

Neolithic of the Northeast Asia and the Arctic Small Tool Tradition of the North America

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The origins of several northern cultures — Native peoples of the Arctic and Subarctic (Inuits, Chukchi, Koryaks, Aleuts) are associated by most researchers with the development and spread of Neolithic cultures in Northeast Asia. These Neolithic cultures later gave rise to the Arctic Small Tool Tradition (ASTt) in Alaska, Canada, and Greenland. Neolithic cultures of Arctic and Subarctic Northeast Siberia (Yakutia, Chukotka and Kolyma regions) began their development during Mid-Holocene, approximately 6500–5500 years ago. Their basis are the Neolithic cultures of the Baikal Lake region, but as they formed they gained a unique character. Thus, in Yakutia, we can distinguish Syalakh, Belkachi, and Ymiyakhakh cultures, which later developed into the Neolithic cultures of Kolyma and Chukotka (Upper Kolyma, Ust-Belskaya, and Northern Chukotka). During the Neolithic, microblade technology continues to be used, and new shapes of bifacially flaked tools appear, which find analogies in the ASTt toolkits of the Arctic and Subarctic Zone of North America. In the Kolyma and Chukotka Neolithic complexes and in the ASTt complex in Alaska and Canada we find common tool types: small triangular points, rounded dorsally and ventrally retouched scrapers, beak-shaped combined tools, angular and multifaceted burins, end and side inset blades, gravers and adze with partially polished blades etc. Common traits of these cultures (traditions) formed, it appears, not only due to the direct spread of the Neolithic technologies and people into Alaska, but also due to the commonalities in the environmental and climatic zones of the Arctic and Subarctic which housed these cultures from the beginning of the second half of the Holocene.

Keywords: Neolithic, Northeast Asia, Arctic Small Tools tradition, Alaska, Canada, Greenland.

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Происхождение ряда северных этносов — коренных жителей Арктики и Субарктики (эскимосов, чукчей, коряков, инуитов, алеутов) большинство исследователей ассоциируют с развитием и распространением на Северо-Востоке Азии неолитических культур, которые впоследствии стали основой формирования арктической традиции мелких орудий (Arctic Small Tool Tradition, ASTt) на Аляске, в Канаде и Гренландии. Свое развитие неолитические культуры арктических и субарктических районов Северо-Восточной Сибири — Якутии, Чукотки и Колымы получили с середины голоцена, примерно 6500–5500 лет назад. Основой их формирования стали прибайкальские и забайкальские неолитические культуры, но в процессе формирования они обрели характерный только для них облик. Это позволило выделить в Якутии сылахскую, белькачинскую и ымыяхтахскую культуры, продолжением которых стали неолитические культуры Колымы и Чукотки (верхнеколымская, усть-бельская и северчукотская), обладающие рядом специфических черт. В неолите микропластинчатая технология на Северо-Востоке Азии сохраняется, ее дополняют характерные формы орудий с двусторонней обработкой, аналогии которым выявляются в орудийных комплексах традиции ASTt в арктической и субарктической зонах Северной Америки. Характерной чертой неолитических культур Якутии является керамика. На Колыме и Чукотке ее присутствие в раннем и среднем неолите незначительно. Она отсутствует на большинстве стоянок этих регионов, а также и на Аляске в комплексах ASTt. В неолитических комплексах на Колыме и Чукотке и в материалах комплекса Денби на Аляске, первого открытого комплекса ASTt в Арктике (Denbigh Flint complex) Аляски, помимо микропластинок отмечаются такие сходные типы орудий, как мелкие треугольные наконечники, округлые в плане ретушированные скребки; клювовидные комбинированные орудия; угловые и многофасеточные резцы, концевые и боковые вкладыши, резцы, тесла с частично шлифованным лезвием и др. Общие черты этих культур (традиций) сформировались, очевидно, не только вследствие прямого распространения на Аляску неолитических технологий и их носителей, но и под влиянием особенностей природно-климатических зон Арктики и Субарктики, в которых они существовали со второй половины голоцена.

