that this region remained a marginal environment in comparison with areas further west. There is an absence of any evidence for human activity in European Russia during late GS 5, which was associated with particularly cold conditions in Eastern Europe. Much of the record of the Pavlovian/Evolved Pavlovian dates to about this time: it is not therefore surprising that there do not seem to be strong analogies for the Pavlovian in European Russia.

It is only at the very end of GS 5 or beginning of GI 4 that evidence for human occupation of the region appears again. What is most interesting about this period is that it is the first time we have evidence for a truly “mosaic”-type Gravettian record in Russia. The site of Kostënki 4 shows stark contrasts to Borshchëvo 5 and Kostënki 9, although the first two sites are now both dated to ca. 25,000 ^{14}C BP and the dates are indistinguishable from one another (Kostënki 9 is undated except by comparison with Borshchëvo 5). The fact that these differences are not only found in the lithic assemblage but also in the site size and spatial organization does suggest that functional difference could have played a key part in producing the variation we see here. However, chronological and ethnic differences could also have been decisive. All sites demonstrate

some similarities with assemblages further west, as well as differences. The collection from Kostënki 4 has an important Gravette point component, as well as a large mass of simple backed bladelets that are difficult to analyse. Gravette points and backed bladelets are, of course, important features of the European Gravettian record as a whole. However, the spatial arrangement of hearths at the huge site of Kostënki 4 does mark it out in the archaeological record of this particular part of the Gravettian. The “Late Gravettian rectangles” found at Kostënki 9 and Borshchévo 5 also now appear to be rather widespread both geographically and chronologically in the second half of the Gravettian in Eastern and Central Europe. However, their domination of lithic assemblage at Kostënki 9 appears rather unusual. Full contextualisation of the Russian record at about this time will depend on a better understanding of the contemporary Eastern, Central and Mediterranean record. Presently, there does appear to be some synchronic variation but it is difficult to judge the precise contemporaneity of the relevant sites and their similarities to the Russian material.

There may have been human abandonment or a decline in activity in Russia during the short GS 4 period, but it is difficult to be certain of this. However, the onset of GI 3 appears to be associated with a definite increase in human presence in Russia. The three principal sites of the “Kostënki-Avdeevo Culture” (Kostënki 1 Layer 1, Avdeevo and Zarsk) all most likely date to the period 23,500–23,000 ¹⁴C BP. However, the site of Khotylëvo 2 also appears to date to this time period.

The assemblages from Khotylëvo 2 and Gagarino seem to represent a local Gravettian *faciès*, defined by the presence of Khotylëvo-type Gravette points. Female figurines were found at both Khotylëvo 2 and Gagarino, but only one convincing fragment of a shouldered point was found in the Khotylëvo 2 assemblage. This does cast some doubt on the strength of the general association between shouldered points and female figurines and on the importance of the former artefacts in assemblages of this time period. On a European scale, it has long been clear that there is significant diversity among lithic assemblages associated with female figurines. This has now also been shown for sites within a few hundred kilometres of each other in Russia. The variation among

these lithic assemblages is worthy of further direct investigation.

Although it cannot be expected that the “Kostënki-Avdeev Culture” will be abandoned as a term and there are inarguably very strong similarities between the sites of this group, it is important to note that it does not form a *faciès* or industry in the Western European sense. There is a strong argument, however, for shifting attention away from this small local group of sites to the wider Willendorf-Kostënkian. This is because a shift to defining archaeological units in this region based on the presence/absence of index fossils would bring it closer in line with how the rest of the European record is usually divided, and hence facilitate cross-European analysis and comparisons. The Willendorf-Kostënkian is already defined in large part by the presence of shouldered points, but the typology of these lithics and their definition as a index fossil requires further work. The definition should exclude the narrow, quite homogeneous points found for example at Kostënki 21 Layer 3 and the Khotylëvo-type Gravette points, previously described as shouldered points, found at Khotylëvo 2 and Gagarino. Furthermore, it would be very interesting to study in detail the backed microlithic assemblages found at sites of the Willendorf-Kostënkian. This category of artefacts has provided the index fossils to define many *faciès* of the Gravettian in Western Europe: it is worth investigating whether the same could be the case further east.

