

A LATE BIRNIRK HOUSE AT PAIPELGHAK IN NORTHERN CHUKOTKA: A PRELIMINARY REPORT BASED ON THE EXCAVATIONS FROM 2002-2004¹

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Abstract: Following excavations from 2002 to 2004, the Paipelghak site, northwest of Cape Dezhneva, has revealed a distinctive driftwood and stone slab house. The research strategy employed extensive block excavations, with nearly 64 m² excavated. The house contains an inventory that matches that of the Birnirk culture and two ¹⁴C assays on driftwood indicate the age of the house falls in the 13th century AD. Its rapid collapse into the permafrost zone allowed excellent preservation of the house, a circumstance that provides numerous architectural details. The block excavation method allowed the investigators to reveal several exterior activity areas for stone-working and the dumping of animal bone and other waste.

Keywords: Bering Strait archaeology, Thule culture, Eskimo architecture

Until the 1990s virtually no multi-year archaeological investigations had been undertaken at prehistoric Eskimo domestic or house occupation sites in Chukotka.² Typically, dwelling structures were not investigated in block excavations and the areas beyond the outer walls of structures were even less studied. This lack of attention can be linked, to a significant degree, not only with the difficulty of access to sites and to the large financial expenses for any expedition, but also with the fact that the investigation of houses in extreme northeastern Russia can be very labor intensive—most cultural layers within houses or middens (in distinction to cemeteries) are in permafrost. Cost-effective methods for multi-year systematic investigations of house structures in permafrost had not been developed in Chukotka prior to 1995. Ekven was the first ancient Eskimo site in Chukotka subject to large-scale multi-year investigations (Blumer and Csonka 1997; Bronshtein and Dneprovsky 2001; Dneprovsky 2001, 2002; Moulin and Csonka 2002). Archaeological research was carried out at Ekven from 1995 to 2002 along the eroding shoreline through the efforts of Russian, Swiss, and

German scholars (Arutyunov, *this issue*; Mason et al., *this issue*). The architecture of House H-18 and the activity areas outside its walls were completely excavated.

Subsequently, from 2002 to 2004 the Chukotka Archaeological Expedition of the State Museum of Oriental Art under K. Dneprovsky conducted investigations at the ancient Eskimo site of Paipelghak, named after a small nearby stream. This site is located on the shore of the Chukchi Sea, 1.5 km northwest of the mouth of the Chegitun River, ca. 80 km northwest of Uelen, and 42 km northwest of the Inchoun site in the Chukotka District of the Chukotka Autonomous Region (Figs. 1 and 2).³ No work had previously been conducted at the Paipelghak site and I am unacquainted with any mention of it in the archaeological literature.

The site sits atop a bedrock bluff 30 m above sea level (Figs. 2 and 3). The cliff is 250 m wide and 220 m long, bordered on the southeast by a shallow ravine cut by Paipelghak Creek and on the northwest by a deep ravine with a rocky

¹Translated by Richard Bland, edited by Owen K. Mason.

²Dneprovsky (2002:175-178) provides a detailed literature review of the investigations of domestic arrangements in Chukotka from the end of the 1940s to the early 1990s.

³The coordinates of the center of the excavation at House 1, using GPS, are 66° 34' 16.2" N, 171° 06' 15.4" W.



Figure 1. Chukchi Peninsula, Russia, with the location of the Paipelghak site and several other localities mentioned in the text.

bed filled with rapids, the course of Mainypaipel'vaam Creek. Talus covers the southeastern slope of the cape; another locale in which Eskimo materials were found (cf. Dneprovsky 2002-2004). Before work started, a detailed topographic map of the site was drafted (Fig. 4).

The bluff is covered with dwarf tundra vegetation; its level surface is interrupted by six house mounds, each up to 1.6 m high. The mounds are well-defined and covered with sod, which is occasionally punctuated by whale bones, part of the structural features of the houses. Each mound was numbered and located on a topographic map (Fig. 2).

House Mound 1 was selected as the first objective for archaeological investigations because, due to its location on the eastern edge of the cliff. House 1 was partially destroyed by coastal erosion. The topographic and plan view maps of House 1 (Figs. 4 and 5) delineate the squares excavated from 2002 to 2004, employing 10 cm contour intervals. The house mound exhibited no evidence of recent digging. The mound is oval in plan, ca. 20 m in diameter, with a depression in

the center and is covered with tundra vegetation, predominantly shrub willow and a small amount of sphagnum moss. Small sod-covered depressions on the surface were initially thought to be collapsed animal burrows, but excavation revealed that the hollows had formed above permafrost cracks, that were still filled with ice. Formed after the occupation, the permafrost cracks caused significant subsidence of the ground surface. The surface locations of large whale bones, structural features of the house, were also recorded on the plan view map (Fig. 5).

The initial excavation in 2002 involved removing a block area of 16 square meters (4 x 4 m) within House 1 ("Sector A"), oriented to the cardinal directions. Sector A was defined so that it embraced the entire northeast part of the depression in the house mound, including a low berm surrounding the house. The expectation was that at the end of the investigation both N-S and E-W profiles to the central point of the house could be obtained. As it turned out, Sector A revealed only one of the rooms of the house. At the outset, it was unclear whether the structure had been rebuilt more than once, or had been erected on the site of a completely or partially ruined house.

In the subsequent 2003 season two additional areas (Fig. 4), each measuring 4 x 4 m, were opened within House 1; the additional units expanded the 2002 excavations to the south and west, and were defined as Sectors "B" and "C." Room 1 was revealed in the SE part of the expanded excavation and the south of Room 2 in the north part. The southwest corner of Room 1, however, remained beyond the limits of the excavated area. In 2004 another 4 x 4 m quad was added, adjoining the 2002-2003 excavation to the southwest; termed Sector G, this completed the excavation of Room 1.

The preferred excavation strategy, emulating the approach at the Ekven site followed since 1995, favors exposing large block areas of living surfaces, and working by sectors. Because of the occurrence of permafrost, which typically starts at 40 cm below the ground surface, a drainage ditch was placed in the northeast corner of Sector A to allow melt water from the excavation to run off into the talus. The walls of the ditch were reinforced with bedrock slabs to prevent their collapse. The ditch gradually deepened as the permafrost thawed and the excavation proceeded. The rate of permafrost thaw was between 5-10 cm on a favorably warm day.

Trowels were used to reveal the basic structural features of the house—vertical roof supports, slabs of floor paving, beams that made up the walls, log roofing, and so on—left in place for photo recording to generate the house plan. All

