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Introduction to the Site of Buran-Kaya III

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Buran-Kaya, an archaic Tatar name meaning "nose rock," is a steep bluff about 10 m high and 40 m wide on the eastern bank of the Burulcha River. The bluff is among the gentle rolling hills and broad valleys that typify this part of the Belogorsk region on the northern side of the Internal (Second) Range of the Crimean Mountains. The surrounding landscape forms part of the New Euxinian forest sub-province of the Crimean Mountains, characterized by wide meadow grass steppes and thin oak forests in the river valleys (Barbarych 1977).

Three Stone Age sites were discovered here in 1936 by O. N. Bader: Buran-Kaya I Cave, Buran-Kaya II Rockshelter, and Kilse-Koba (Bader 1957). These contained Mesolithic and Neolithic cultural remains and were excavated by Bader and M. D. Gvozdover in 1957–1958 (Bader 1976). Buran-Kaya III, a partially collapsed rockshelter with a southwestern exposure, was discovered and named by A. A. Yanevich in 1990. This site, 45°00'N, 34°25'E is located about 10 m above the present-day level of the Burulcha, 314 m above sea level, 4 km southwest of the village Aromatnoye and 20 km east by northeast of Simferopol. Presently, the area sheltered by the cliff face encompasses an area roughly 5 m east to west and 3 north to south.

The first test excavations at Buran-Kaya III were carried out in 1990 and consisted of a 4 m^2 sondage in squares Д10–11 and Е10–11 with a depth of 2.5 m, and extended in square Д10 to just above bedrock (Yanevich et al. 1996) (Figure 1-1). Thirteen archeological layers were recognized in the 3.5 m deep sondage, ranging in age from late Bronze Age through Middle Paleolithic. Excavations at the site were continued in 1994, with the collaboration of M. Yamada of the Institute de Paléonotologie Humaine, Paris, who took the responsibility of studying the Middle Paleolithic layers of the site, layers 7–10. The 1994 excavations consisted of a 2 × 3 m trench adjoining the north wall of the initial sondage (Yamada and Yanevich 1997) (Figure 1-1). Yamada's study of the Middle Paleolithic material (Yamada 1996) led him to suggest that the layers be grouped into two phases. The lower phase (layers 10–9) was characterized by bifacial tools and

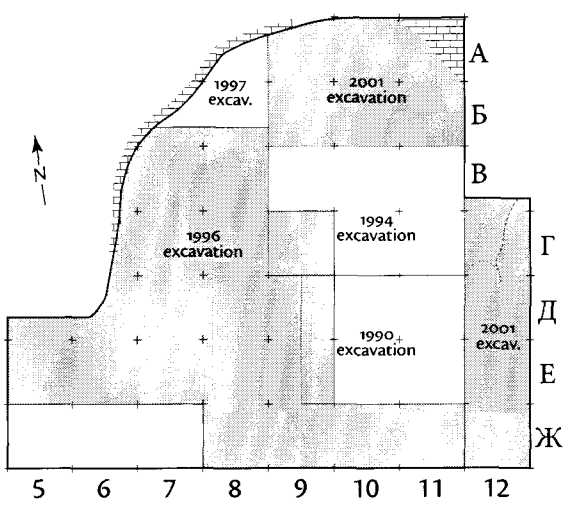

Figure 1-1—Site plan of Buran-Kaya III showing excavations by year.

foliated points, and the upper phase (layers 8–7) was characterized by Mousterian points and sidescrapers, Kiik-Koba type points, centripetal and bifacial reduction, and an absence of large bifacial tools (Yamada 1996:16). He also noted that the upper part of layer 7 was intermediate between the Middle and Upper Paleolithic, where Kiik-Koba points disappeared and forms such as nosed and carinated endscrapers appeared.

Under an agreement between Yanevich and the Joint Ukrainian/American Project and with the participation of M. Otte from the Université de Liège, excavations at Buran-Kaya III were continued in 1996, 1997, and 2001 with A. E. Marks taking responsibility for the excavation and analyses of all Middle Paleolithic layers, and A. A. Yanevich taking responsibility for the excavation and analyses of more recent materials. The 1996 excavations concentrated on the area to the west and south of the previous excavations, and reached bedrock or the sterile sands overlying bedrock in most squares (Figure 1-1). In addition, to obtain in situ Aurignacian and Gravettian materials, a 20 cm portion of the north wall along squares Б6–9 was excavated by a team from the Université de Liège. Excavations in 1997 were conducted to continue the U.Lg. project (concerned with the Upper Paleolithic of CIS countries), and were limited to the northwesternmost corner of the site. In an effort to enlarge the samples of lithic material from the lowermost layers, excavations in 2001 concentrated on the other extant portion of the site, to the north and to the east of previous fieldwork (Figure 1-1). It is these most recent excavations, 1996–2001, that provided the data for the analyses presented in Chapters 2–14 of this volume.

Excavation Methodology

By the time the Joint Ukrainian/American team began work at the site, Yanevich and his collaborators had recognized six geologically-defined strata containing Middle Paleolithic cultural layers (strata 7–12, cultural layers 7–10), which were subdidvided into at least 15 artificial 5–10 cm-thick spits that followed natural geological contours, but which were occasionally defined as "fireplaces," "lens," etc. (horizons 24–38). All of these proved fairly impossible to recognize on the ground at the beginning of the 1996 field season in the east-west baulk along line B–E8/9, in the north profile along line В/Б7–9, or in the east profile of Г–Ж11. Owing to the lack of a coherently published geological description and excavation methodology of the site for 1990–1994, is was even impossible to tell whether the distinctive sediments of what would later be called Level B1 were part of Yanevich et al.'s layer 8, or a continuation of their layer 7. It was therefore decided to renumber, alphabetically, the Middle Paleolithic layers visible at the start of the 1996 season based on their sedimentological characteristics. This resulted in Levels A, B, B1 (Levels B and B1 are grouped as Layer B), C, D, and E, all of which contained distinct cultural material, and which were sometimes separated by (unnamed) sterile deposits (Figure 1-2). Although geologic units (Roman numerals I–VIII) were identified for the entire depositional sequence at the end of the 1996 field season and have been noted in previous publications (e.g., Marks 1998; Monigal 2001), no comprehensive description by a professional geologist has been conducted for Buran-Kaya III, and those geological units are eschewed in the description below.

The alphanumeric grid system (1-m^2-units) and datum point established by Yanevich during his first season of excavation were also used during subsequent excavations of Buran-Kaya III in 1996, 1997, and 2001. Excavations of the lower sequence (Level A through Level E) followed the natural stratigraphy of the deposits. Sterile sediments were removed with the aid of picks and shovels, while the excavations of the cultural layers were conducted with trowels, knives, and brushes. The occasional recalcitrant boulder or limestone slab was broken up by a sledgehammer in order to remove it from the excavation area. All excavated sediments were sieved; during the 1996 and 1997 seasons by dry screening through 5 mm mesh, and during the 2001 season by water screening through two to three nested screens (5 mm, 3 mm, 1.5 mm).

Plans of each cultural level were drawn at a scale of 1:10. These maps, drafted by a professional artist using the notational system common to Crimean Paleolithic excavations, included major features such as boulders or large rocks, burned sediments, pebbles (potential hammerstones), and special samples for palynological and radiometric analyses. Animal bone that was rabbit-sized or larger and had a maximum dimension greater than 3 cm, and all flint artifacts, including chips as small as 1 cm, were mapped and most of their elevations were recorded both on the plans and on the artifacts themselves. In addition, any item that appeared (in its still unwashed state) to be a tool or core was given a unique identifying number specific to the square and level. This field number was noted on the plan and on the artifact. In the event that a tool was not recognized as such in the field, its grid position could usually be reconstructed by its depth measurement. It should be noted that the prodigious density of the Layer B material in the central portion of the site during the 1996 excavations—up to 2,000 pieces per square meter—rendered mapping of all

material unreasonable. Instead, only lithics more than 3 cm in largest dimension and bones greater than 5 cm were mapped.