Ключевые слова: неолит, Северо-Восток Азии, Аляска, Канада, Гренландия, арктическая традиция мелких орудий.

Introduction

Researchers have established that people started inhabiting the Arctic and Subarctic of Northeast Asia from the early stages of the Late Paleolithic, from the end of the Karga epoch. This process continued, with different levels of intensity, during the entire Sartan cooling¹.

¹ *Pitulko V. V., Pavlova E. Y. Geoarchaeology and Radiocarbon Chronology of the Stone Age of the North-East Asia. St. Petersburg, 2010; Mochanov Yu. A. Drevneishie etapy zaseleniia chelovekom Severo-Vostochnoi Azii. Novosibirsk, 1977; Dikov N. N. Early Cultures of Northeastern Asia. Anchorage, 2004; Slobodin S. B., Anderson P. M., Glushkova O. Yu., Lozhkin A. V. Western Beringia // Human Colonization of the Arctic: the Interaction Between Early Migration and the Paleoenvironment. London; Cambridge, 2017. P. 239–298.*

At the end of the Sartan epoch, while moving into the Bering land bridge that formed between Eurasia and North America as a result of global climatic changes², people also reached North America, where they first inhabited ice-free Arctic and Subarctic regions of Alaska and Yukon Territory (Northwest Canada)³.

However, before the Holocene warming, this process was irregular, periodic, and punctuated by long pauses due to climatic catastrophes; it is characterized by frequent replacement of one culture with another, quite dissimilar: the Yanskaya, Dyuktai, Early Ushki, Mesa, Nenana, Sluiceway, Paleoarctic.

This process is also associated with the time period, still little understood, during which people inhabited the areas of North America past the icesheets, in the second half of Sartan⁴. Common features of the cultural traditions of Northeast Asia and the Arctic and Subarctic North America, which formed as early as the Paleolithic, were retained during the later time periods⁵. During the early Holocene, the exploration of the Arctic and Subarctic was activated and somewhat stabilized for a few thousands of years, as seen in the Sumnagin culture of Northeast Asia⁶ and the Late Tundra tradition in Alaska, which adapted the prismatic microblade technology from the Sumnagin culture⁷.

This is the foundation for the development of the Northern Archaic culture in Alaska, around 7000 years ago. This culture, characterized by large side-notched points and sub-prismatic cores, might have represented inhabitants from the upper Yukon River moving into Alaska; part of this population used microblade technologies, but the rest did not⁸.

However, the most active exploration of the Arctic, especially Arctic Alaska and Canada began only in the mid-Holocene at the end of the Atlantic period, when Neolithic traditions from Subarctic Northeast Asia spread into those regions, continuing the unity of the historical development of Beringia's post-glacial period. They brought about a fundamental change in the character of the cultures during the transition from the Mesolithic to the Neolithic, similar to the change that occurred at the Pleistocene-Holocene boundary, when major catastrophic environmental changes were taking place.

Since the mid-Holocene (approximately 6000–5000 years ago) and until the beginning of the current era, this unity was reflected in the development of Neolithic cultures in Northeast Asia, and the Arctic Small Tool tradition⁹ in Alaska and Arctic Canada. During this time, elements started forming in Northeast Asia, which later appeared in ASTt — small bifacial leaf-shaped points, scrapers, burins, end blades and side blades, ribbon-like

² Beringia in the Cenozoic Era. Rotterdam, 1986.

³ Goebel T., Powers R., Bigelow N. The Nenana complex of Alaska and Clovis origins // Clovis: origins and adaptations. Corvallis. 1991. P. 49–79; Holmes Ch. E. Tanana River Valley Archaeology Circa 14,000 to 9000 B. P. // Arctic Anthropology. 2001. Vol. 38, no. 2. P. 154–170; Yesner D. R. Human dispersal into interior Alaska: antecedent conditions, mode of colonization, and adaptations // Quaternary Science Reviews. 2001. Vol. 20, no. 1–3. P. 315–337.