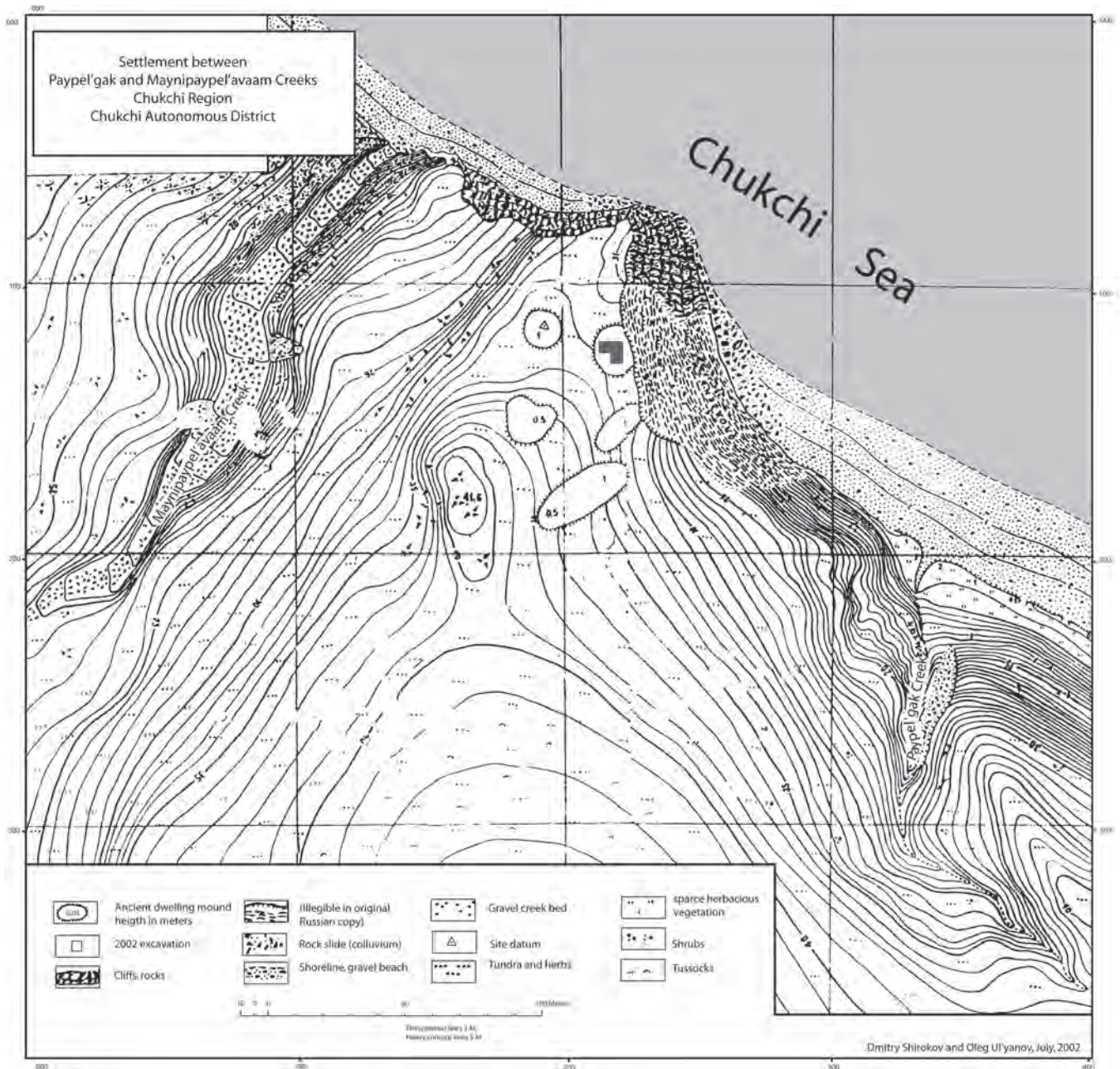


Figure 2. Topographic map of the Paipelghak site. The area excavated in 2002-2004 is marked in black. Other mounds are marked by letters. Digital illustration courtesy Dale Slaughter, Boreal Imagery.

objects were drawn at a scale of 1:10, and the depth of each was measured to within 1 cm. The depth of large structural features were measured both at the top of the object and beneath it in order to determine the stratum and thickness of the object. The incline of an object was marked by an arrow corresponding to its direction. Graphic recording within each sector was carried out simultaneously by horizons (e.g., D1, D2, D3, and so on), while the relative thickness of each horizon was estimated visually, depending on the density of artifacts within each area; but, as a rule, the cultural level associated with the house was no more than 10 cm thick. At

this stage of the investigation of House 1, only Room 1 with the corridor and straight entryway had been entirely cleared, as had the southern outline of Room 2.

Room 1

By the end of the 2004 field season, Room 1 of House 1 was entirely revealed (Figs. 5 and 6a). Almost square in outline, House 1 measured roughly 3.5 x 3.5 m, and the walls were oriented to the cardinal directions. Room 1 was built on an undisturbed tundra surface. The walls (except



Figure 3. View of the north coast of Chukotka near Paipelghak, in the foreground.

the north one) were formed of beams that were placed horizontally. The lower tiers of the walls were preserved, as were the support posts to a height of 50 to 60 cm (to the upper level of the permafrost). In the corners of the room wooden posts were arranged on the inside and outside of the walls to reinforce them and to support the roof as well.

Gaps between the horizontal beams of some walls served, evidently, to economize on structural wood. Beams laid horizontally on one another did not fit snugly to each other in grooves, as anticipated after examining the lower tier in the east wall; instead, whale vertebrae and short beams were added between beams. The gaps between the beams were covered on the outside with rows of short, upright (i.e., vertical) flat slabs. For example, a 15 cm wide horizontal beam, south of a large wooden post in Quad J-10, 11, has a longitudinal groove from 4 to 5 cm wide and 2 to 3 cm deep. The groove ends 12 cm from the north end of the beam. Beneath the grooved beam lies another beam, also grooved on its upper surface. Originally, both beams probably were not arranged directly on top of one another: i.e., several vertical boards had been set in the groove—in several layers and each layer was secured to the subsequent beam.

One of the supports in the south wall of Room 1 consisted of a bowhead whale mandible. Another bowhead mandible, encountered in one of the upper levels of Sector C was

also probably one of the upper tiers of the east wall (Figs. 6a, and 6b). Evidently, due to its location above permafrost after the beams on which it was supported decayed, the mandible slid to the east, toward the slope. Within Room 1 a general trend was noted in the direction of displacement of structural elements as the structure collapsed: as a rule, all structural members subsided toward the slope, in an easterly direction. The bases of the lower tiers of the east, south, and west walls extended above the ground, placed set on flat rocks, whale vertebrae, or small vertical beams. Sod was used to cover the outside of the walls. The thickness of the entire wall was about 1 m. Wall beams lacked corner joints; instead, vertical wooden posts were set shallowly in the ground at the corners of the room and the horizontal wall beams were apparently fastened to the vertical posts by skin or *babiche* thongs. As time passed, additional posts were very likely set in the corners to reinforce the base with short wedge-shaped braces.

In 2003, the surface of several beams (each up to 10 cm in diameter), oriented east-west, was mistaken for the upper level of the floor in Room 1. The pile of beams included a 1 m long portion of a whale mandible that was in the northeast part of the House 1 floor (Fig. 6 a). The beams were lying parallel within a single layer, its width not more than 50 cm. Based on subsequent excavation, it seems more likely that the beams were part of an accessory or temporary partition that stood vertically along a north-south line in the north

Figure 4. Excavation blocks at Paipelghak in the 2002-2004 seasons. The "site plan" features major excavated blocks in 4 by 4 m segments, marked with capital letters and identified by the excavation year. Digital illustration courtesy Dale Slaughter, Boreal Imagery.