Deviations from this methodology occurred in 2001 for squares Г12–Ж12. Before these were excavated, it was noted that Levels B, B1, and C, clearly visible in the wall of Г11/12, stopped partway into Д11/12 and from here to the south wall, the entire lower sequence appeared disturbed. All deposits along this line also had a 26° north to south inclination. Levels B, B1, C were intact in the northwest quadrant of square Г12, but there was a washed area in the western sector towards a pit in the southwest quadrant (see Figure 1-6). All cultural remains were therefore bagged separately as intact, washed, or from the pit; Swiderian, Azillian, and Gravettian type artifacts occasionally appeared in the latter two. Sediments in part of Г12 were cemented, all bone was in poor condition due to water damage, and artifacts were frequently on edge as well. The remaining squares, Д12–Ж12, containing obviously disturbed deposits, were dug with a trowel, water screened, and mapped as long as artifacts were present, and were numbered as sub-levels of Layer 5 for the upper sequence, and as levels 10 and 11 for the lower sequence, based on changes in lithology, color, and gravel content. Despite the care taken, no intact cultural layers were found in this section of the site; levels 10 and 11 contain Kiik-Koba points, distal tips of foliates reminiscent of Level C, *Theodoxus* shells, Azillian points, Epi-Gravettian points, bladelets, microliths, and debitage derived from a minimum of five unrelated reduction strategies, including prepared flake core, bladelet core, non-volumetric blade core, and *façonnage*. Sterile alluvial sands were found at the base of these western deposits and presumably overlie bedrock.

Stratigraphic Description

A total of 50 m^2 has been excavated at Buran-Kaya III, of which about 8 m^2 are mostly mixed and redeposited sediments (easternmost and western most lines). The main stratigraphic sequence at the rear of the shelter (Figure 1-3A) is 3.1 m deep and covers an interval of time from the Medieval Ages to the late Middle Paleolithic. Owing to the steep slope of the bedrock at this north profile, Level C is very thin and immediately overlies over bedrock; Levels D and E did not extend this far north. The west profile (Figure 1-3B) shows what remained of the sediments of the lower part of the sequence when the joint Ukrainian/American excavations began in 1996; the true thickness of Level B is not show in this representation. The collapse of the shelter ceiling, along with levels D and E and the alluvial sediments at the base of the sequence only occur from line Г southwards toward the rear wall. The stratigraphy seen the profiles of Figure 1-3 is summarized below.

1 — Loose dark brown silty clay with poorly sorted *éboulis* and large limestone blocks. Contains Medieval Age remains.

2 — Loose, grey sandy loam sediment with a significant content of limestone debris, which is medium to large in size and slightly rounded. Contains Bronze Age material.

2a — Identical to level 2, only the limestone debris becomes smaller and less dense. Culturally sterile.

3 — Slightly cemented yellow loamy sediment with medium to large clasts and some ash. Near the west wall, there is a travertine and the limestone debris is larger in size and more dense. Contains Bronze Age material.

3a — Concreted light grey loamy sand and scattered ash with small, angular *éboulis*. Contains Neolithic material.

4 — Dark grey loam with medium and fine angular *éboulis* that becomes denser towards the east. Contains Swiderian (Final Paleolithic) material.

4a — Dark grey loam with a negligible amount of fine angular limestone debris. Contains Swiderian cultural material.

5 — Relatively loose pale yellow loess with fine to medium sized *éboulis*, which is slightly rounded. Contains Shan-Koba (Final Paleolithic) material.

6 — Loess with a significant amount of fine and some medium sized slightly rounded *éboulis*. This level is subdivided into several sublevels based on differences in color and the size and amount of *éboulis*. Sublevel 6a is relatively loose brownish-yellow sediment with medium and small slightly rounded *éboulis* and larger, isolated limestone blocks, and contains cultural level 6-1. Sublevel 6b is relatively loose dark grey sediment with a lens of lighter brown sandy sediment and slightly rounded *éboulis* and isolated larger limestone blocks, and contains cultural level 6-2. Sublevel 6c is slightly concreted light brown loamy fill with poorly sorted and slightly rounded *éboulis*, containing cultural layer

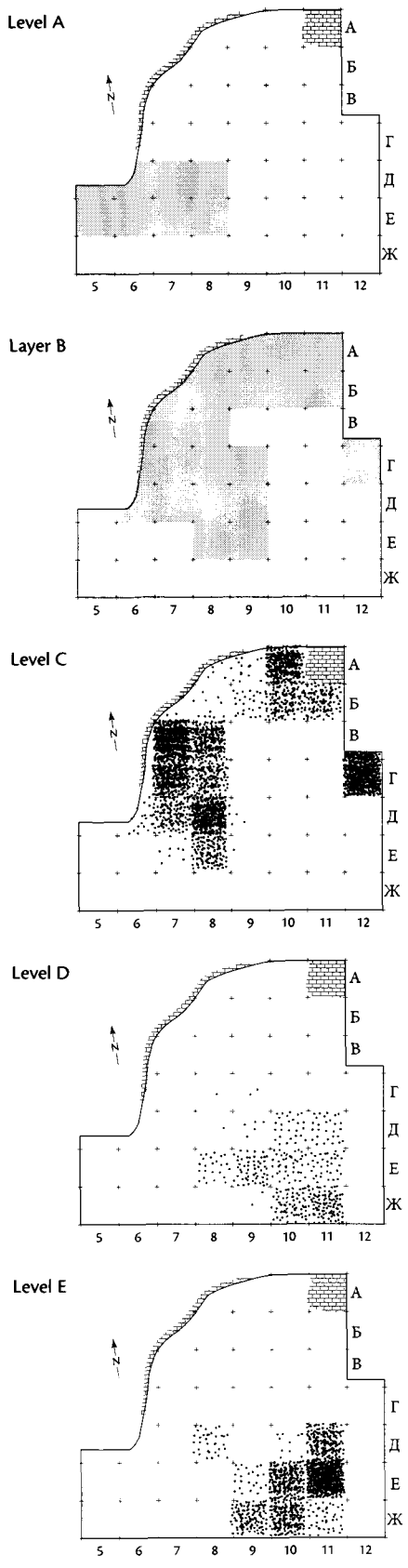

Figure 1-2—Relative spatial distribution of all lithic material from the Middle Paleolithic levels. Counts unavailable for Level A and Layer B.

6-3. Sublevel 6d is slightly concreted dark grayish brown to dark grey loamy fill with slightly rounded, poorly sorted *éboulis* and isolated larger limestone cobbles and contains cultural layer 6-4. Sublevel 6e is relatively concreted light brown fill with poorly sorted, slightly rounded *éboulis* and contains cultural layer 6-5. Levels 6-5, 6-4, and 6-3 have been attributed to the Aurignacian and levels 6-2 and 6-1 to the Gravettian (Janevic 1998).

A — Loose, light tan silty-sand sediment with poorly sorted *éboulis* ranging from very fine to large platy rubble. This layer is in secondary position and was only present in the western part of the 1996 excavations (Figure 1-2). Contains material of unknown provenience and age, although mostly of a late Middle Paleolithic character.

B — Slightly cemented yellowish-brown clayey sand sediment with small (2 cm) and medium (5–8 cm) sized flat angular *éboulis* that are horizontally bedded and relatively dense throughout the matrix. Contains Kiik-Koba material.

B1 — Dark grey to black clayey sand sediment with small (2 cm) to medium (5–8 cm), as well as frequent larger-sized (8-12 cm) flat, angular *éboulis*. Differs from Level B in color—the dark grey to black appears to have been the result of several, now-destroyed, hearth areas—and in having slightly more dense *éboulis*. Contains Kiik-Koba material.

Sterile sediments between B1 and C — Wet, clayey, dark brown sediments interspersed with very fine (0.2–1 cm) gravels. Contains no archeological material and varies in thickness from 1–10 cm.

C — Fine, sandy silt deposits in pea gravels, tan in color, 10–25 cm in depth, with relatively little *éboulis* that does not exceed 5 cm in size. Contains Eastern Szeletian (Streletskaya) cultural remains.

Rockfall — Coarse yellow to buff-colored *éboulis* with poorly sorted angular to subangular limestone fragments 0.5–40 cm in size, in a very pale brown sandy silt matrix. It is thickest (75 cm) at the southern limit of excavations and progressively thins out northwards to line Г. This is assumed to be related to a significant spalling of the shelter's ceiling during a cold period.

D — Brown fine sandy silt with small (< 4 cm) angular limestone rubble and cobble clasts. Contains a culturally-unattributed lithic assemblage, which has some slightly damaged edges, suggesting that the material has been moved.