⁴ Goebel T., Waters M. R., O'Rourke D. H. The Late Pleistocene Dispersal of Modern Humans in the Americas // Science. 2008. Vol. 319, no. 5869. P. 1497–1502.

⁵ Ackerman R. E. Late Tundra // Encyclopedia of Prehistory. Vol. 2. Boston, 2001. P. 111–115; Dixon E. J. Quest for the origin of the first Americans. Albuquerque, 1993.

⁶ Mochanov Yu. A. Drevneishie etapy zaseleniia chelovekom Severo-Vostochnoi Azii.

⁷ Ackerman R. E. Late Tundra // Encyclopedia of Prehistory. P. 111–115.

⁸ Esdale J. E. A Current Synthesis of the Northern Archaic // Arctic Anthropology. 2008. Vol. 45, no. 2. P. 3–38.

⁹ Dikov N. N. Early Cultures of Northeastern Asia; Dumond D. E. The Eskimo and Aleuts. London, 1987.

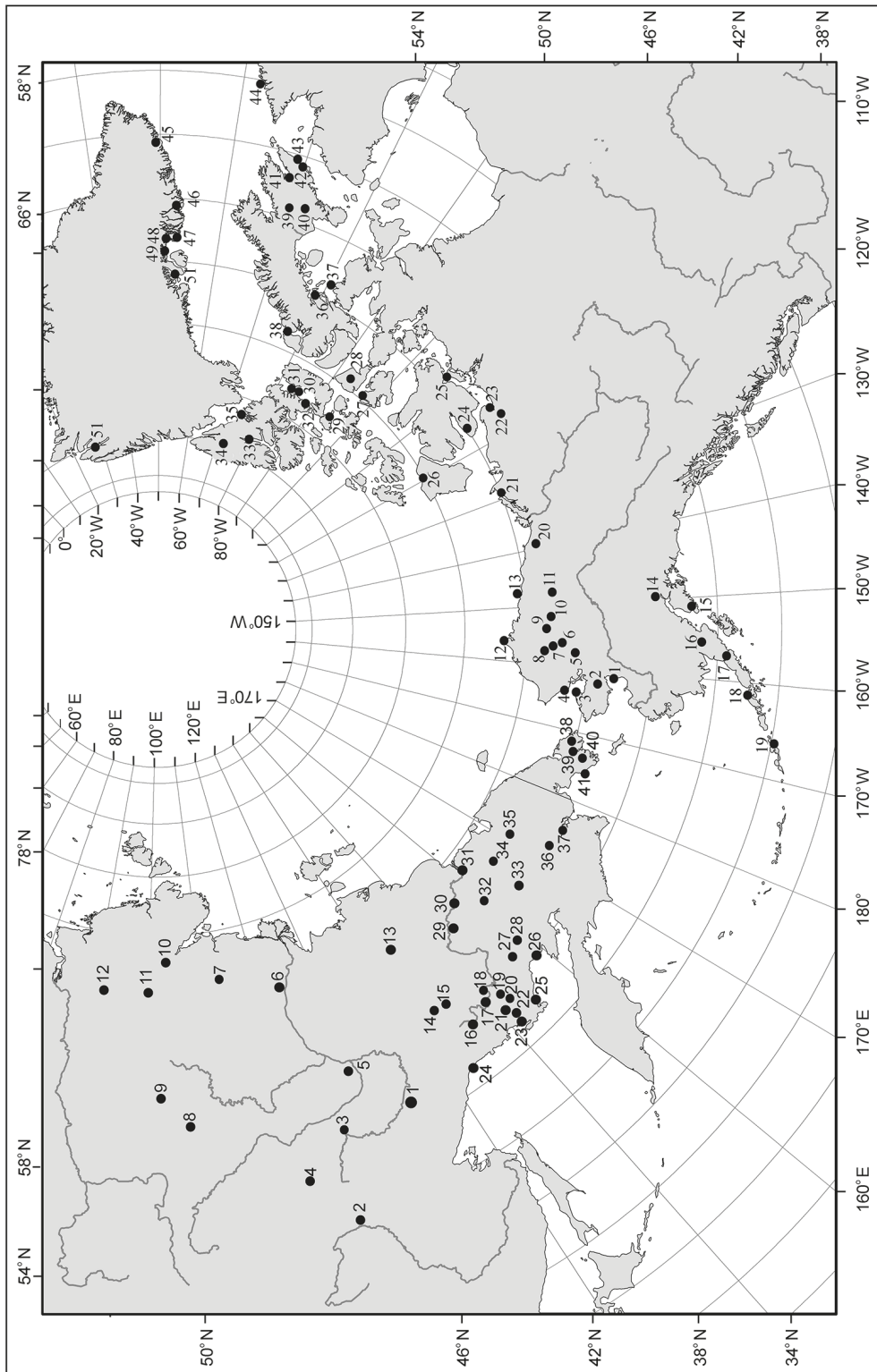


Fig. 1. Geographic distribution of early and mid-Neolithic sites of Northeast Asia (1–41): 1 — Belkachi; 2 — Gromatukha; 3 — Sumnagin; 4 — Dzhikimda; 5 — Kangalas; 6 — Siktyah; 7 — Olenek; 8 — Tuoi-Haya; 9 — Ust'-Chirkuo; 10 — Khatanga; 11 — Maimече; 12 — Pyasina; 13 — Buolumana-Taasa, Belaya Gora; 14 — Ui (Locality 2); 15 — Mamontai I, Mamontai I-VI, Perevalnaya XI and Pridorojnaya site; 16 — Agrobaza IV; 17 — Nemichan; 18 — Migai; 19 — Bauman; 20 — Elikchan Lake; 21 — Khurendzha II, III, V, VI, and VIII, Neel-Ustye, Neel II and IV, Urtychuk II, III, IX, and X; 22 — Ola I; 23 — Oksa V, Vesolyaya VII, Dukcha, Alevina, and Kolchakovskaya (Tay Bay); 24 — Kukhtuy I and III; 25 — Malkachan 1–4 and Iretskaya site; 26 — Gizhiga; 27 — Ust-Tenkeli; 28 — Burlakich; 29 — Kamenka I, Labuya III, Kigilyakh I, III, IV, and VI; 30 — Pomazkino II–IV; 