The end of the Gravettian and the beginning of the Epigravettian, and the relationship between these industries, remains rather poorly defined. The question of whether human activity continued in this region throughout the LGM likewise requires further investigation.

11.2 Index fossils

An important result of this work has been the reconsideration of several index fossils. These shall be considered in turn.

11.2.1 Late Gravettian rectangles

The rectangles from the Kostënki 9 assemblage were identified as a new index fossil shortly before the article of Wilczyński et al. (in press), defining “Late Gravettian rectangles” became available. These lithics do appear to be widespread and significant during the latter half of the Gravettian in Eastern and parts of Central Europe. They require further focused study and comparison: the definition put forward for these lithics by Wilczyński et al. does not fully encompass the range of variation seen (particularly the presence of convex ends on many artefacts). They would also benefit strongly from use-wear analysis. Most of those found at Kostënki 9 do not appear to be feasible weapon components, but their function remains obscure. One of the reasons that these lithics are interesting is that they may have been produced over a period of several thousand years, from ca. 25,000 ^{14}C BP until the time of the Kostënki-Avdeevo Culture. If this is the case, then it indicates the durability of a local (Eastern/Central European) lithic tradition through a period which otherwise saw great changes in material culture. Confirmation of the definition and identification of these lithics is necessary before this can be further explored.

11.2.2 Gravette points with rectangular truncations

Gravette points with rectangular truncations, while discussed for the sites of Khotylëvo 2 and Kostënki 4, were not formally defined as a new index fossil during this research. This is because there are some strong differences between those found at the two sites mentioned. Furthermore, it is not yet clear whether they are present at any other sites in Eastern or Central Europe. While a search of the literature was carried out, this was not exhaustive, and these artefacts may have been previously identified as awls, etc., at other sites. For a new index fossil of Gravette points with rectangular truncations to be defined, it would be better to wait until their distribution and the variation among them can be properly assessed. Nevertheless, they are interesting artefacts, indicating a hitherto unknown level of diversity among Gravettian backed lithic types in Russia. As

with the Late Gravettian rectangles discussed above, their presence at both Kostënki 4 and Khotylëvo 2 may indicate a degree of continuity of lithic traditions in Russia during the period ca. 25,000–23,000 ^{14}C years BP.

11.2.3 Khotylëvo-type Gravette points

The identification of a new index fossil—Khotylëvo-type Gravette points—is very important for our understanding of lithic variation during the Russian MUP. It removes the ambiguity caused by the definition of these artefacts as shouldered points, and demonstrates that the definition of new *faciès*, based on idiosyncratic index fossils, is possible for this region. The artefacts also add hitherto-unsuspected variation to our definition of Gravette points, with consequences for how we understand these lithics as a European phenomenon.

11.3 Recommendations for future work

The following sections give some suggestions for future work arising from this research.

11.3.1 Further work on MUP Russian assemblages

The assemblages examined during this research represent only a part, albeit a significant part, of the Russian MUP record. The remaining sites would benefit from further work using a similar approach to that taken here. Furthermore, only the backed lithics from these sites were studied: the remainder of the collections could have much to tell us about material culture diversity during this time period. Sites that might be particularly productive to study are Talitsky and Kostënki 11 Layer 2. The sites of the Kostënki-Avdeevo Culture could also benefit from focused study of parts of their collections. There is plenty of work remaining to be done on Streletskayan and particularly Gorodtsovian assemblages: it would be useful if these industries could be contextualised by comparison to the entire European/Eurasian Upper Palaeolithic.

11.3.2 Early MUP lithics

The study of the Kostënki 8 Layer 2 assemblage has demonstrated the very strong similarity among Early Gravettian microlithic collections across Europe. It is clear that microliths are an important part of assemblages dating to this period, and that they are often created with a high degree of attention and homogenisation. Several different typological categories of microliths are known from this period. These include microgravettes, *fléchettes* and geometric microliths. It would be extremely interesting to systematically study the morphology of all these types of lithics, and determine whether they do in fact form discrete typological groups, and whether there are any intermediate forms. Although backing is often considered as a defining feature of lithics (including in the present research), it is worth investigating its importance for typological categorization. This is because it often seems to exist as a continuum between invasive abrupt backing and marginal abrupt or semi-abrupt retouch (as at Kostënki 9 and Aggsbach). It is also because it is not clear that invasive backing (forming a back) is always necessary for the purposes it is presumed to have fulfilled. We assume that many backed lithics were hafted by the backed edge, but it is not obvious that unbacked lithics could not have been hafted just as well. It may be that the choice of backing was in many cases directed by the need to achieve a certain degree of size reduction of the lithic, rather than the desire to create a back.