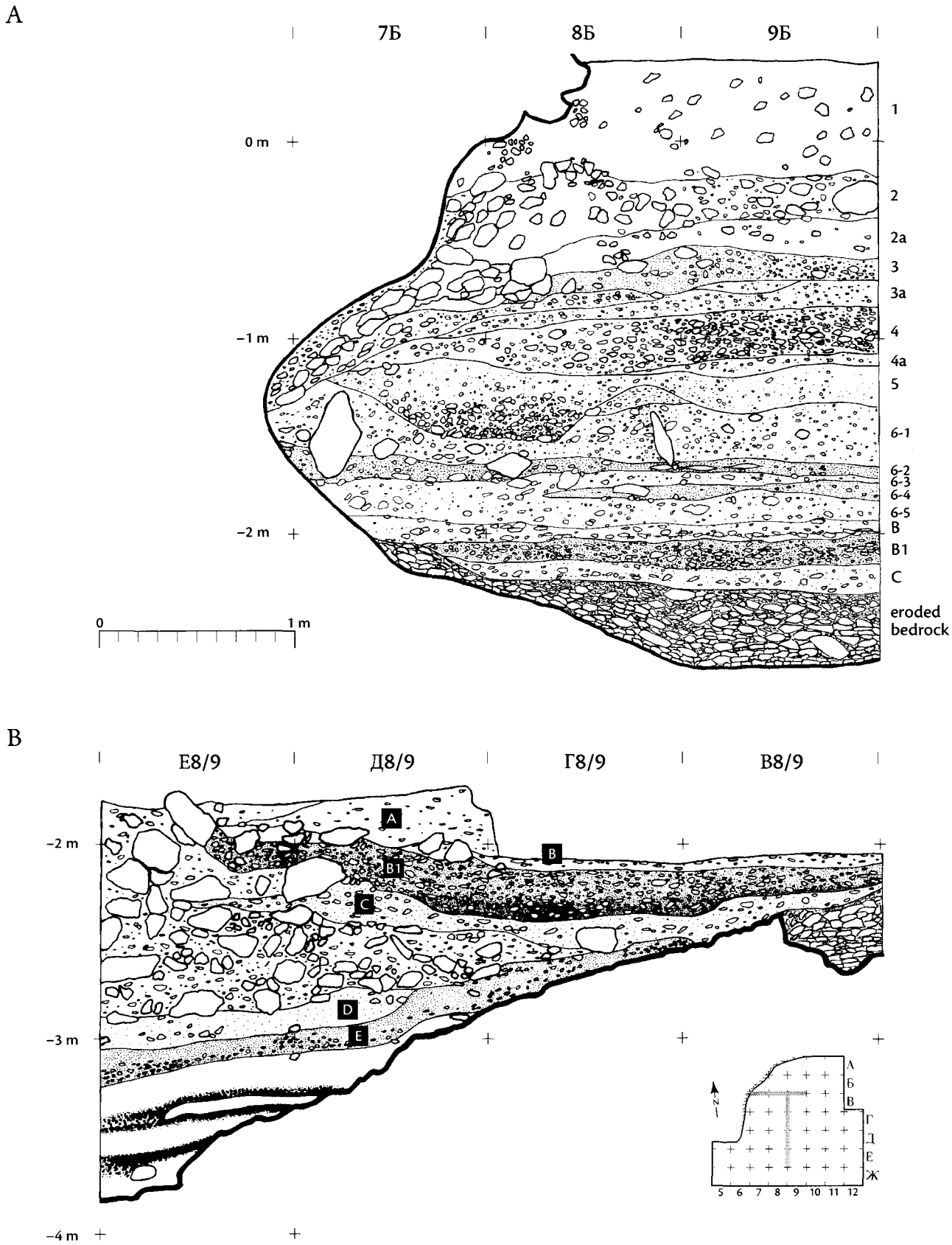

Figure 1-3—Sectional profiles of Buran-Kaya III: A–north profile line В/Б 7–9; B–west profile line В–Е 8/9. Inset shows locations of profiles on a plan of the site.

E — Light yellowish brown sandy silt with very small (< 3 cm) angular *éboulis* and root clasts. Contains a culturally-unattributed lithic assemblage (unrelated to Level D) with blades.

Alluvial deposits — Directly below Level E, there is a series of horizontally bedded alluvial deposits. The beds are soft orange sand sediments with round 0.2–3 cm quartz gravels, alternating with soft, very fine yellow-orange sands with round quartz gravels smaller than 0.5 cm. There are no other alluvial sediments in the shelter; they are limited to the base of the archeological sequence, before human inhabitation of the shelter.

The bedrock supporting the site dips abruptly north to south: there is an approximately one meter difference in its depth between the northern and southern walls of the excavation (Figure 1-3B). The alluvial sediments were banked in against the bedrock, and thereby leveled off the floor of the shelter. As a result, the levels of the lower part of the sequence (B–E) are fairly horizontal, and other than Level D, show no evidence of having been moved, cut, or redeposited.

The stratigraphic sequence of Buran-Kaya III is very complex, with about twenty lithologically and archeologically distinct levels within nearly 4.5 m of deposits. There are very few sterile horizons; those that do occur are quite thin and/or variable in thickness across the site. The Pleistocene part of the sequence (Level 5 and below), furthermore, is less than 1.5 m in depth, which suggests very slow sedimentation rates and thin, non-ruderal occupations. Yet, Crimean Paleolithic sites have generally been characterized as having high sedimentation rates (e.g. Chabai et al. 1999), and this would naturally be assumed to be the case in a south/southwest facing shelter at the base of a bluff where colluvium and exfoliation would be exacerbated by seasonal variations in temperatures and humidity, and what appears to have been only a thin vegetational cover due to the overall aridness of the period in which the lower sequence was deposited.

Absolute Dating of Buran-Kaya III

A total of sixteen AMS dates have been obtained on material from the Buran-Kaya III sequence, all carried out by the Radiocarbon Accelerator Unit, Oxford University, Great Britain (Table 1-1). Additional attempts at absolute dating have been unsuccessful. No substantial concentrations of charcoal were found, at least in the lower part of the Buran-Kaya III sequence. Wood residue, discovered on a tool from Level C and submitted to the Oxford Laboratory, could not be dated, while bird bone from the same level failed assays due to low collagen content. Two dosimeters for ESR and U-series dating were placed in Layer B and Level C in the north profile of the 1996 excavations (squares 7–9Б), but these were stolen by local vandals over the ensuing year.

The first series of five dates that was run (OxA-4126–4130) were submitted to the Oxford Laboratory in 1993–1994 by P. Allsworth-Jones as part of a dating program of Paleolithic sites in the CIS (Hedges et al. 1996; Allsworth-Jones 2000). The material in this series had been collected during the first test excavation (1990) by Yanevich before the archeological sequence was well understood. The samples originated from squares 2–3 meters from the north profile uncovered in 1994 (line B) to which they were later correlated based on their elevations. Since the sediments have a slight inclination southwestwards towards the river in this area, their positional extrapolation some years later to the cultural layers visible in the wall was problematic. Two very consistent dates of ca. 11.9 kyr (OxA-4126, -4127) were obtained from square Дп, Level 6/horizon 8 and Level 6/horizon 9. These horizons, however, contained Aurignacoid material. Yanevich has suggested that perhaps they related to the Shan-Koba culture (with which the dates are compatible): although no material of this type was found in this square, this was an area where

TABLE 1-1
Absolute dates from Buran-Kaya III

Level	*Industry*	*Lab #*	*Date*
3A	Neolithic	?[1]	5,070 ± 40
3A	Neolithic	?[1]	5,180 ± 50
4A	Swiderian	?[1]	10,580 ± 60
4A	Swiderian	?[1]	10,920 ± 65
6-3 (horizon 6:8)	Aurignacian	OxA-4126[2]	11,900 ± 150
6-4 (horizon 6:9)	Aurignacian	OxA-4127[2]	11,950 ± 130
6-5 (horizon 6:10)	Aurignacian	OxA-4128[2]	28,700 ± 620
7 (horizon 7:1)	Kiik-Koba	OxA-4129[2]	33,210 ± 900
7 (horizon 7:2)	Kiik-Koba	OxA-4130[2]	32,710 ± 940
6-2	Gravettian	OxA-6882[3]	30,740 ± 460
6-5	Aurignacian	OxA-6990[3]	34,400 ± 1,200
B1	Kiik Koba	OxA-6673[3]	28,840 ± 460
B1	Kiik Koba	OxA-6674[3]	28,520 ± 460
C	"Streletskaya"	OxA-6672[3]	32,350 ± 700
C	"Streletskaya	OxA-6869[3]	32,200 ± 650
C	"Streletskaya	OxA-6868[3]	36,700 ± 1,500

1 Gerasimenko, Chapter 2, sample type unknown; 2 Hedges et al. 1996, AMS on bone; 3 Pettitt 1998a, AMS on bone.

the layers began to more steeply slope to the south and east (Yanevich in Hedges et al. 1996).