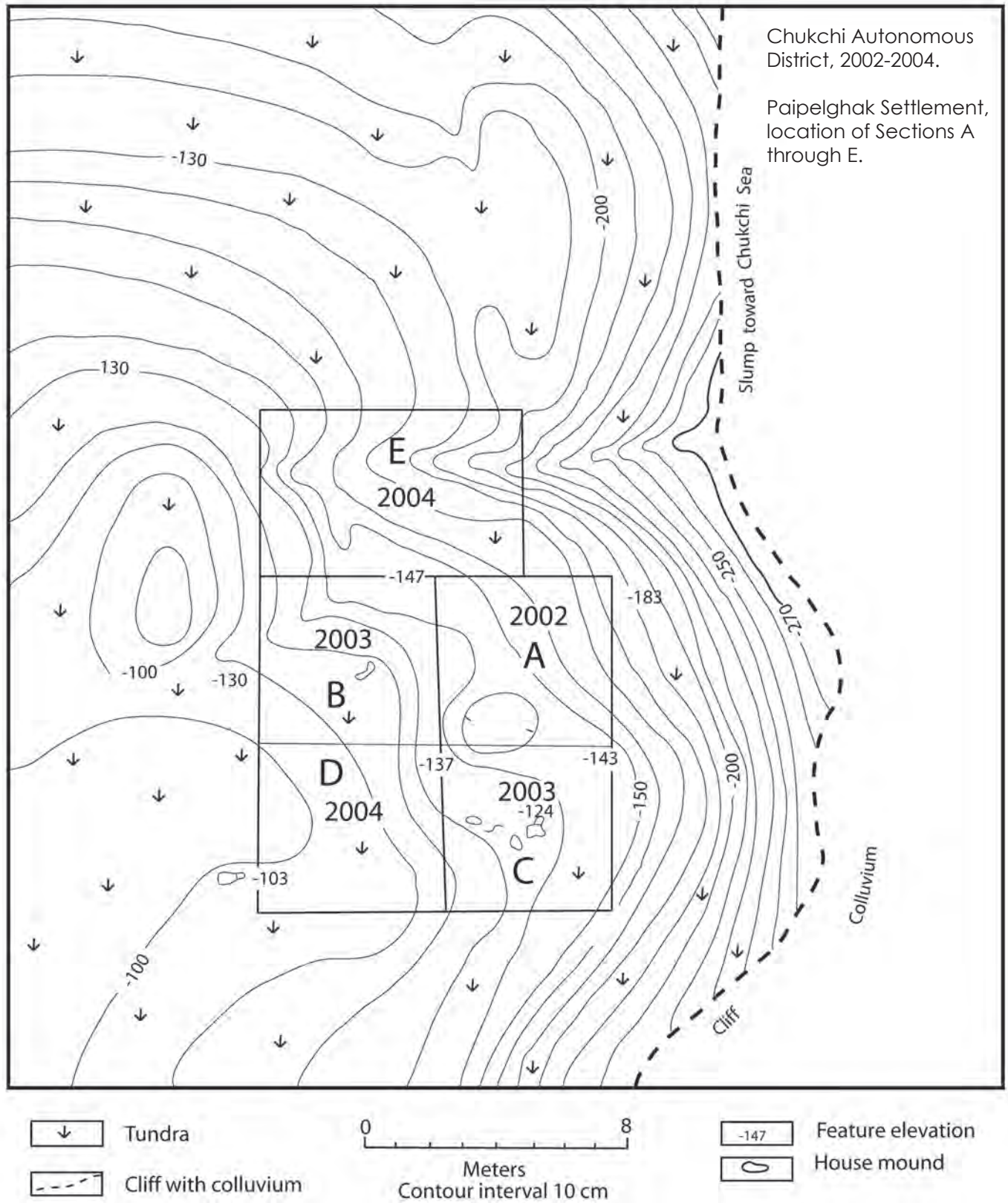
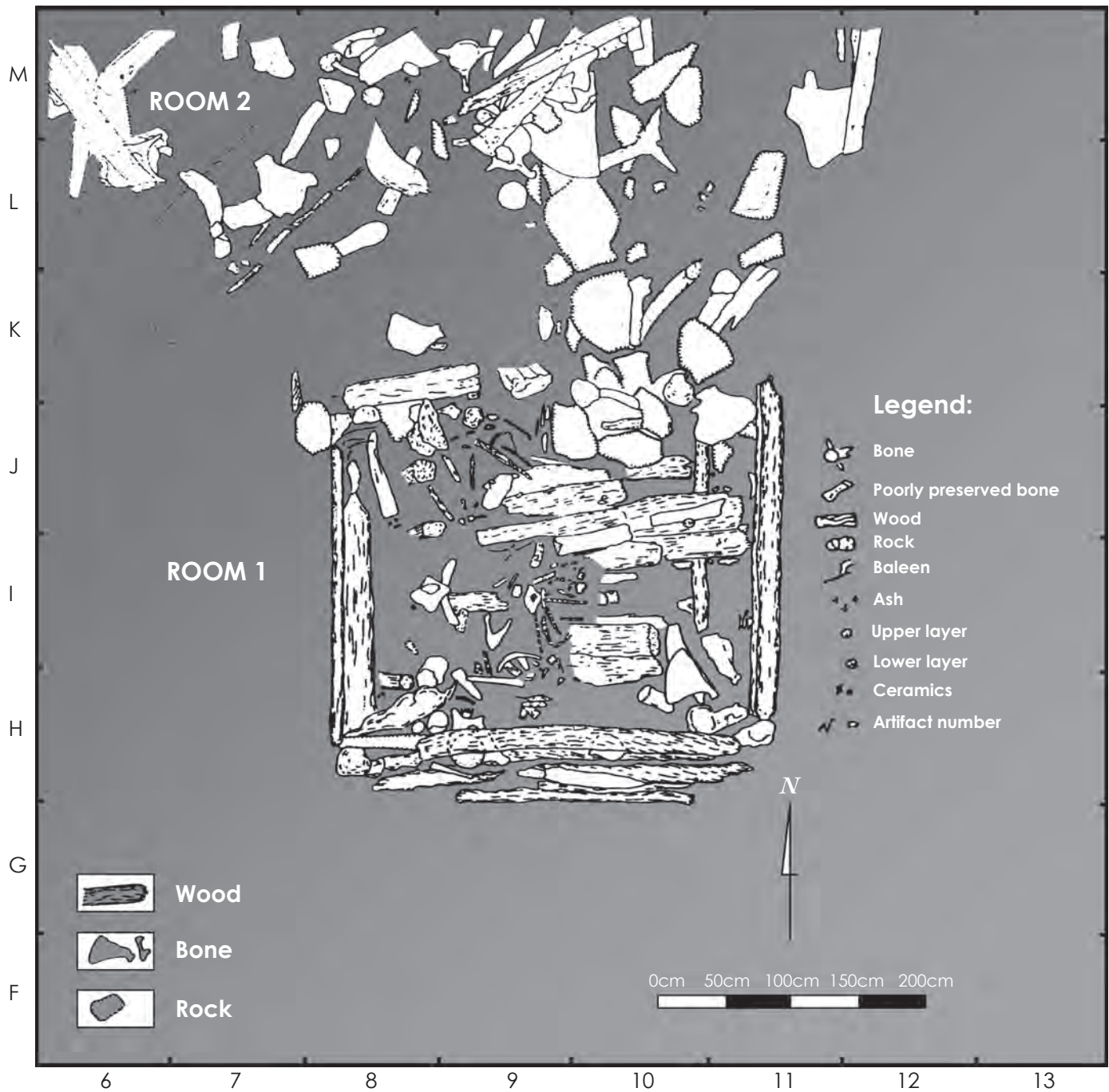


Figure 5. The excavation grid of Paipelghak provides a floor plan of the House. Smaller 1 by 1 m squares were used in the excavation of the house.



half of the room and continued toward the east wall of the exit corridor. Presumably, the inner partition extended from floor to roof, or somewhat lower (the original length of the beams was most probably the same as the length of the jaw bone discovered among them). While the partition was in a vertical position, the upper part of the beams could not collapse into the permafrost zone and were not preserved. Then, the remains of the beams fell in an easterly direction. No structural features from roof construction were found in the room.

The living surface (i.e., the level above the floor, contains compressed layers of debris about 10 cm thick), consisting of wood chips, fragments of baleen, fur, bird feathers, and a large quantity of everyday objects, as a rule, broken. Below the living surface, the floor of Room 1 had a single level and was constructed of blocks of wood oriented in an east-west axis. A bowhead mandible lay among the beams with a flattened upper surface. The floor did not extend to the wall in the southern part; instead, short posts were set in the ground, which reinforced the outermost southern



Figure 6a. Photograph of Paipelghak Room 1 showing the architectural details.



Figure 6b. Photograph of the activity area outside Room 1.

block and very likely served as an enclosure for a ceramic lamp, judging from the fragments of which were discovered in this location. The debris-covered surface of the adjacent floor area was saturated with organics and showed evidence of trampling. Possibly, the oil supplies for heating and lighting were kept in this area. An ice body, up to 40 cm wide, filled the eastern part of the room from the southeast corner to the exit. As the ice body grew, hypothetically, after house abandonment, the floor structure was disrupted above the crack and shifted 20-30 cm to the east. Very likely, the surface of the floor under the east wall has experienced some amount of subsidence. On the other hand, it is possible that the permafrost crack started to develop while the house was occupied or during its last stages of occupation. This would explain the circumstance that the east end of the floor beams extended atop the north-south oriented beam. Two beams of the central floor extended nearly to the east wall of the room, while the remaining beams terminate 50-60 cm short of the wall. A part of the floor significantly lower than the general level of the beams was possibly intentionally left bare, adjacent to the east wall. Therefore, a person who entered the

room from the corridor would have quickly stepped down onto an earthen floor.

The east part of the north wall of Room 1, east of the corridor, has a doorway directly out of the room, extending north-northeast. This exit is marked by a break in the wall of the room, by a step between a whale scapula lying on the floor of the room, and a pavement of stone slabs and large bones. This exit was not covered by a roof, as inferred from the absence of supporting posts for a roof. Seemingly, this exit was only used in the warm season and not in the winter.