Investigation of use-wear and fractures could help to inform such a study. However, a focus on the morphology of pieces would be very interesting, and could also be methodologically innovative. The descriptions usually used in lithic studies for the shapes of artefacts remain rather simple, obscure a huge amount of variation, and are very difficult to standardise between researchers. Recent advances in scanning and photographic technologies now make the 2D/3D study of large numbers of artefacts, using computer analyses, a real prospect. Statistical investigation of morphologies, either using geometric-morphometric techniques or some other approach borrowed from another field, could provide an entirely new perspective on lithic typology.

11.3.3 Female figurines, *bâtons percés* and lithic assemblages

The appearance of *bâtons percés* across Europe apparently at approximately the same time as the female “Venus” figurines is intriguing and worthy of direct investigation. It would also be extremely useful to study the lithic assemblages found in association with female figurines and with the earliest *bâtons percés*. This part of the Gravettian is fascinating for the contradictions it exhibits between overall similarity in features of its mobiliary art tradition (although these, indeed, may show geographical patterning in their styles) and clear differences among lithic traditions. There is scope for a project which tackles these problems directly by studying the lithic assemblages from across Europe that have been found in association with female figurines, as well as carefully reviewing their dating. This should include a detailed review of the technology and typology of shouldered points themselves.

11.3.4 Theoretical differences between archaeological traditions

One of the most surprising aspects of this research was the importance of the theoretical differences between Russia and the West. Some of these differences could also extend to Central Europe, especially concerning the status of the Pavlovian. It is crucial, if the archaeological record of all of Europe is to be studied together, that the theoretical differences between intellectual traditions, particularly concerning the construction of archaeological taxonomic units, are fully accounted for.

There is scope for a formal evaluation of these theoretical differences, particularly for the differences between current post-Soviet and Western perspectives. Since the end of the Soviet Union, there has been very little work done comparing the differences in archaeological theory between Russia and the West. A thorough exposition and clarification of these differences, however, would be of great help to researchers in the West who work on the Russian record.

11.3.5 Palaeoclimatic frameworks and chronostratigraphy

A significant problem for this project, and for Western research into the Russian Palaeolithic more generally, is presented by the strong differences in the palaeoclimatic frameworks used in Russia and the West (discussed in Chapter 4). While the Greenland ice core chronologies now largely form the basis for all frameworks used for the Late Pleistocene in the West, they are, if not unknown in Russia, then certainly very little utilised. The continuing dependence of Russian Pleistocene researchers, including archaeologists, on traditional named palaeosol-interstadial correlations (the equivalents of, e.g., the Laugerie and Tursac interstadials) represents a serious problem for cross-continental comparisons.

The development of detailed and well-dated palaeoclimate archives for European Russia, and their comparison with those elsewhere in Eurasia, is necessary to solve this problem. In the meantime, only approximate and heavily caveated comparisons based on radiocarbon dates and assumptions about palaeosol sequences (as attempted in this study) will be possible.

It would also be extremely helpful to obtain more palaeoenvironmental information directly from Russian archaeological sites. It is regrettable that more work is not done routinely on, for example, the collection and study of microfauna, but this would require significant change in excavation practices. At present we do not know much about Upper Palaeolithic macrofaunal suites in Russia, both archaeological and palaeontological, and this would be a very productive avenue to pursue. Another possible approach to gaining a better understanding of Russian palaeoclimates could be the study of isotopes from faunal remains.

Apart from the palaeoenvironmental framework, there is plenty of scope for further study of the chronostratigraphy of Russian sites. This includes the identification of tephras and microtephras and, if possible, work on the micromorphology of cultural layers to assess their connection with the rest of the sequence.