The date from level 6 horizon 10, OxA-4128, pertained to the base of the Upper Paleolithic layers. The initial sondage of 1990 yielded some bifacially worked points among the early Upper Paleolithic material and the layer was likened to the Streletskaya culture (Hedges et al. 1996:189). (N.B. this likening did not pertain to the material from Level C, now often referred to as Streletskaya, which occurred deeper in the sequence.) At ca. 28 kyr, this date was within expectations, and subsequently corroborated by dates of a similar age from the Aurignacian at Siuren I (Chabai 1996).

The two dates from the Kiik-Koba layer 7/horizon 1 and layer 7/horizon 2 were very consistent (ca. 32 kyr), but inverted. These have often been considered untenable, because of the inversion and questions about the provenience of the samples (Marks and Monigal 2000). Alternatively, it has been claimed that the dated material was from mixed (during Yanevich's excavations) material of Layer B and Level C (Chabai et al. 2001:63), although this seems highly unlikely given the lithology of the deposits and Yanevich's penchant for recognizing even very localized lenses of darkened sediments as new horizons.

Subsequent dating assays on material from the 1996 excavations, the proveniences of which were certain, were not consistent with the first set of AMS dates. As a result, the first set has often been selectively dismissed or gone unreported in publications (e.g., Marks 1998; Monigal 2001; Marks and Monigal 2003). A sample from the Gravettian level 6-1 (OxA-6882) provided a date of 30,740 ± 460, while the sample from the "Aurignacian" level 6-5 (OxA-6990) provided a date of 34,400 ± 1,200. This latter date was considerably older than that obtained from the lowermost Aurignacian in the first AMS series, although both of these dates fall within traditional expectations of the time range for the Gravettian and Aurignacian industries.

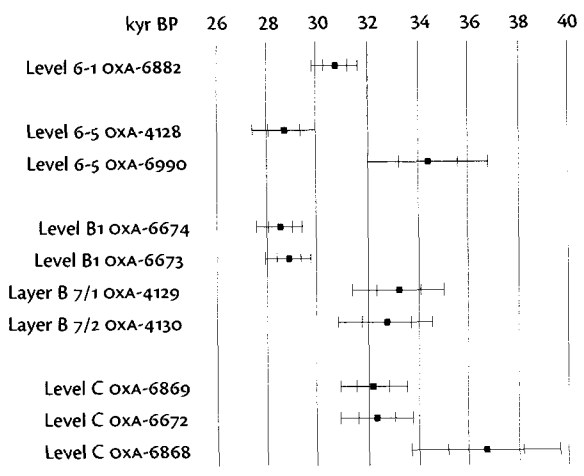

Figure 1-4—AMS dates on bone from Buran-Kaya III, with one and two standard deviations. Not shown are OxA-4126 and OxA-4127 at ca. 11.9 kyr BP.

The two dates obtained on material from the 1996 excavations of the Kiik-Koba Level B1 (OxA-6673 and -6674, ca. 28 kyr), which are internally consistent, are younger than the above-quoted two dates for the Gravettian and Aurignacian, and considerably younger than the dates from the first AMS series obtained for layer 7. While the Kiik-Koba dates of ca. 32 kyr were initially thought to be problematic, since this industry was conventionally assumed to date around 50,000 years ago, the dates of ca. 28 kyr for the same level were more easily accepted. Investigations at sites such as Kabazi II and Siuren I have recently indicated that the Middle Paleolithic lasted an exceptionally long time, and the Upper Paleolithic made a rather tardy appearance in Crimea. Thus, these remarkably late dates for Buran-Kaya III Kiik-Koba—which only a few years ago would have been viewed as aberrant—appear to fit comfortably within the newly emerging picture of Crimean occupation by multiple, migratory groups of peoples.

Dates from the immediately underlying Level C appear reasonable, being older than the Kiik-Koba dates and within the expected time range for a lithic industry of this type. Two of these are statistically the same and around 32 kyr BP. One of these, OxA-6869, was from a bone haft collected in the 1994 excavations and correlated to this level (see Figure 5-19: *8*). The third date from Level C, run on a bone tube whose provenience is unquestionable, is somewhat older at 36,700 ± 1,500 BP and barely overlaps the other dates at two standard deviations (Figure 1-4).

Rather than selectively choosing among the dates of the first and second series of AMS assays, all of these dates are better viewed with caution until the calibration of the radiocarbon chronology is refined. The extreme variations in atmospheric radioisotope production and deposition during OIS 3 suggest that ^{14}C dates may be six thousand, and up to ten-thousand, years younger than the actual time of occupation (Beck et al. 2001; Van der Plicht 2002; Voelker et al. 2000). Radioisotope concentrations in archeological material show even more fluctuations due to the reservoir effect, resulting in inconsistently young/old dates for material that was deposited simultaneously (Richards and Beck 2001). The anomalous, inverted, and/or inconsistent dates in the lower levels of Buran-Kaya III might therefore be entirely the result of fluctuations in atmospheric ^{14}C and its deposition rather than any disturbance of cultural levels or excavation error.

In the absence of independent chronometric controls, the apparent ambiguity of the radiocarbon dates may find verification, at least partially, in the paleoecological studies that have been carried out at the site, summarized below.

Overview of Occupations in Levels A–E

Level A was present only in the western sector of excavations in squares E5–8 and Д6–8. It was assumed during excavations that the material and matrix were derived *en masse* from above and to the west of the rockshelter, although it seems post-depositional erosion played a part as well. Lithics from the westernmost squares (line 5: figure 1-2) were often on edge and show edge damage, but the remainder of the material does not; in fact, many pieces are in pristine condition. Very small chips were also present in the eastern squares of Level A. At the easternmost extension of Level A, the level lies directly on top of B1 sediments, as seen in Figure 1-3B (Level B was not present in this area) and the faunal material, which was scattered among large boulders, had the same appearance and condition of the underlying level. In a few instances, large faunal remains, the upper parts of which were clearly in Level A sediments, were found to belong to the underlying Level B1. Hence, the Level A was deposited after there had been some erosion of Layer B sediments in the front of the rockshelter.

The lithic material of Level A, which has not been analyzed, is, without a doubt, mixed, but much of the material shares enough distinctive technological and typological traits to more or less define the assemblage while rejecting other pieces as intrusive. Unifacial points are the most characteristic feature in Level A. These are all off axis, frequently cortical, often ventrally thinned, and in cross-section are flat and fairly thick (the ventral profiles in Figure 1-5 appear twisted and incurvate because they are drawn according to the axis of the tool, not the axis of debitage). They are fairly large, ranging in size between 3.5–6 cm (about twice as large as typical Kiik-Koba points) and have thick, roughly faceted platforms with unlipped, very salient bulbs of percussion. In the few instances of non-cortical points, the scar patterns are unidirectional, but since most of the points are on thick primary pieces, all of their scars are the result of tool shaping/retouch. The retouch on the points is very fine, flat, and regular. Most have a tertiary retouch and the edges appear to have been ground. There are, in addition, transversal scrapers made on the same raw material as the points and that have similar technological and retouch characteristics. There are six cores in the assemblage—these are all single surface, non volumetric and unidirectional or bidirectional, with rough platform preparation. Debitage in the assemblage is mainly consistent with such cores, with large platforms, thick, flat cross-sections, and averaging 3–4 cm in length.

Aberrant in the assemblage are two large bifacially worked pieces (8.5 cm long), one of which is rolled, which most closely resemble adzes. The pieces are symmetrical, flat in cross-section, shaping retouch is very fine and flat, and the edges are ground. A small portion of debitage in the assemblage is typical of bifacial reduction flakes and are probably related to these pieces. An extremely well-made, long, crested blade, burins, and denticulates also appear aberrant. In sum, none of these characteristics can link the Level A material with any known Middle Paleolithic or Upper Paleolithic Crimean industry. It is most likely a true core reduction technology without bifacial work, thereby distancing it from the Crimean Micoquian. The superb retouch technique is similar to that see in Level C, but is otherwise typologically and technologically distinct from that industry.