Corridor

The questions about the exit from Room 1 could not be resolved until the south and west walls were completely excavated (Figs. 4, 5, and 6a). Following the removal of stratigraphic Level D5, it was clear that no break was present in the west and south walls of the room. The initial evidence of a doorway or corridor exists as a break in the north wall near the northeast corner of the room bounded, on the sides by

two wooden posts. The discovery in 2004 of a paved floor in the corridor definitively indicated that the entrance into the room—more precisely, the passage from Room 1 to Room 2—was within the north wall of Room 1, in its eastern part. The floor was paved with stone slabs and had posts along its sides that led to the north, toward Room 2. The corridor abutted the sod-fill of the wall between Rooms 1 and 2. The northern part of this corridor was left unexcavated, exclusive of the area investigated in 2004. The connection of the corridor to the south wall of Room 2 remains uncertain at the time of writing. The width of the passage varied between 50 and 60 cm, while its length extended more than 2.5 m. All the roof supports of the corridor were wood. Four pairs of support posts for the corridor roof were made of beams, including a pair of posts that are a part of the structure of the north wall of Room 1. The base of each beam was set 10 to 15 cm in the ground, below the level of the corridor floor pavement. The posts were nearly completely preserved, as evident from traces of shaping on the top of the third post from the west side of the room. Similar evidence is available from the third post on the east side which was made from a beam with a bifurcated basal notch. Its height from the floor pavement is 110 cm—the actual height of the corridor from the pavement to the roof. Some cross supports of the corridor roof were also partially preserved. In the northern part of the corridor a beam was oriented east-west, with a diameter up to 10 cm, with its east end on top of a corridor support post. A gray whale mandible lies parallel to the beam and also served as a roof beam.

In Quad L-10, within the central part of the corridor, three boards were encountered oriented parallel to the direction of the corridor; both were well-worked on two sides, up to 20 cm wide, 20-30 cm thick, and 1.7 m long. The three boards were positioned with their north ends overlapping one another, fan-like. Two very evenly shaped boards were at the center of the west wall. One board had a knot in its end, the other, in the middle part. The surface of the boards was likely worked with a stone adze. While the original placement of the boards remains uncertain, both were evidently structural features of the corridor roof that subsequently collapsed. Possibly, the transverse and longitudinal log roof of the corridor was covered by sea mammal skins.

The level of the floor of the corridor, capped by its roof elements, was lower than the floor of Room 1 by 40 to 50 cm. The floor pavement was made up of several flat slate slabs with traces of grinding on the upper surface, as well as a large scapula of a bowhead whale in the northern part.

Room 2

The excavation of this room remained incomplete by the end of the 2004 season, and conclusions about its construction remain speculative (Fig. 5). Nonetheless, it seems reasonably certain that Room 2 was built on the original tundra surface and was larger than Room 1.

Part of Room 2 was uncovered north of Room 1, in Sector B (Fig. 4) in Quads L, M-6, 7, 8, 9. The room is subrectangular in plan, oriented southwest-northeast. Two walls were partially traced in sector B: the southwest wall in Quads L, M-6 and the southeast wall in Quads L, M-7, 8, 9. A considerable part of the room continued under the north wall of Sector B. The southwest wall of Room 2 was marked by a single horizontal beam, one end fastened to two bowhead whale vertebrae placed one on the other, and was associated with a line of burnt vertical posts. The southeast wall of the room consisted of two vertical supports formed by bowhead whale mandibles placed 70 cm apart. The height of the preserved (possibly burnt) posts was up to 130 cm (their tops were seen on the surface). The posts were separated by a horizontal wooden block, several tumbled blocks, and a roof log in Quad M-9.

Outside of the walls of Room 2, in Sector B and on the level of the lowest horizon, a sub-oval ash area, 30 by 50 cm, delineated a hearth. The hearth was surrounded by an area that was clearly the original and earliest undisturbed surface, covered with an abundance of food bones and with the remains of original tundra surface. A vertical post of whale mandible in Quad L-7 had no traces of burning, although the fire area and several burned wooden posts in the wall were found in the immediate vicinity. This support was evidently set after the hearth fell into disuse. This may mark the second level or stage in the construction of Room 2, or possibly its renovation. Evidently, the floor level of Room 2 started under an area between the posts and coincides with the level of the fire area. The excavation ended at this level in 2004; future excavations will examine the level of the floor across the entire room.

In summary, Room 2, revealed in Sector B, was only partially investigated. The use of large whale bones as a material seems characteristic of Birnirk houses, as well as wood, and should be considered a characteristic feature of Paipelghak architecture. Meanwhile, the form of the structure, in some of its structural principles (including its entry) and size remain unclear. It is clear that Room 2 joined Room 1 through a passage, but precisely which part of the corridor served as the entry remains uncertain.

Extramural Areas

Our investigations at Paipelghak benefitted from the lessons learned during the mid-1990s in the international, multi-disciplinary efforts at Ekven (Bronshstein and Dneprovsky 2001; Dneprovsky 2001, 2002). Research at Ekven House H-18 provided a more complete perspective about the use of the site, by examining the areas beyond the walls of houses. At Ekven, extramural excavations revealed a variety of outside activity areas, hearths, pits for preserving food, and other important features.

At the present state of our investigations at Paipelghak [at the end of 2004], the area outside Room 1 is not completely excavated (Fig. 6b). Future goals include the expansion of the excavation to the east. However, beyond the walls of Room 1, to the south, west, and east of it, no large structural elements and few artifacts were recorded above the base of the walls. The largest quantity of objects was discovered at the original ground level—at the base of the bottom wall tiers.

One very important discovery involved an extramural activity area (Figs. 5, and 6b). In the southwest corner of the excavation, outside of House 1, an accumulation of abraded polished stone slabs of various sizes, blanks for slate tools with traces of abrasive sawing on two sides, and stone flakes were encountered on the original ground surface along with materials characteristic for that level (a large quantity of artifacts, an abundance of wood chips, likely from house construction, and other debris, including animal bones, small twigs, scraps of baleen, small clusters of burned bones, etc.). Apparently, the southwest area served as an outdoor activity area for stone tool manufacture, considering that it lacked a paved floor or roof. Outside of Room 2, to the northwest, a burnt area with pieces of clay vessels occurred in the buried horizon. Surrounding the burnt area was the early [pre-occupational—ed.] ground surface that contained midden deposits with a wealth of food refuse (animal bones) and the remains of buried sod.

Factors Influencing Preservation of Various Structural Features of the House

To ensure a reliable reconstruction of the architectural remains one must describe at the outset the factors that influence preservation processes. The most important consideration, of course, is position and thickness of the frost table which fosters the preservation of usually short-lived wood remains. By contrast, any organic debris above the permafrost level is much more likely to decay. The permafrost level, of course, generally follows the modern ground surface.

The accumulation of clastic material (small fragments of slate rubble and silty humus from the surface) within the abandoned rooms likely proceeded in the following sequence. Initially, the site area, during its occupation, was clearly not as completely vegetated as at present. The most active process of covering the structure of the room by clastic material apparently occurred soon after the house was abandoned. An abundance of snow cover, thawing in spring, probably produced large streams of water, transporting bedrock rubble from the south, from the hill (cf. Fig. 2, the topographic plan). Subsequently, plants colonized the living surface that had high nutrient levels due to the site's organic material. As time passed, plant material died and decayed with the rubble from the bedrock restraining it, leading to soil formation. The character and intensity of the filling of Rooms 1 and 2 with clastic material can be easily traced in the profiles of the excavation walls. Clastic material was blocked by the horizontal features of the structure in the lower layers, and then overtopped them and filled the space between the vertical supports of the rooms. The thickness of the layer of broken rubble, which begins immediately below the soil layer, extends to a maximum of 0.5 m. In summary, after the house was abandoned, the void between the walls and roof was filled and covered in a relatively short time by a layer of soil with rubble material up to 60 cm thick, from the sloping top of the mound to the southwest. The character and intensity of the fill in Rooms 1 and 2 can be readily traced in the wall profiles of the excavation. This material was interrupted by the horizontal features of the structure but filled the expanse between the vertical supports of the rooms. The rapid accumulation of clastic material guaranteed that preservation was excellent, at least to a height of ca. 0.5 m in the permafrost.