31 — Panteleyikhha I, II, IV, Slezovka, Kamenniy Cape, Frolovskaya IV, Stadukhinskaya I, Rodinka I, II, and V; 32 — Cape Simitsina; 33 — Bolshoy Nuteneut II; 34 — Yagodnaya site; 35 — Tytyl'; 36 — Ust-Belyi, Kameshki; 37 — Chikayevo site; 38 — Koolen' III (low level); 39 — Getlyanen I; 40 — Naulnyngytgyn I; 41 — Unenen.

AST sites of Alaska (1–19), Pre-Dorset, Independence I and Saqqaq of Canada and Greenland (20–51): 1 — Iyatayet; 2 — Kuzitrin Lake at Seward Peninsula; 3 — Cape Espenberg; 4 — Cape Krusenstern; 5 — Onion Portage; 6 — Matcharak Lake; 7 — Punyik Point; 8 — Croxton; 9 — Kurupa Lake; 10 — Imaigenik; 11 — Mosquito Lake; 12 — Walakpa; 13 — Coffin (Prudhoe Bay); 14 — Sussitna; 15 — SEL-033 (Chugachik Island); 16 — Brooks River; 17 — Ugashik Narrows; 18 — Sapsuc River; 19 — Margaret Bay; 20 — Engigstciak; 21 — Crane (ObRv-1); 22 — Dismal Lake; 23 — Bloody Falls; 24 — ObPj-6; 25 — Buchanan, Wellington Bay; 26 — Umingmak; 27 — Bettison Point; 28 — Stanwell Fletcher Lake; 29 — Port Refuge; 30 — Rocky Point; 31 — Gneiss, Far Site, Icy Bay, and Hind sites; 32 — Cape Storm; 33 — Kettle Lake; 34 — Sojourn; 35 — Lake View, Camp View, and Skraeling sites; 36 — Kapuivik and Jens Munk sites; 37 — Kaleruserk-Parry Hill; 38 — Mittimatalik; 39 — LdFa-I; 40 — Mosquito Ridge; 41 — Shaymarc; 42 — Annawak; 43 — Closure; 44 — Saglek Bay; 45 — Tuapassuit; 46 — Nipisate site; 47 — Tupersui; 48 — Qeqertasussuk 12, 13, and 14, Saqqaq, Sermermiut, and Niivertussanguaq sites; 49 — Qajaa; 50 — Nuussuaq; 51 — Pearylandville, Midternaes, and Deltaterrasserne sites (map by S. Slobodin)