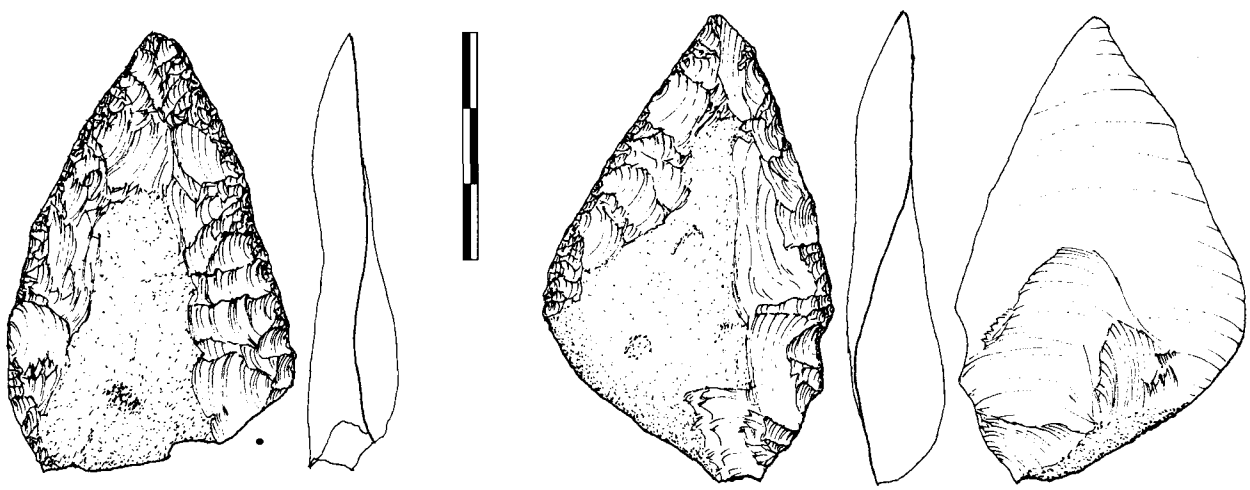

Figure 1-5—Typical points from Buran-Kaya III Level A.

The heaviest concentrations of Levels B and B1 material appeared in the central portion of the site. In the north, along lines A and Б, Level B was fairly thin (ca. 10 cm) and sloped due to the bedrock configuration. Near the back wall, Level B1 was only present in thin pockets in squares Б10 and Б11.

The Layer B micro- and macro-faunal assemblage has very good preservation with little spalling, chemical alteration, or climato-edaphic damage. The presence of small and/or fragile bones like carpals, sesamoids, and costal cartilage suggests that the assemblage was protected from prevailing winds by a shelter and quickly covered by sediments. The lithic material is likewise in excellent condition, without evidence of rolling or edge damage. Patinated artifacts were mainly limited to the northern sector of the site where the clay content of the sediments was slightly higher and where the matrix in which the lithics were embedded would have had seasonal saturation from cliff runoff.

There are no constructed features such as pits, hearths, or bone heaps in either Level B or B1. They are presumed to have been present, however, accounting for the dark grey color of the B1 sediments (Demidenko, Chapter 9), although it is not at all clear how they were destroyed given the quick burial and subsequent lack of sediment churning or movement seen in these levels. Palynological (Gerasimenko, Chapter 2) and microfaunal (Markova, Chapter 3) evidence point to a temperate climate with mesophytic species and open steppe during the deposition of this layer; based on the absolute dates, probably the Denekamp (Bryansk) Interstadial. Patou-Mathis (Chapter 8) suggests that Layer B was a seasonal camp with repeated occupations geared towards the hunting and initial processing of *Saiga tatarica*. Use-wear analyses conducted on the tools of Layer B (Giria, Chapter 10) further corroborates this, with evidence for carcass butchery and initial hide treatment.

The main concentration of the Level C lithic and faunal material occurred in squares Д–Е9, with lithic concentrations from tool resharpening in Д7 and В7 (Figure 1-6). There was no specific concentration of bone; it was generally fragmented and small in size throughout the excavated area. In the northern sector of the site, the cultural remains of Level C thin out as the bedrock forms a hump in squares В7–8 and А11 and as it rises abruptly near the back wall. The richness of the cultural remains in the eastern sector (В–Г12) appears concomitant with that of the eastern sector, suggesting that there was probably a uniform distribution of remains across the whole area. Unfortunately, most of this area was excavated in 1990 and 1994 without having been recognized as a discrete cultural layer, and the southwest corner of the site (Е12, Д12, and part of Г12) was destroyed by post-depositional churning. The occupation of Level C does not appear to have extended southwards past line Е, owing to the collapse of the shelter ceiling.

The Level C macro-faunal assemblage is quite small (eight times smaller than that of Layer B) and highly fragmented, especially in comparison to that of Layer B. Climato-edaphic and plant damage was quite severe—most fragments in Level C showed weathering damage, versus only 0.08% in Layer B (Laroulandie and d'Errico, Chapter 7; Patou-Mathis, Chapter 8). There is also substantially more evidence of carnivores in Level C versus Layer B, unexpected in light of Layer B having more hunting and butchering remains, and presumably more attractive to scavengers. Carnivore tooth marks and gastric acid damaged 17% of the macrofaunal assemblage of Level C, versus only 0.14% of carnivore damage in Layer B (Laroulandie and d'Errico, Chapter 7; Patou-Mathis, Chapter 8). Coprolites are also present in Level C, whereas they are not in Layer B. On the other hand, the Level C faunal material had much more anthropic damage than did Layer B—in burning (8% vs. 2%) and in non-burning human damage (1.0% vs. 0.5%) (Laroulandie and d'Errico, Chapter 7; Patou-Mathis, Chapter 8). Laroulandie and d'Errico have interpreted the Level C material to represent a single, brief occupation, with carnivores partially responsible for accumulation. In fact, more carnivore evidence (tooth marks) probably would have been found if material was not so fragmented. It should be noted that *none* of the edges of the Level C lithic material or bone tools shows evidence of having been worn, trampled, or abraded, and there are intact tool resharpening scatter zones, despite this apparent use of Level C as a hyæna den. The lithic assemblage also indicates a single, brief occupation.

No constructed features such as hearths or pits were noted during the excavation of Level C. Lenses of burned sediments, however, were present in the northeastern part of the shelter, a small portion of the faunal remains had traces of burning, and microscopic charcoal was present in samples taken for palynological analyses. Root etching and chemical alteration of the Level C macro-faunal assemblage points to at least a thin vegetational cover and water percolation, and palynological data (Gerasimenko, Chapter 2) suggests the living surface was open for a long time, with a stable, slow deposition rate of pollen. The small mammal fauna recovered from the level (Markova, Chapter 3) indicates that at the time of deposition of the cultural layer, arid, open steppe prevailed in the area around the site and that there was a nearby river. While there are some cold tolerant species such as *Microtus gregalis*, the assemblage is periglacial in composition. Mosses and grape ferns in the pollen spectrum point to the aridity of the climate with boreal steppes surrounding the site. Given the dates and the features of the overlying Layer B, this level has been correlated with the last stadial of the Middle Pleniglacial.