The house was possibly still standing, its roof still intact, when the extraneous clastic materials filled the inside area. Subsequently, the roof collapsed, which was not preserved because it remained in the active layer above the permafrost. This is very likely the reason the roof logs were few, assuming that none of the roof timbers were removed for re-use elsewhere or in other nearby houses. Only those logs are preserved that fell while the interior part of the house still was not filled with material. The logs were then substantially deeper in the permafrost layer and more likely to be preserved. The thicker the layer of post-depositional material, the more quickly it accumulates (i.e., the level of the permafrost, which rises directly under the clastic material, replicates the external relief, always remaining 45-50 cm from the surface) and the better the preservation of the wood. Quite to be expected, only the lower tiers were preserved. The posts of whale jaws are always higher than the wooden ones because they can be preserved on the surface,

even though they are exposed to weathering. In the burials of the Ekven cemetery, made on the surface of the permafrost, almost no wood is preserved.

A deep permafrost crack (visible on the surface and initially thought to be a rodent burrow) passes through the northwest corner of Sector B. It is filled with ice and oriented along the NE-SW line. Its width is up to 40 cm. A similar frost crack, oriented along the N-S line, passes through Sector C almost parallel to the east wall of Room 1. The frost cracks literally broke apart the structural features of the building, such as the wooden blocks and large bones. The whole structure was thus pulled apart by tens of centimeters, during the centuries following the abandonment of the house.

Finally, it is also necessary to consider the human factor: the abandoned house, up to when clastic material covered the living surface of the rooms and/or collapsed the roof, was visited by hunters and residents of surrounding villages. It seems very possible that beyond the outer walls of the house, after the occupants left, some additional surface modification occurred (e.g., the digging of a cache pit, leveling of the area for another house, etc.), and the production of a trash dump formed as a result of this work and covered the lower tiers of Room 1.

The stratigraphic profiles of six walls in Sectors B and C establish that Rooms 1 and 2 were built on the level of the preexisting ground surface. It is notable that no outlines of external additions to the walls of the rooms were found in the profiles. In the profiles of the south wall of Sector B and the south wall of Sector A, which “cut” Room 1 from east to west, a layer of clastic material was atop the level of the early ground surface.

Another process, beyond those of colluviation and post-depositional earth-moving, influenced the infilling of the house with clastic material. After the room was completely excavated it was appreciated that the walls of Room 1 were supported on the outside by earthen fill retaining walls. The fill was evidently taken from near the room and the subsequent clastic material is similar to it in composition and color. The surface of the site was not covered with peaty sod, so that sod could not be used for backing the walls. The original form of the wall, constructed of wood, bone, and stone and filled on the outside by soil, was subtriangular in plan and sloped to the outside. The thickness of the base of the wall of Room 1 was about 1.5 m. To be expected, few or no artifacts were found in the fill of the wall. After the house ceased to function, destruction of the sod walls occurred from two directions: from above, inside the room, and from the outside along the slope of the wall. The sediments that

were thus eroded from the wall were added to the colluvial sediments and were incorporated into it.

General observations based on other sites of this period and the individual characteristics recorded during excavations of Room 1 at Paipelghak support the idea of the presence of outside earthen fill in the walls of other adjacent early Eskimo houses. First, I cite my own observations and those of other archaeologists from the numerous sites on the coast of Chukotka (e.g., Ekven, Tunytlen, Segtun, Yandagai, Ekichuvren, and others). All the house ruins of the early Eskimos are represented by mounds, often with a sunken center. Without earthen fill in the walls the mounds could in principle not have formed. All the houses of this type in Chukotka, which were exposed to even partial investigation (Cape Baranov, Chetyrekhtolbovyi Island, Kuniskak, Ekven) had, according to the authors of the excavations, earthen or sod walls on a primary frame.

The following are specific lines of inference for the presence of earthen (sod block) fill (likely as insulation) outward from the walls of Room 1 at Paipelghak:

- The area of artifact distribution in the cultural layer around the room has a clear boundary, which is located approximately 1.5 m from the wooden frame of the walls. Numerous artifacts are recorded in the layer of structural debris with a thickness of up to 40 cm from the level of the early ground surface. Virtually no artifacts were found at the level of the pre-occupation ground surface, in the area covered by the sterile fill of the wall.
- The structural features of the walls appear to be so flimsy that without earthen fill they plainly would not be effective insulation under Arctic conditions [although the likelihood of a snow cover would considerably improve their insulation (cf. Lee and Reinhardt 2004)–Ed.]. The south and east walls have breaks between the lower tiers. One beam is held to another on two whale vertebrae and a short beam. The west wall was constructed partially of thin vertical blocks standing at a substantial distance from each other and set in a longitudinal groove of the second-from-bottom horizontal tier. The north wall of Room 1 consists of individual vertical blocks embedded in the ground up to 40 cm from each other.
- The south wall of Room 2 has no significant structural elements except whale jaw posts, and

is adjacent to the north “wall” of Room 1, which is essentially only a partition between the two spaces. If this wall had not produced lapse-related fill the space between the rooms would have accumulated a substantial cultural layer. For the most part, there were no artifacts in the wall fill, except the very remarkable snow goggles found at the early ground level (Fig. 7).

If the walls had not been purposely filled with earth on the outside, the earthen mound would not have developed on the location of the houses. Fill material could not pile up on the wooden structures of the walls.

An argument supporting the fact that the beam walls of Room 1 at Paipelghak were not on the exterior, but were supplemented with earthen fill, is the very structure of the

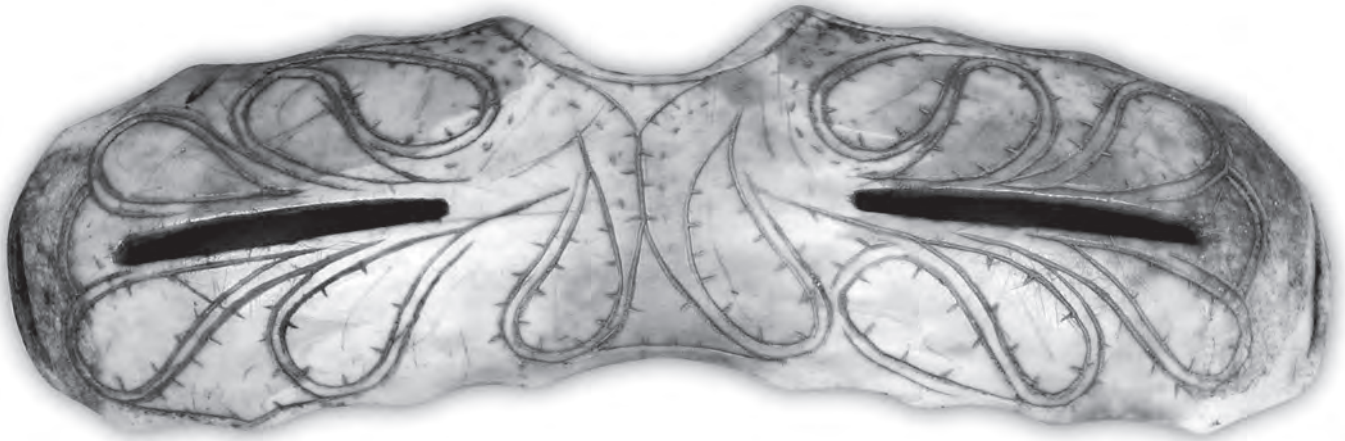


Figure 7. Snow goggles obtained from above the floor of the structure.

- The bases of the lower tiers of three walls were raised on stone, bone, or wooden structural elements substantially above the earth. Without fill the walls would not likely have stood and supported the roof.
- The wooden wall elements would not have been preserved to such a height as in Room 1 if the walls were not within the permafrost. It would seem that this could occur with the presence of earthen fill, which quickly filled the inner part of the room and partially preserved its height on the outside.
- At the base of the first tier of the room, and parallel to it one and a half meters west and southwest of the west wall, runs a sharp boundary localizing all signs of the early ground surface. South, east, and north of the walls at the level of the ground surface signs of the boundary are absent. Why does the early ground surface with artifacts not go directly up to the wall? In 2003 we mistakenly took the expanse between Rooms 1 and 2 (about 1.5 m wide) to be a “passageway,” an empty space between structures. The fill of the wall undoubtedly prevented the accumulation of the cultural layer here.

walls itself. The north wall consists of vertical blocks standing at a substantial distance from each other, while the south wall was built up of beams and a whale jaw, with the aid of whale vertebrae that were inserted between beams every 50 cm. The presence of such breaks in an outer wall is not logical.

Objects found in the drift layer may be synchronous with Room 1, as well as belonging to a time both earlier and later in relation to the time of existence of Room 1. Artifacts and debris were transported away from houses by fluvial processes (see Figs. 2-5 or the plan views).