retouch. Canadian Arctic and Greenland could not have been inhabited before 5000 years ago due to severe paleographic conditions of the area¹⁰.

Northeast Asian Neolithic

The development of the Neolithic Northeast Asian cultures took place parallel to the cultural processes of the nearby territories.

Powerful cultural impulses coming from large cultural centers, such as the Baikal Region, Transbaikalia, and the Amur region, towards Northeast Asia through Yakutia, gave rise to the fundamental new technological, cultural and, it seems, ethnic elements which eventually determined the changes of cultural traditions in Northeast Asia and led to the formation of unique northern ethnic groups (Fig. 1).

Approximately 5000–6000 years ago, during the early and middle Neolithic of Northeast Asia (Kolyma and Chukotka) and Taymyr Peninsula, cultural traditions from Yakutia and the Far East shaped the formation of new cultures, whose toolkit includes microblades, sometimes retouched along one or both edges; conical, prismatic and flattened microblade cores; small flat lanceolate and triangular arrow points; dihedral, angle and multifaceted burins; beak-like burin spalls; small end and side scrapers on flakes and blades; various side blades; awls; and rarely, pottery and adzes with polished edges¹¹.

Early Neolithic

At this point, the early Neolithic in Kolyma and Chukotka are poorly studied. Its origins are associated with the spread of the Yakutian Syalakh culture from the Lena River valley around 6000 years ago. Only a few sites dating to that period are known, which probably reflects the complicated environmental and cultural changes taking place in Northeast Asia at the time. Nevertheless, the available material shows that during the early Neolithic people spread to Kolyma and Chukotka all the way to the Bering Strait.

Early Neolithic materials include small bipointed end blades, points made on flakes and blade-like flakes, oval bifacial knives, multifaceted burins, microblade inserts, ground knives, rectangular ground adzes, corner burins on blades, awls, endscrapers, beak-like burin spalls, bone harpoon tips, and net-stamp pottery¹².

In the Upper Kolyma, early Neolithic materials were discovered at the Mamontai I site (Mamontai Lake in the Chersky Range), where a dwelling and an activity area (3.5–4 m in diameter), surrounded by stones, were examined. The tools here include blades, scrapers on blade-like flakes, prismatic cores, retouched microblades, lanceolate projectile points, knives with an asymmetric base, and a multifaceted burin.

¹⁰ Dyke A.S. An outline of North American deglaciation with emphasis on central and northern Canada // *Quaternary Glaciations, Extent and Chronology*. Amsterdam. Vol. 2b, 2004. P. 373–425.

¹¹ Dikov N.N. Early Cultures of Northeastern Asia; *Kiryak M.A.* Arkheologiya zapadnoi Chukotki. Moscow, 1993; *Slobodin S.* The Upper Kolyma and Continental Priokhot'e during the Neolithic and Early Metal Periods. Anchorage, 2015; *Khlobystin L.P.* The archaeology of Northernmost Eurasia. Washington, 2005.