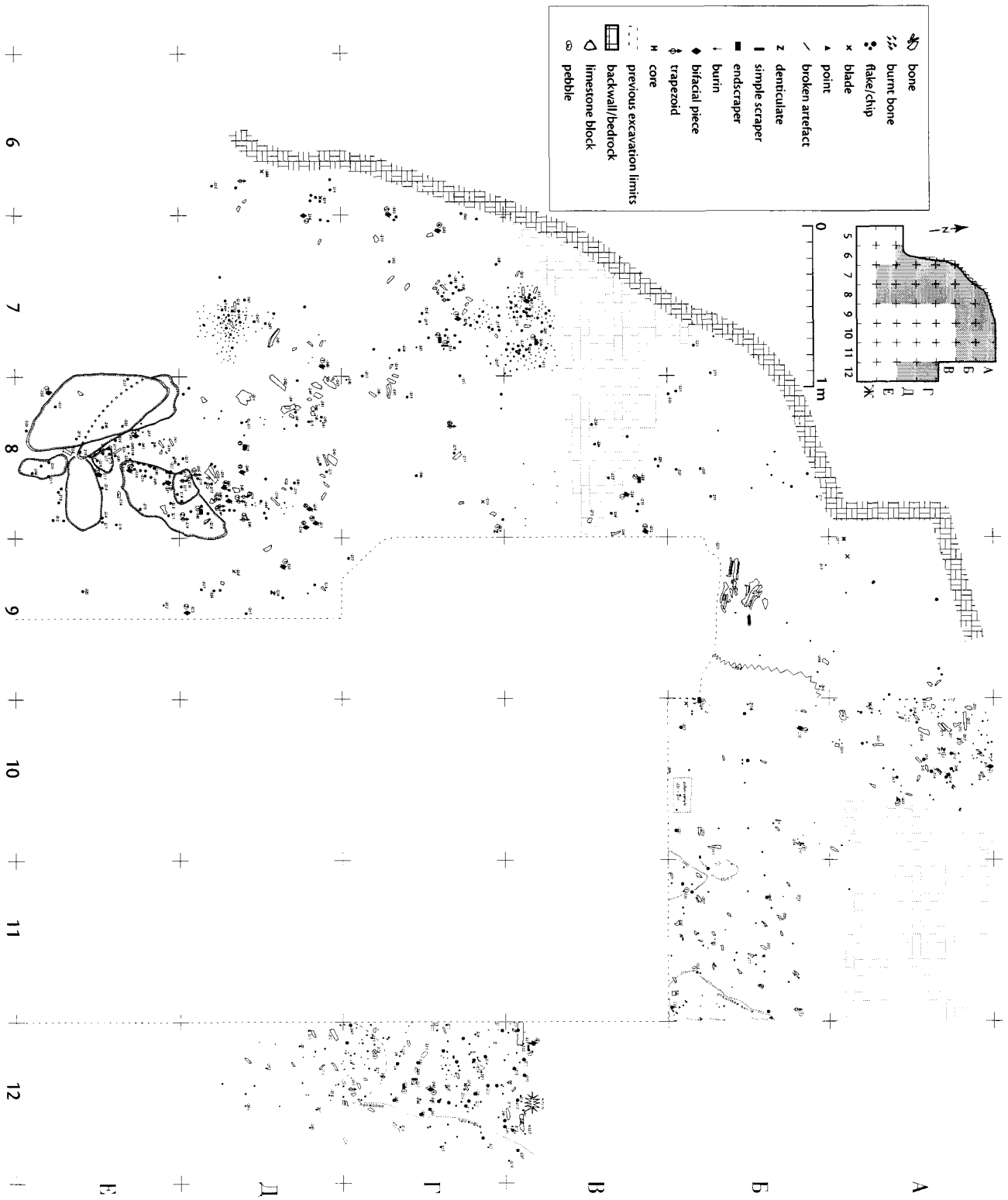

Figure 1-6—Plan of excavations at Buran-Kaya III Level C.

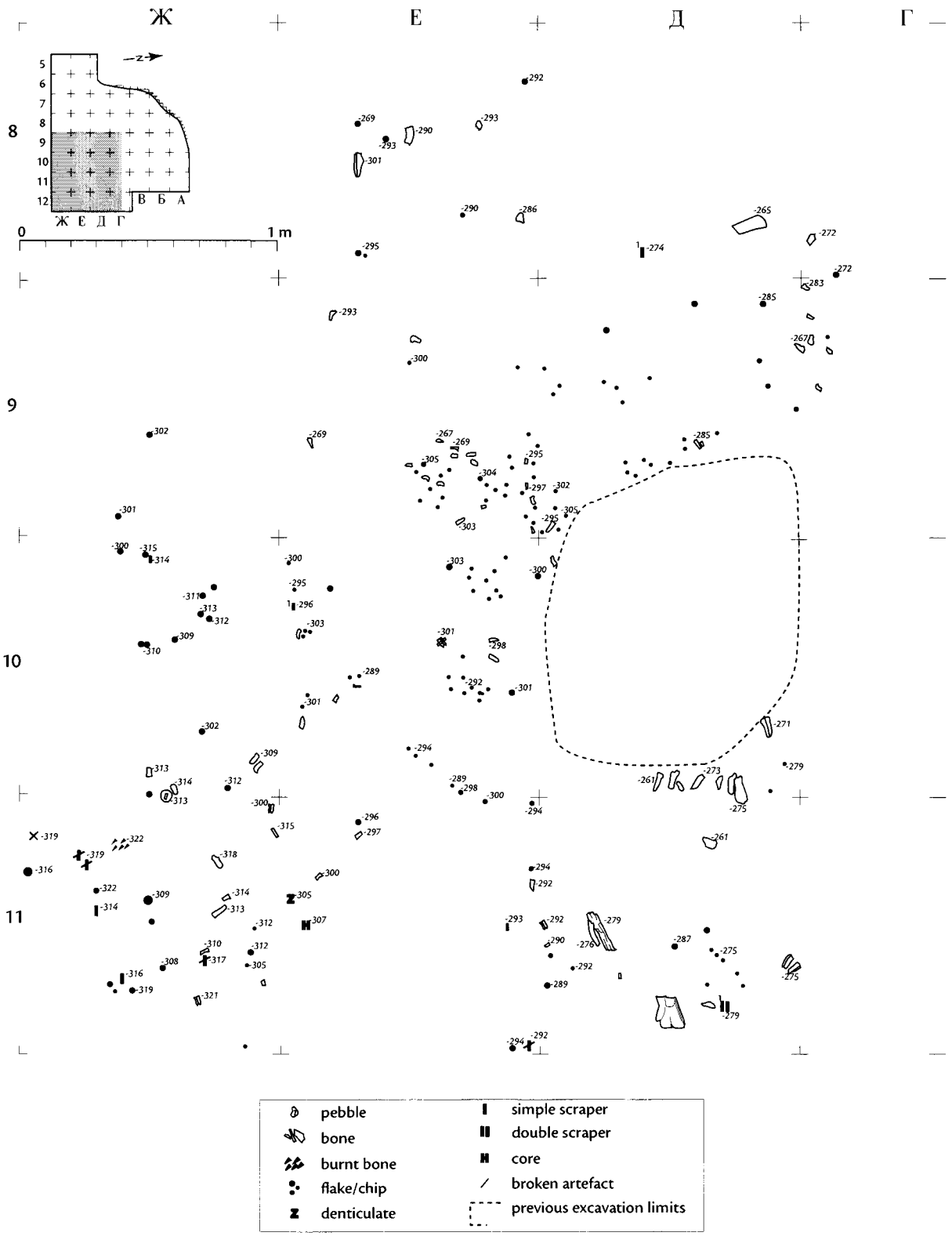

Figure 1-7—Plan of excavations at Buran-Kaya III Level D.