The inner area of the dwelling structure should be conceived as a zone with a special kind of accumulated cultural layer, one naturally different from the area outside the structure. The structural horizons in this case cannot be interpreted as stages of settlement. No sterile lenses were recorded here. The division into levels or stages of structural elements of the paved floor and of the inventory found in the material accumulation of the interior of the room can only be provisional. If this material does not contain clearly asynchronous or multi-cultural markers then it is not possible to separate it into stages or levels. If the layout of the house walls was not modified, then the material discovered in the floor stratum can be logically viewed as a single complex.

Thus, at the end of the 2004 season the following picture became clear. Room 1 was constructed on the ancient ground surface. It was square-ish in plan with right-angled corners. The characteristics stated above attest that the walls were filled with earth on the outside. The construction of the west wall, where part of the vertical short blocks set on end in grooves in the upper surface of the horizontal beam was preserved, evidently reflects the construction of at least three walls, with the exception of the north one, which was basically a partition between the rooms. Gaps were evidently left between the beams for purposes of economizing on wood: the horizontal beams did not fit closely to each other in the groove, as was supposed after the study of the lower tiers of the east wall, but rather whale vertebrae and short wooden blocks were laid between them. Short flat blocks were secured in vertical position in the gaps. The base of the lower tiers of the east, south, and west walls was raised above the earth and placed on stones, whale vertebrae, or small vertical beams. Vertical wooden posts, shallowly sunk, were placed at the corners of the room. Depending on how loose they were, additional posts were set that were reinforced by short wedge-shaped chocks placed around the base. The floor of the room had one level of construction and was paved with wooden blocks oriented east-west. In the south part the floor pavement did not reach the wall. Here short posts were set in the ground which secured the extreme southern block and possibly enclosed a place for a lamp. The surface of the floor here was very saturated with organics and was trampled. The oil for the lamp was possibly kept here.

Room 1 of House 1 at the Paipelghak site has many features in common with the small room in House H-18 at the Ekven site. Both rooms are equally oriented so that the walls face the cardinal directions and were constructed on the surface, not sunk into the ground. They are both subsquare in form and almost equal in area. Wooden posts supporting the roof and maintaining the walls were at the corners. The structures are of "warm" permanent post construction with an earthen (sod) outer fill of the walls. The use of horizontal beams in the construction of the walls is a common feature (in H-18 there is a horizontal beam in the base of the east wall). There are no wooden beams in the floor pavement of the Ekven house; stone slabs prevail. In Paipelghak House 1 the floor pavement is made up primarily of beams, but part of the floor that attached to the entryway was laid with stone slabs. Judging by the composition of the inventory, both rooms were living rooms, not working rooms. The small dimensions and other features also permit supposing the structures were sleeping rooms.

The small room of Ekven House H-18 was attached directly to a larger one on the north, but not to the south, like Room 1 at Paipelghak. Between the large and small rooms

at Ekven there is no thick earthen wall; they are joined through a step and a common thin wall, in which is a passage from one room to the other. Room 1 at Paipelghak has four walls, three of which are outer walls. The fourth wall, common for both rooms, also has earthen fill. The corridor exit in the eastern part of the north wall of this structure has a length of more than three meters. It is attached on the east side to the earthen wall and joins the small and large rooms of the house. Thus, Room 1 at Paipelghak has four "warm" walls and is an independent structure, more isolated from the large room.

Meanwhile, it is possible to establish that a substantially larger quantity of driftwood was used in the construction of the Paipelghak rooms than in Ekven House H-18. This is connected, first, with the fact that the geographic position of the Paipelghak site, in distinction from the Ekven site, is such that even at the present time a substantial quantity of driftwood can be seen in the vicinity of the site after storms. Meanwhile, there is insufficient data for ascertaining the general layout of the house.

Artifact Assemblage

Only those artifacts that were recorded at floor level, below the floor level of the room, and on the level of the early ground surface beyond the outer walls (and lower) should be considered as belonging to the structure, and, consequently synchronous with it. The possibility of artifacts falling to the floor level or early ground surface after the house ceased to function diminishes, until the appearance of clearly asynchronous artifacts that post-date the occupation.

A similar concern involves the archaeofauna. Unfortunately, the bones of animals were collected by excavation level over the entire area of the excavation sectors in 2002 and 2003. Consequently, it is not possible to distinguish bones belonging to Room 1 proper from the midden or dump areas. In 2004, bones discovered within the room at floor level and below were collected individually. In addition to formal osteological analysis, specimens of land and sea mammals will be employed in the radiocarbon dating of Room 1.

In order to distinguish the cultural association of Room 1, it is necessary to identify the artifacts in the cultural layer as only those objects that were found on the floor and below in the inner part of the room, and those on the early ground level. However, one should not identify *all* the objects from the two layers as cultural markers. Certainly, one must be cautious in attributing artifacts to the occupation of the house. Of the diagnostic artifacts, a few of the most interesting are illustrated in Figs. 7, 8 and 9. The snow goggles, with

Table 1. Radiocarbon assays from House 1, Paipelghak.

Laboratory No.	¹⁴ C yr Age BP	Calibrated Yr AD (2 sigma)	Material
IEMAE - 1362	789±30	1193-1198, 1209-1284	Local Wood (likely willow)
IEMAE-1360	673±31	1280-1325, 1348-1391	Driftwood

Both samples are on wood, unidentified, but likely willow. The IEMAE (Institute of Evolutionary Morphology and Animal Ecology) lab was employed for both assays.

the Punuk-like motif (Fig. 7), were obtained from above the floor of the structure, as noted above. Otherwise, several types of harpoon heads were recovered from adjacent the house. The harpoon heads fall into the following types (cf. Ford 1959): Natchuk (Fig. 8a, b and c); Birnirk (Fig. 8 d, e); Old Bering Sea (Fig. 8j, k, m); the III-a-x (=Sicco) (Fig. 8v); and possibly the Thule 2 (Fig. 8f). Several pieces are apparently preforms (Fig. 8t, u) while others are difficult to assign to widely recognized types, e.g., the variants of the Old Bering Sea types [Fig. 8l, n, o, p, q, r, and s]. The wide variety of cutting tools of ground slate include long knives and the classic ulu (Fig. 9k, m, o, p).

Within the house, in 2004, the characteristic single barbed Birnirk harpoon head did not occur in association with the floor or beneath House 1. At least five discrete forms of open harpoon heads with open sockets were recovered within the excavation; and one typical open-socketed, harpoon head of antler (III-a-x) was decorated with typical Punuk motifs (Fig. 8 v, lower right). Judging by the inventory (Figs. 7, 8 and 9), both Rooms 1 and 2 are assigned to the Birnirk-Punuk stage of the Eskimo culture of Chukotka.

Dating the House

Wood, both local and driftwood, was employed for two age assignments; dendrochronological analyses are planned. The two ages overlap only within several years of the 13th century AD. Of the two ages, most commonly, the short-lived “local” wood should yield the more precise age estimate. However, that assay (Iemae-1362) is possibly 100 years older than the driftwood sample. Considering that the two ages barely overlap within the 2 sigma range, it would seem inadvisable to average them. The two radiocarbon assays (Table 1) indicate that the house was occupied quite late in the history of the Birnirk culture, during the 13th or early 14th century AD. The most expeditious explanation would be that the house was first occupied, possibly in the late 12th century, with re-building continuing until the early 14th century AD.

Conclusions concerning Ancient Eskimo Architecture in Chukotka

Houses of the ancient Eskimo cultures of Chukotka that employ a frame of large sea mammal bones and driftwood backed by sod walls, can be divided into two types, based on their structural features [cf. Lee and Reinhardt 2004 for further examples—eds.]:

- First, houses built on a low coastal bluff where there is always an incline toward the sea, directly on the slope. Often “terraces” were leveled on the slope, arranged one above the other. The floor surface of the rooms in the house was never excavated into the ground. The roofed corridor exit from the room opened directly onto the shoreline. Typically, the entryway was not toward the sea, but rather toward the slope. This was because the floor level always had to be below the level of the floor in the room. This type of house is the most archaic, which was brought about by the simplified technique of construction—the builders did not have to dig the corridor into the earth.
- Second, houses built on a flat surface at some distance from the shore. The general construction principles are the same: the floor level of the rooms was on the surface. The exit in this case was also constructed toward a small slope, but it was dug somewhat into the ground. If one of the rooms of a house went beyond the flat area, then a floor of fill was made. For example, the level of the floor in the small room of House H-18 at Ekven was raised with earthen fill on the north side. This fill was retained by whale skulls on the side toward the slope.