¹² *Mochanov Yu.A.* Mnogosloinaia stoianka Bel'kachi I i periodizatsiia kamennogo veka Iakutii. Moscow, 1969; *Mochanov Yu.A., Fedoseeva S.A.* Main Periods in the Ancient History of North East Asia // *Beringia in the Cenozoic Era*. Rotterdam, 1986. P. 669–693; *Pitulko V.V.* Holocene stone age of Northeastern Asia // *Encyclopedia of Prehistory*. Vol. 2. Arctic and Subarctic. Boston, 2001. P. 46–58.

In West Chukotka, evidence of the early Neolithic can be seen at Bolshoy Nuteneut II (locale 3), dated to 6000 — 5000 years ago. Researchers found an oval above-ground dwelling (3.5 m in diameter), like a tent, with stones around the perimeter (to hold down the skins) and a hearth with a bone accumulation in the center. Around the hearth, there are fragments of net-marked pottery, prismatic cores, microblades, rectangular (in shape and cross-section) ground adze, endscrapers, and asymmetrical lanceolate bifaces¹³.

In Central Chukotka, along the Anadyr River, middle Neolithic materials (obsidian microblades, a prismatic core, adzes, scrapers, inserts, projectiles, and net-marked ceramics) were found “among the earliest remains of the Ust’-Belaia site at Burial Mound 14 and outside the burial complexes of Burial Mound 15” dated to 3000 years BC¹⁴.

On the Chukotka Peninsula, near the Bering Strait, early Neolithic sites include Koolen’ III (lowest level), Getlyanen I and Naulyngytyn I, located on the river and lake shores¹⁵. The toolkit included conical and prismatic cores, retouched microblades, bifacially flaked knives and projectile points, and endscrapers on flakes; ceramics were absent. Radiocarbon date of 5700 ± 300 BP (MAG-717) was obtained from the Koolen’ III site. The small number of sites does not allow, for now, to determine the exact character and timing of the early Neolithic cultures in Central and East Chukotka, but they were undoubtedly present.

Judging from the small number of sites, this was not the most plentiful period for Northeast Asia, but the early Neolithic population explored the continental regions of Kolyma and reached the Chukotka Peninsula and the Bering Strait. The archaeological record shows that these were small groups of nomadic reindeer (tundra) and moose (taiga) hunters with a compact toolkit of relatively small implements, which included microblade cores, microblades, composite bone tools, arrow and spear points, knives, scrapers, and burins. They used clay pottery to prepare and store food. Their sites were located along the shores of large rivers and lakes with fish, indicating that they were fishers in addition to hunting. They lived in light portable dwellings, similar to tents, covered with animal skins held down by stones.

Middle Neolithic

The middle Neolithic sites in Northeast Asia and Taymyr Peninsula, are more common than the early Neolithic sites, but are distributed unevenly. They are associated with the formation of the Belkachi culture in Yakutia at the end of the 4th millennium BC. This process, compared to the early Neolithic, was more “explosive” in nature; the accumulated energy allowed the culture to cross the Bering Strait and reach Alaska. The same period in Yakutia is characterized by several fundamental single-component complexes with tools, ceramics, and radiocarbon dates¹⁶. Researchers suggest that middle Neolithic populations reached Northern Far East and Taymyr Peninsula around the 3^d millennium BC (Fig. 1).

Middle Neolithic materials from the sites in the Lena River Valley are identified by the presence of cord-ornament ceramics and such characteristic stone tool types as con-

¹³ Kiryak M. A. *Arkheologiya zapadnoi Chukotki*.

¹⁴ Dikov N. N. *Early Cultures of Northeastern Asia*. P. 204.

¹⁵ Dikov N. N. *Asia at the Juncture with America in Antiquity*. Anchorage, 1997. P. 73.

¹⁶ Mochanov Yu. A., Fedoseeva S. A. *Main Periods in the Ancient History of North East Asia*. P. 669–693; Khlobystin L. P. *The archaeology of Northernmost Eurasia*.

ical and prismatic cores, microblades, bifacially worked flat sub-triangular arrow points with an extended base tip, bipointed end blades, beak-like tools, ground stepped adzes, axes with “ears,” endscrapers on flakes and blades, multifaceted burins, burin spalls, leaf-shaped biface knives, corner burins on flakes and blades, and retouched blade insets. The primary cleavage technique continued to rely on conical and prismatic cores and blades removed from them.