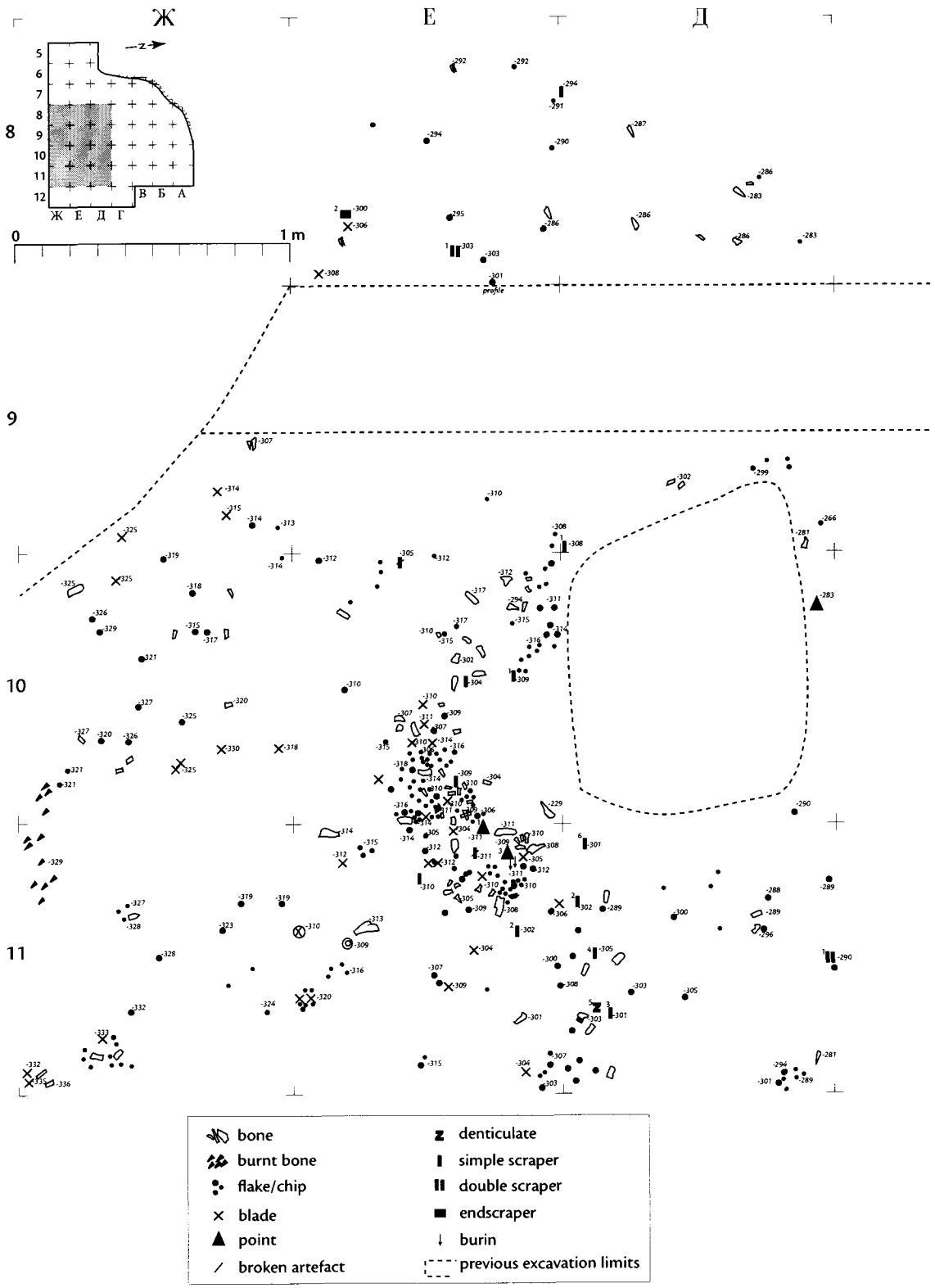

Figure 1-8—Plan of excavations at Buran-Kaya III Level E.

Level D was only encountered during the 1996 excavations, although the 1m² sondage of the 1990 season clearly penetrated the level. The level consists of a very thin scatter of lithics and bone in the southern part of the site (Figure 1-7). Level D was not present along Ж5–8 owing to the erosion and talus cone at the shelter mouth and it was not present in the northern half of the excavation area, presumably due to the configuration of the bedrock. No Level D sediments or lithic material were encountered during the 2001 field-season: it was hoped that they would be present along line 12 based on the apparent distribution of the material, but this portion of the site was destroyed.

There were less than a dozen recognizable faunal elements in Level D; most of the bone assemblage was small and in poor condition and was not submitted for analysis. No small mammal faunal or malacofauna were found during the excavation or screening of sediments. As Level D was not present in the main profile sampled for pollen in 1996 (Figure 1-3A), nor in the 2001 excavation area, no palynological analyses were conducted for this level. Finally, the poor condition of the bone precluded it from being submitted for AMS dating. In sum, little is known about the timing or paleoclimatic conditions during this occupation, other than it was deposited before the major overhang collapse in the southern part of the site.

Level E was also only encountered during the 1996 excavations, although previous excavations cut into it in two separate areas (Figure 1-8). Level E comprises a thin scatter of lithic and faunal remains in the southern sector of the rockshelter, with a marked slope from north to south (Figure 1-3B). Only a few pieces in the faunal assemblage exceeded 5 cm in greatest dimension; overall the assemblage is small and highly fragmented. Although burnt bone was present near the south wall, no hearths were found during excavation. As with the overlying level, the faunal assemblage has not been analyzed, no microfaunal or malacological remains were discovered, no suitable bones were available for AMS dating, and no sediments were submitted for palynological analyses. This level contains blades (Monigal, Chapter 4) and, on this basis alone, has been called "Upper Paleolithic" (Chabai 2000a; Chabai et al. 2000), but it must be stressed that very little is known about the timing or nature of this occupation, other than it is definitely in situ and predates ca. 40,000 BP.

Buran-Kaya III Analyses

Buran-Kaya III is a surprisingly complicated site given its rather limited areal extent of 50 m². The exceptionally rich and deep cultural sequence spans the latter part of the Late Pleistocene through the early Holocene, and its comprehensive analysis requires the expertise of a great many specialists. At the commencement of the American involvement in the excavations, we envisaged a volume devoted to the Buran-Kaya III sequence in its entirety. Such a publication, however, not only was exceptionally difficult to organize given the number of specialists involved, whose studies all tend to be at different stages of completion, but seemed illogical, since we presume few of our audience would be as equally as interested in the Kiik-Koba as the Swiderian. More logical was to keep the lower part of the site's sequence in its geographical and cultural context of the late Middle to Early Upper Paleolithic of the eastern Crimean Peninsula. While this is true of most of the papers devoted to Buran-Kaya III in this volume, certain paleoclimatic studies for the site—pollen, microfauna, and malacology—obviously must be published in their totality.

Buran-Kaya III has provided the most extensive Pleistocene pollen sequence in Crimea, derived from the entirety of the three meters of the cultural deposits. The evolution of landscapes in the Belogorsk region described by Natalia Gerasimenko in Chapter 2 provides an extremely important addition to our knowledge base for the peninsula, and links the previous palynological investigations conducted at Zaskalnaya V and Kabazi II, which only had Middle Paleolithic deposits (Gubonina 1985; Gerasimenko 1999), and at Skalisty, which only had Final Paleolithic deposits (Cohen et al. 1996). The majority of samples analyzed in Gerasimenko's study of Buran-Kaya III were taken from the north profile of the 1996 excavations along lineБ/В. In this area of the site, however, Level C was represented by an extremely thin deposit adjacent to bedrock, and Levels D and E were not present at all. Additional samples were therefore taken in 2001 from Level C as well as from the sterile alluvial deposits at the base of the sequence.

The extensive research by Anastasia Markova on Quaternary microfauna is a fundamental component of the paleoclimate reconstructions done during the past decade for Eastern Europe and Markova has continued her work initiated in the western Crimean Paleolithic sites (Markova 1999) in the eastern half of the peninsula (Chapters 3, 17, 23). Her analyses of the Buran-Kaya III small mammals in Chapter 3 includes a portion of the lower part of the sequence—the Eastern Szeletian of Level C and the Kiik-Koba of Layer B. (The underlying Levels D and E did not yield adequate faunal material.) Markova's analysis

also includes the Upper Paleolithic layers immediately overlying these: Levels 6-5, 6-4, and 6-3, said to be Aurignacian; Levels 6-2 and 6-1, representing a Gravettian occupation; and Layer 5, a Shan Koba/Epi-Gravettian deposit. As the absolute dating record of the Middle and Upper Paleolithic of Crimea is far from complete, a microfaunal analysis such as this is absolutely essential in placing these cultural layers into their environmental and chronological context. The sample used by Markova was from multiple years of excavation and represents the better part of all the occupations within the shelter.

The lithic assemblages from Levels D and E of Buran-Kaya III have frequently been described as preliminary and awaiting further augmentation (e.g., Marks 1998: 357). Yet, at the end of the 2001 field season, it became clear that the samples were as complete as they were ever going to be. The material of these two levels from the 1996 field season is described in Chapter 4.

Chapter 5, by Katherine Monigal, focuses on the lithic assemblage from Level C. This material has been described as "transitional" between the Middle and Upper Paleolithic (Marks 1998), as "Upper Paleolithic" (Chabai et al. 2000), as "Eastern Szeletian" (Monigal 2001) and as Streletskaya-related (Chabai et al., Chapter 25). In short, it is a fairly unique lithic assemblage with a contested status. No modern human remains, art objects, dwellings, or other features typically associated with the Upper Paleolithic were found in Level C. The level underlies the Middle Paleolithic Kiik-Koba Layer B. The assumption about its "advanced" status lays in its technology, which is unlike the recognized Crimean Middle Paleolithic facies, and to a lesser extent, a few of its typological features.

The skeleton of the golden eagle analyzed by Gleb Gavris and Svetlana Taykova (Chapter 6) was found during the 1996 excavations of Level C in square B9 (Figure 1-6). The bones were in articular position and included nearly all of the skeletal elements. It is unknowable whether the bird simply died in the rockshelter while using it as a nesting place and was overlain by sediments without being disturbed by scavengers or, as Gavris and Taykova suggest, it was ritually slaughtered and buried. As noted above, the remainder of the Level C faunal assemblage did have extensive carnivore damage, and it is evident that the cultural material of this level lay in the open for a fair amount of time before it was buried. Yet, no burial pit in this area was noted during excavation.