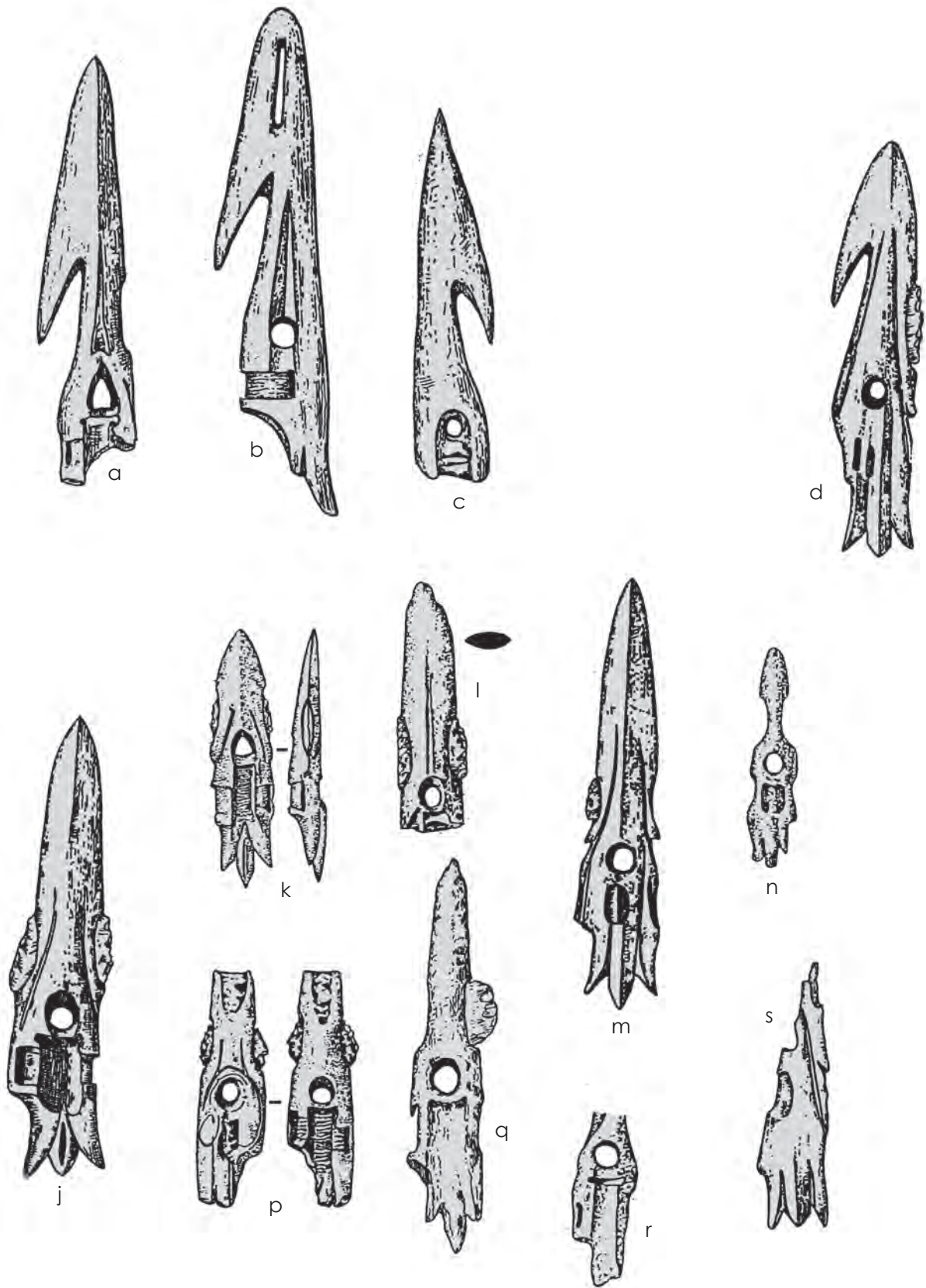
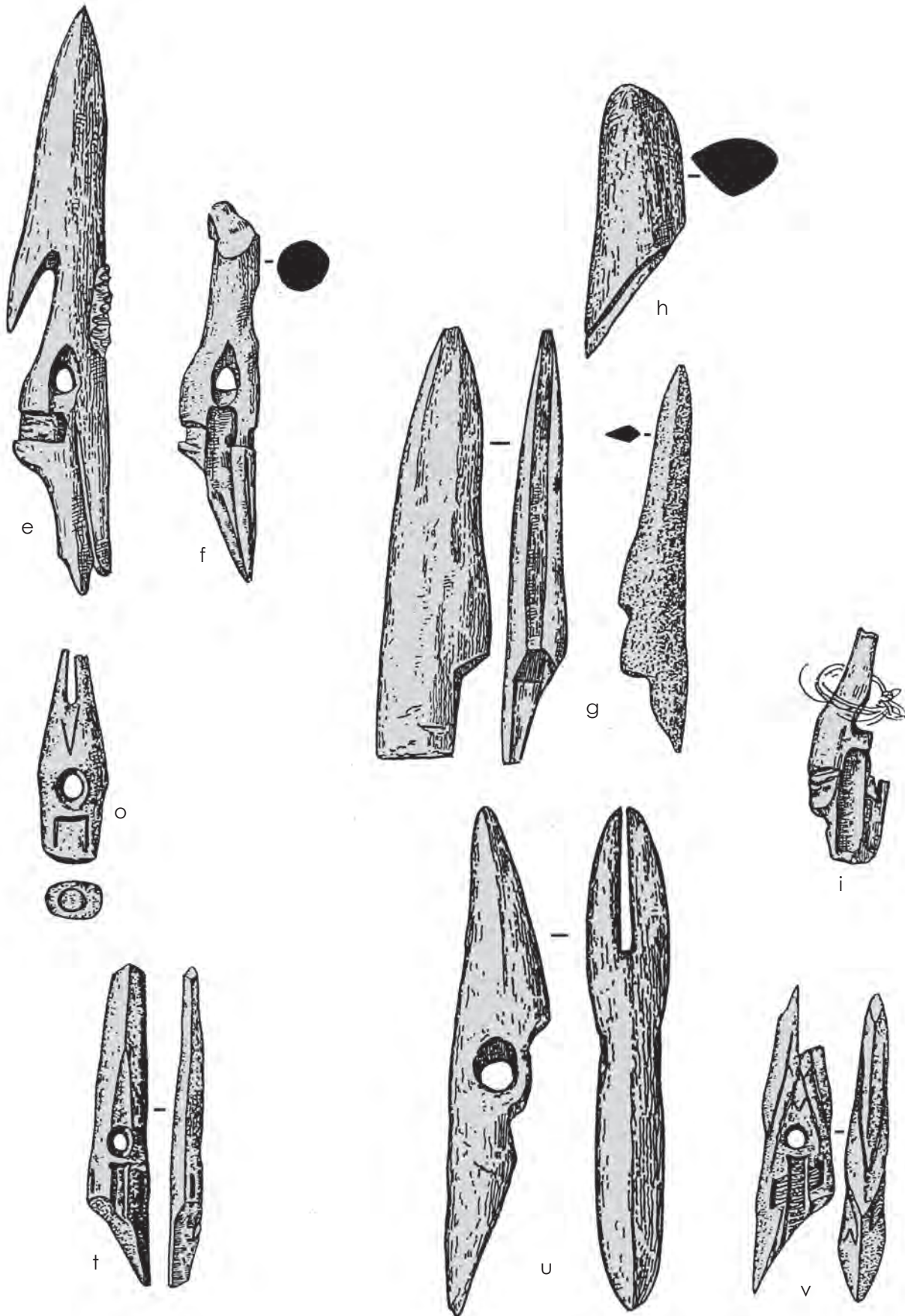


Figure 8 (facing pages). Harpoon heads recovered from the Paipelghak house in 2002-2004, clockwise, left to right: Natchuk (a, b and c); Birnirk, (d, e); Old Bering Sea (j, k, and m); the III-a-x (=Sicco) (v); and possibly a Thule 2 piece (f). Several pieces are apparently preforms (g, h, t, and u). Three are variants of Old Bering Sea types (l, n, o, p, g, r, and s).