Researchers have also identified specific implements characteristic of the Middle Neolithic in the Kolyma region and Chukotka: stemmed points on blade-like flakes, rhomboid bifacial points, burins on blades, pendant disks, and others¹⁷.

There are several Middle Neolithic sites (Buolumana-Taasa and Belaya Gora) on the lower Indigirka, east of the Verkhoyanskiy Range, contain fragments of cord-ornament ceramic, triangular points with a pointed base, and beak-like implements¹⁸.

Further east, in the Lower and Middle Kolyma there are sites (Kamenka I; Labuya III; Kigilyakh I, III, IV, VI; Pomazkino II–IV, Panteleyikha I, II, IV, Slezovka, Kamenniy Cape, Frolovskaya IV, Stadukhinskaya I, Rodinka I, II, V, etc.) with cord ceramics and microblades, rectangular flat adzes, rhomboid points, retouched microblade insets, triangular (sometimes with an asymmetrical pointed base) and bipointed end blades, stemmed endscrapers and knives on blades, angle burins on microblades, multifaceted burins on flakes, etc.¹⁹

The burial at the Rodinka II site, dated to 3600 ± 60 (GIN-5594), is also classified as Belkachi culture²⁰. The burial goods, according to Kistenev, include such characteristically Belkachi tools, as bipointed end blades, ground adzes with a convex long-axis profile, microblades, and bone artifacts with designs similar to the ornaments on the Belkachi ceramics.

Moving towards the Upper Kolyma region, it is possible to confirm the presence of the Middle Neolithic populations in the Chersky Range, on the alpine lakes Ui and Mamontai, at the sites Mamontai I–VI, Perevalnaya XI, Pridorojnaya, Ui (L. 2)²¹. Technologically and typologically, ground adzes, rectangular in cross-section, awl and burins (dihedral and angle) on microblades, a multifaceted burin, a conical core, a pendant, and triangular points with a pointed stem are classified as Middle Neolithic (Figs 2, 3). The Pridorojnaya site's cultural level yielded a C-14 date of 5300 ± 150 (Le-3897), corresponding to the earliest Middle Neolithic of this region and confirming the typological analogies to the Yakutia artifacts. Also, a Middle Neolithic complex is represented by single-component sites along the Kolyma River. At Agrobaza IV, located on a tall river terrace, material is found in situ in an area around 50 m², approximately 1 m deep, in a sandy deposit under the cultural level dating to the Early Metal period. Around a hearth, formed with small cob-

¹⁷ Dikov N. N. Early Cultures of Northeastern Asia; Kashin V. A. Neolit Srednei Kolymy: sbornik trudov. Novosibirsk, 2013; Slobodin S. The Upper Kolyma and Continental Priokhot'e during the Neolithic and Early Metal Periods.

¹⁸ Everstov S. I. Novye arkheologicheskie pamiatniki Indigirki i Alazei // Novoe v arkheologii Yakutii. Yakutsk, 1980. P. 66–74.

¹⁹ Kashin V. A. Neolit Srednei Kolymy: sbornik trudov; Kistenev S. P. Kamenniy vek basseina Nizhnei Kolymy. Avtoref. dis. ... kand. ist. nauk. Yakutsk, 1990.

²⁰ Kistenev S. P. Novye arkheologicheskie pamiatniki v basseine Kolymy // Novoe v arkheologii Yakutii. Yakutsk, 1980. P. 74–87.

²¹ Slobodin S. The Upper Kolyma and Continental Priokhot'e during the Neolithic and Early Metal Periods.