11.3.6 Dating

Radiocarbon dating has been of critical importance to this study. There remain many ambiguities concerning the dating of Russian MUP sites, which could be addressed by further dating work. The lack of good material for sampling (i.e., material of certain provenance, which can be securely related to human activity and which has not been chemically conserved) is, however, a real problem. Closer collaboration with Russian colleagues could help to ameliorate these issues for sites that are currently under excavation or which will be excavated in the future. Apart from this, there are a few sites that would be worth targeting for chronological assessment if suitable samples can be obtained, particularly Talitsky and Gagarino.

11.3.7 Genetics

As noted above, the Streletskayan and Gorodtsovian seem to predate the Gravettian in Russia, which has its first known appearance ca. 2,000 years after its earliest known manifestations in Western and Central Europe. The nature of this replacement is enigmatic: was there a replacement of the whole population, or did local populations adopt new technologies? The Gravettian assemblage from Kostënki 8 Layer 2 seems to be classically Gravettian in its appearance, with no suggestion of a Gorodtsovian-type component, and there are clear differences between the Gorodtsovian and Streletskayan assemblages, with no obvious influence between them. One possible way of assessing the likelihood of a full population replacement here could be to examine genetic evidence.

Our understanding of Eurasian population structures during the Upper Palaeolithic has seen recent advances thanks to the sequencing and comparison of several ancient human genomes, including from Kostënki (Fu et al., 2014; Raghavan et al., 2014; Seguin-Orlando et al., in press). There are numerous human remains from Eurasia whose genomes remain to be sequenced: these include those from Sungir' and Kostënki 15. Study of these genomes, from Streletskayan and Gorodtsovian contexts respectively, and comparison with data from Gravettian remains could be extremely illuminating

with regard to population structures during the late EUP and MUP. There are in fact few remains from Gravettian sites in Russia, but the skeleton of a child was found at Kostënki 18, whose assemblage contains shouldered points and is hence likely Late Gravettian (Rogachëv & Beliaeva, 1982b). There are some fragmentary human remains from Kostënki 8 Layer 2 but they are burnt and therefore may be unsuitable for aDNA analysis (Pusch et al., 2000).

11.3.8 Translation

A large translation project would be a very worthwhile (and cost-effective) way to transform the research landscape as it currently exists. The vast majority of articles relating to Russian archaeology are written in Russian, which only a tiny number of Western archaeologists know with any degree of proficiency. It has become extremely obvious during the course of this research that there is a wealth of information in the Russian (and Ukrainian, Belarusian, etc.) literature that would greatly enrich international Palaeolithic archaeology if it were more widely known. The easiest way to rectify this would be with a major translation project: if the appropriate permissions were obtained and funding could be found, then a huge amount of literature could be brought to a wider audience. This would, quite simply, permanently transform the research landscape. Gaining access to an understanding of the Russian material would be of overwhelming benefit to Western archaeology, allowing for new perspectives and an end to reliance on often extremely outdated secondary literature. But I believe it would also be of great benefit to Russian archaeology, as the ideas and methods of our Russian colleagues would be brought to the international attention and critique they deserve.

11.4 Reflection

In the first pages of this thesis I referred to the lack of progress over the past several decades among Western archaeologists in gaining a proper understanding of the Russian archaeological record. There remains much work to be done.

This research has confirmed that the Russian record is a rich, and under-studied, archaeological resource whose full appreciation could transform our understanding of societies during the Upper Palaeolithic. The methods used in this thesis are not innovative or particularly complicated. They combine a well-established approach to techno-typological lithic studies with a review of chronology that is based on a conservative, sceptical viewpoint regarding dating and an acknowledgement of the need for strict protocols in selecting and treating samples. The only thing that is new here is in applying these well-proven ideas to material that has not previously fully benefited from this approach. I am convinced that much further progress could be made by applying the same methods to other Upper Palaeolithic material, especially from parts of the European continent which have received relatively little attention.