Golden eagles inhabit a wide variety of landscapes, from barren plains to coniferous forests, and tend to nest on high cliff ledges (or, if these are unavailable, tall trees), overlooking grasslands where prey can be sighted easily. Golden eagles are monogamous and a pair will often hunt together, covering a territory of 90 km^2. *Aquila chrysaetos* preferentially eats rabbits, squirrels, and other lagomorphs and rodents, but will supplement its diet with lizards and birds, including large birds such as geese. In all of these aspects, the area around Buran-Kaya would have provided plentiful food supplies and a sheltered location from which to survey a portion of the surrounding territory. On the other hand, golden eagles re-use their nests from year to year, and often from generation to generation (DeGraaf et al. 1991; MacLaren et al. 1988). There is little in the faunal material from Level C that points to long-term habitation of the rockshelter by a pair of golden eagles, suggesting that, at most, it was used as a temporary perching place. These are large birds: they can carry up 4 kg in flight and have a wingspan reaching over 2 m. Given their size and predilection towards roosting in isolated and inaccessible areas, they are presumably difficult for humans to hunt. The manner of death, age, and sex of the golden eagle found in Level C is undetermined. The femora and fibulae that Gavris and Taykova note as missing in the material submitted for analysis, were in fact present during excavations, when they were drawn and photographed in situ. Before they were removed from position, however, pothunters or scavengers stole these bones. On the other hand, the feet, claws, and beak were not found during excavation, since these elements cannot survive in such a depositional environment.

Véronique Laroulandie and Francesco d'Errico cover a number of issues about the large mammal fauna from Level C in Chapter 7. Aside from providing a basic enumeration and identification of the assemblage, they describe its taphonomic patterning. They also elaborate on their previous studies of the Level C bone tools (d'Errico and Laroulandie 2000) with an extensive, heavily illustrated analysis of bone tool taphonomy, the techniques used for tool production, and supporting evidence from experimental manufacture. Finally, they discuss the implications of this unique bone tool assemblage, which, as they note, may be Middle Paleolithic, transitional, or Upper Paleolithic, and may have been made by Neandertals, modern humans, an acculturated, or a hybrid population. Their review of Late Middle Paleolithic/transitional non-Aurignacian sites with worked bone makes a very strong case that such an elaborate, time-intensive, and highly specialized tool production as seen at Buran-Kaya III was not the purview of only Upper Paleolithic anatomically modern humans.

As Laroulandie and D'Errico note (Chapter 7), the first bone handle found at Buran-Kaya III, during the 1994 excavations, was from layer 7-6, the base of Yanevich's Kiik-Koba level. Other material from that particular excavation collection bore many similarities to Level C, leading to the assumption that a mixture of two cultural levels had occurred during excavations in that year. There are a number of reasons to conclude that the haft belongs to Level C and not to the Kiik-

Koba layer: its AMS date is identical to another bone tube from Level C, it is obviously of the same techno-typology as the bone tool assemblage from C, and no worked bone remotely of this nature has been found in the Kiik-Koba faunal material excavated since 1996. The sample studied by Laroulandie and d'Errico represents the entire Level C faunal assemblage excavated during the 1996, 1997, and 2001 field seasons.

The analysis of large mammal remains of Layer B (1996 collection) is the subject of Chapter 8, by Marylène Patou-Mathis. This sizeable and very well preserved faunal assemblage furnishes evidence for the climatic conditions at the time of the Layer B occupation, on hunting patterns, site patterning, butchery practices, and the diet of the rockshelter's occupants. Based on her wide-ranging examination, Patou-Mathis suggests that the Layer B Neandertals came to Buran-Kaya III seasonally in order to hunt Saiga antelope, which comprises the better part of the assemblage, and that this animal was the primary reason for the site's occupation.

The lithic collection from Layer B of Buran-Kaya III is the largest of all known assemblages of the Kiik-Koba facies of the Crimean Micoquian and Yuri Demidenko's analysis of the material, presented in Chapter 9, is by far the most in-depth study yet available of this facies. This study focuses on the lithic assemblage recovered from the 1996 field season; although these excavations were small in area—less than 7 m^2—over 17,000 pieces were recovered. While the description alone of such a huge assemblage would be daunting to most, Demidenko also reconstructs the lithic *chaîne opératoire* employed over the course of occupations and puts the material into its landscape-use and Micoquian contexts.

The excellent preservation of the Level B lithic assemblage makes it an ideal candidate for use-wear analyses. Chapter 10, by Evgeny Giria, touches on a number of issues in addition to his traceological description, including the question of whether tools were imported into or manufactured on the site, how they were used, how they were modified during their use-life and eventually discarded, and what sort of post-depositional damage they incurred. Long assumed manufacture and use aspects of Micoquian lithics find verification in Giria's study, such as the order in which ventral and dorsal surfaces of bifacial tools were shaped and rejuvenated, that the type of use the tools withstood dulled edges in a predictable manner, and that the subsequent resharpening of these resulted in the small, heavily retouched tool kits that are the hallmark of the Kiik-Koba.

The age-old question archeologists have grappled with—the meaning of lithic technological and typological variability—can be examined from a number of different angles. Some of the those which have lately received the most attention are the nature of a site's occupation and how it fits into a regional mobility framework, the *chaîne opératoire* of the lithic assemblage and which, if any, phases took place off-site, how the end-products of this *chaîne opératoire* were used, and how much that use affected their form. Many studies that try to solve such issues start on the broad, regional scale and are hamstrung by patchy knowledge about landscape and resource use. The authors of Chapters 11–14, Thorsten Uthmeier, Jürgen Richter, and Martin Kurbjuhn, are part of research team approaching these problems for the Crimean Middle Paleolithic with a novel methodology, beginning with the smallest unit of study—the raw material nodule—and working upwards and outwards from there.

The specifics of this methodology, or transformation analysis, and its theoretical underpinnings are detailed in Chapter 11 by Thorsten Uthmeier. While a few issues particular to the late Crimean Middle Paleolithic are touched upon here, the chapter truly does describe a *modus operandi* that may be applied with ease to any lithic assemblage.

Chapter 12, also authored by Thorsten Uthmeier, applies this methodological approach to the lithic assemblage from Level B1. Beginning with raw material source exploitation, Uthmeier reconstructs the original shape of nodules or artifacts imported into the site, how they were prepared and transformed into cores or surface-shaped tools, the blanks and tools produced, and what was discarded or exported from the site. Then he discusses how these activities were part of the day to day activities of the Neandertals that inhabited the site and how task groups and larger movements were organized.

Jürgen Richter (Chapter 13) focuses on a single aspect of the transformation analysis: the *chaîne opératoire* for pointed tools. The *fossils directeurs* for the Kiik-Koba facies, are, of course, the small, off-axis point and the convergent scraper; two forms that grade into each other and are distinguished only by their pointedness (points) and slight lateral asymmetry (scrapers). Any presentation of a Micoquian lithic assemblage will distinguish between, and discuss separately, the unifacial and bifacial tools (see e.g., Chapters 9 and 20), even in those cases where the unifacial and bifacial tool type counterparts differ solely in their surface shaping. Richter turns our conventional wisdom on its head by his elegant analysis of these tools from Level B1.

One of the first steps in the transformation analysis presented in these chapters is to sort a lithic assemblage into raw material types and then into their basic units, either nodules or single pieces. Chapter 14, by Martin Kurbjuhn, presents the itemization of each of the units recognized in the Level B1 assemblage, in a manner similar to that used for refitted cores. It includes such details as the morphology and visual characteristics of the raw material units, their source,

the spatial distribution in the site, and the life history of each unit.

The study of the malacological remains found at Buran-Kaya III is presented in Chapter 19 as part of a larger snail analysis of eastern Crimea. Constantine Mikhailesku's study is temporally limited to Late Middle Paleolithic/Early Upper Paleolithic, so the prevalent snail remains of layer 6 and upwards in the Buran-Kaya III sequence were not included. As noted above, no malacological remains were found in Levels A, D, or E, and those from Level C were extremely limited. Layer B, on the other hand, did yield an adequate enough sample to make some characterization of the paleoecological conditions current during its deposition.

With the last field season, in 2001, aside from a witness section in squares A–B12, most of the Paleolithic cultural remains have been excavated at Buran-Kaya III. The small cave at the rear of the site (north of squares A9–A10) may be a meter or more deep, but given the steep rise in the bedrock in this section of the site, the very thin remains of Levels B and C north of line B, and the predilection of Epi-Gravettian people to dig pits, it is highly doubtful that the cave will contain any material older than Epi-Gravettian. Excavations in row 12 revealed that the site in squares Д–Ж12 and part of Г12is completely destroyed from the uppermost layers through the sterile sediments that cap bedrock. To the south of line Ж, the cultural layers slope towards the river and appear mixed in the profile. To the west, what is not limited by the cliff wall appears to be derived material (Level A) or sterile; Levels B–E were mainly concentrated in the central portion of the site.