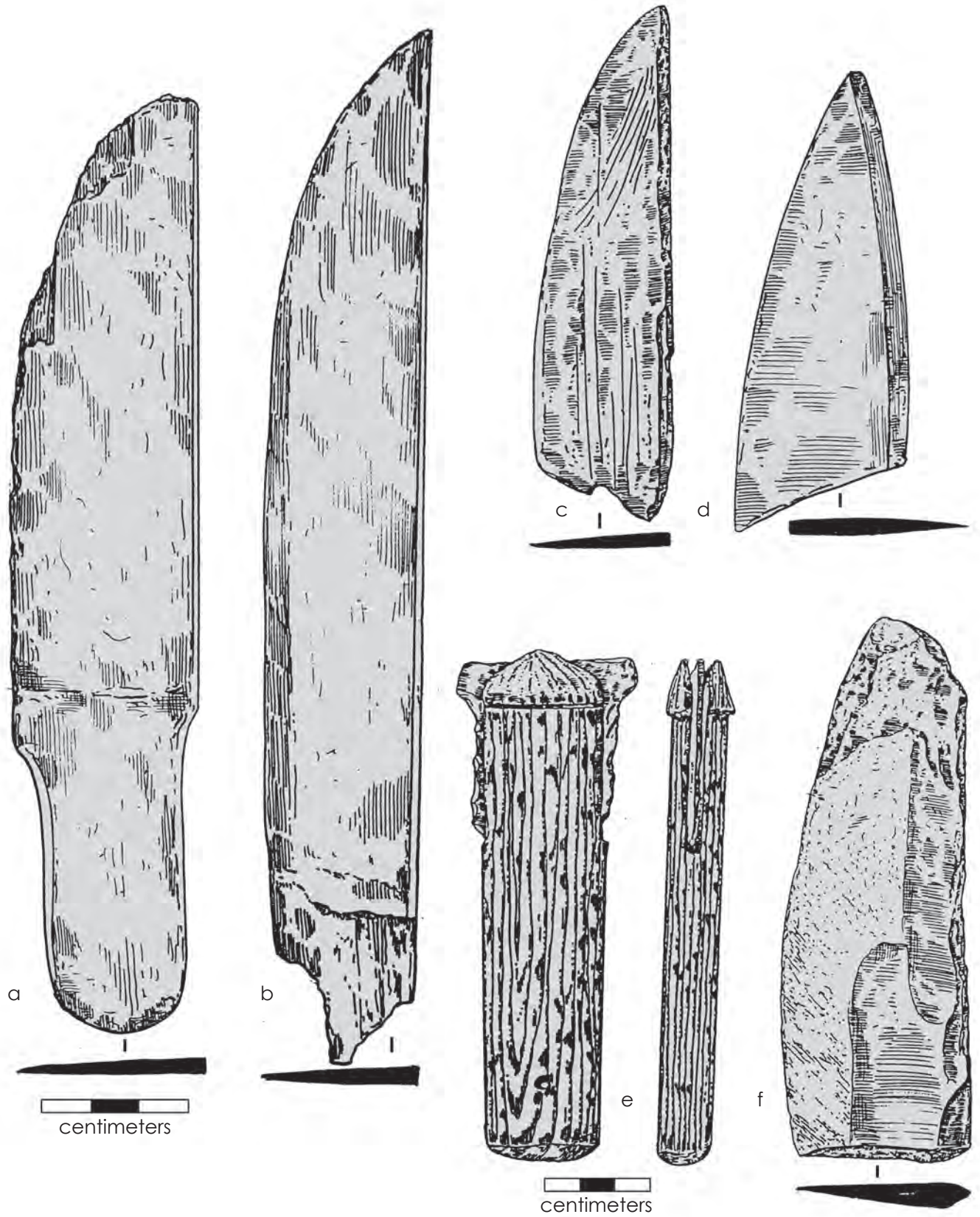
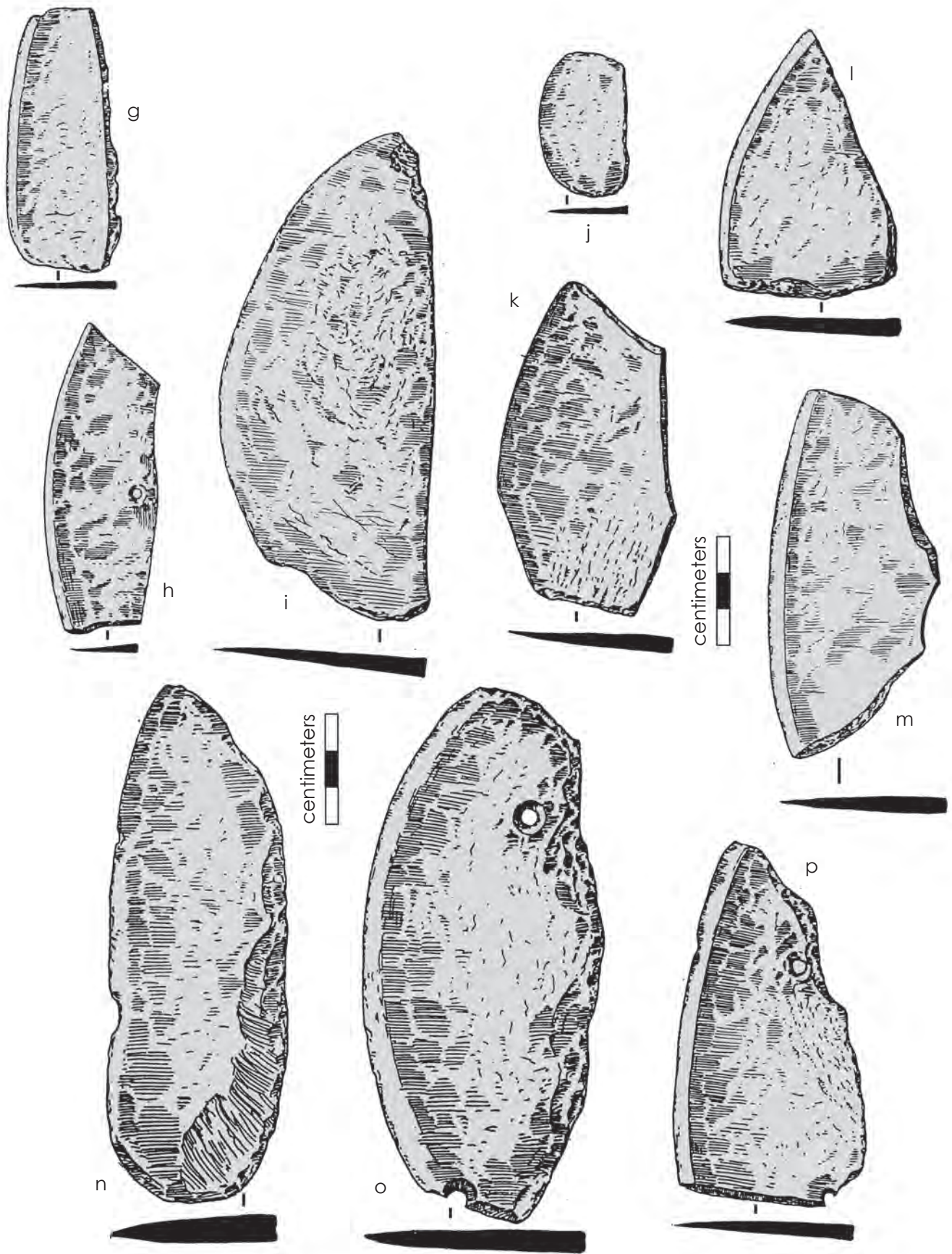


Figure 9 (facing pages). Various cutting tools of ground slate from Paipelghak, including long knives, a classic ulu (o), and a bone handle with blade (e).



Investigations of the Paipelghak houses are not yet complete; in fact, excavations occurred through 2006. The 2002-2004 collection of objects from Room 1 and areas adjoining it number about 1,500 items. At this stage of investigation, analyses are far from systematized. Tasks underway include the development of a typology for the objects, as well as additional comparisons of the house using analogies from other sites, especially with materials from Ekven House H-18.

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