The research has also shown that there are real theoretical issues which must be overcome in order to consider material from a truly pan-European perspective. I did not originally set out to consider theoretical and intellectual historical issues during this research. However, these matters became impossible to avoid, because they have created so many of the differences among past interpretations of the material. It has been extremely satisfying to begin to understand what to me were entirely foreign approaches to archaeology and the human past by tracing the ideas and debates that led to their development. At first reading, many of the arguments and conclusions of Russian archaeologists can seem somewhat unconvincing and even absurd to Western eyes: fuller understanding leads to a less dismissive reaction. This also gives a new perspective on conventional Western ideas, by demonstrating that the ideas and assumptions that underlie our approaches are products of their time and place, which are not natural or inevitable. This does not mean I think that they are wrong, but it does mean that I think we could perhaps benefit from being more explicit about them, and working out their full implications.

This research has been enjoyable—if sometimes challenging—to undertake. There are many genuine reasons why Western archaeologists usually find it more difficult to carry out research in Russia than areas closer to home. The ongoing cooling of

political relations between Russia and the West is also troubling for those of us who hope for closer academic interaction. However, it is very much hoped that more Western researchers will rise to these difficulties and that in the future there will be further communication and collaboration between colleagues across Europe. The opportunities for transformation of our understanding of the European Upper Palaeolithic are real and substantial.

Appendices

Appendix A

Recording of bladelets

The following information was collected on each backed bladelet recorded. See Section 3.2.4 for further details.

Curatorial information

- Curatorial information: Location of collection, collection numbers, labels on boxes, bags, etc.
- Labelling information: Labels written directly on artefacts.

Bladelet production information

- Blank type: Blade, spall, *lame sous crête*, etc.
- Raw material: Colour, texture, inclusions, patination.
- Dorsal scars: Bipolar scars, maintenance removal scars, etc: present/absent.

General descriptive technological information

- Distal/proximal ends: Determinable or indeterminable?
- Whole or fragment: Whole, distal, proximal, medial or indeterminate fragment?

Morphological and dimensional information

- Length: Total length (to nearest millimetre).
- Width: Maximum width; other width (e.g. width of stem) (to nearest millimetre; at Khotylëvo-2, to nearest 0.5 millimetre).
- Thickness: Maximum thickness (to nearest millimetre; at Khotylëvo-2, to nearest 0.5 millimetre).
- Weight: (To nearest 0.1 gram).
- Ventral surface: Rectilinear (to within 1 mm tolerance), concave, convex, twisted, sinuous, twisted concave, twisted sinuous.
- Profile of piece: Triangular, trapezoidal, etc.
- Sides: Rectilinear, lunate, sinuous, tapering (proximal to distal/distal to proximal/indeterminate), irregular, shouldered, curved (left, right, indeterminate).
- Dorsal arrises: Present/absent; number.

Lateral retouch

Up to three types of retouch were recorded for each lateral edge.

- General description of retouch.
- Position: Direct/inverse/alternating/crossed/bifacial.
- Angle: Abrupt/crossed-abrupt/semi-abrupt/low.
- Distribution: Continuous/discontinuous/partial (if partial, extent also measured in mm).
- Delineation: Rectilinear/oblique/follows edge/concave/convex/notched/denticulated/shoulder/cran.

- Delineation 2: Regular/irregular.
- Localization: If applicable: Proximal/distal/mesial.

Working of proximal and distal ends

- General description: Break, point (with location: left/right/central), unretouched end, rectangular truncation, etc.
- Retouch: Direct/inverse; truncation; abrupt/semi-abrupt etc; length (invasiveness) in mm.
- Point angle: If applicable, angle of point to nearest 5°.

Platform

- Present/Absent: If absent: missing (due to break)/removed/indeterminate.
- Platform description: If present, description of platform (plain, faceted).

Bulb

- Present/Absent: If absent: missing (due to break)/removed/indeterminate.
- Bulb modification: If present: Intact/partly removed (> 50% remaining); mostly removed (< 50% remaining).
- Bulb description: If present, description of bulb (e.g. diffuse, prominent).

Summary data

- Typology: e.g. Backed bladelet, Gravette point, microgravette, nanogravette, shouldered point.
- Backing: Left/right/both/indeterminate edge; if both, left/right more invasive?
- Damage: Location (refers back to retouch previously recorded).

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