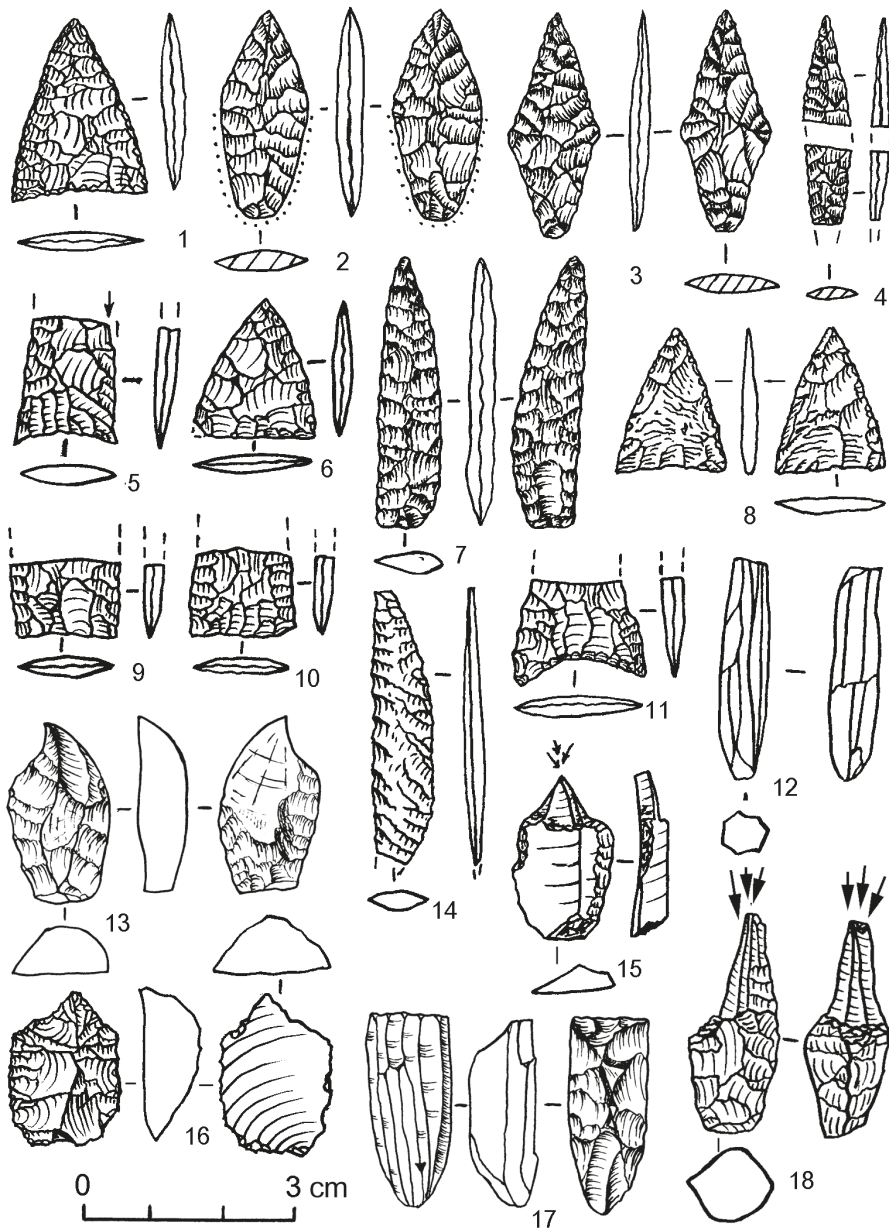


Fig. 2. Stone tools assemblage of the Middle Neolithic Kolyma sites (1-18):

1-6, 8-11 — points; 7, 14 — side inserts; 12, 17 — microblade cores; 15, 16 — graters; 13, 18 — burins (created by S. Slobodin)

bles, there were fragments of corded ceramics, prismatic microblade cores, microblades and small stone tools. The toolkit included small rhomboid arrow points, bipoined end blades (some with a rounded base); multifaceted and angle burins on blades; endscrapers on microblades and flakes; knives and small insets on retouched microblades; beak-like multi-purpose tools (burin-scrappers) and a net weight. The tools are 3-3.5 cm long.

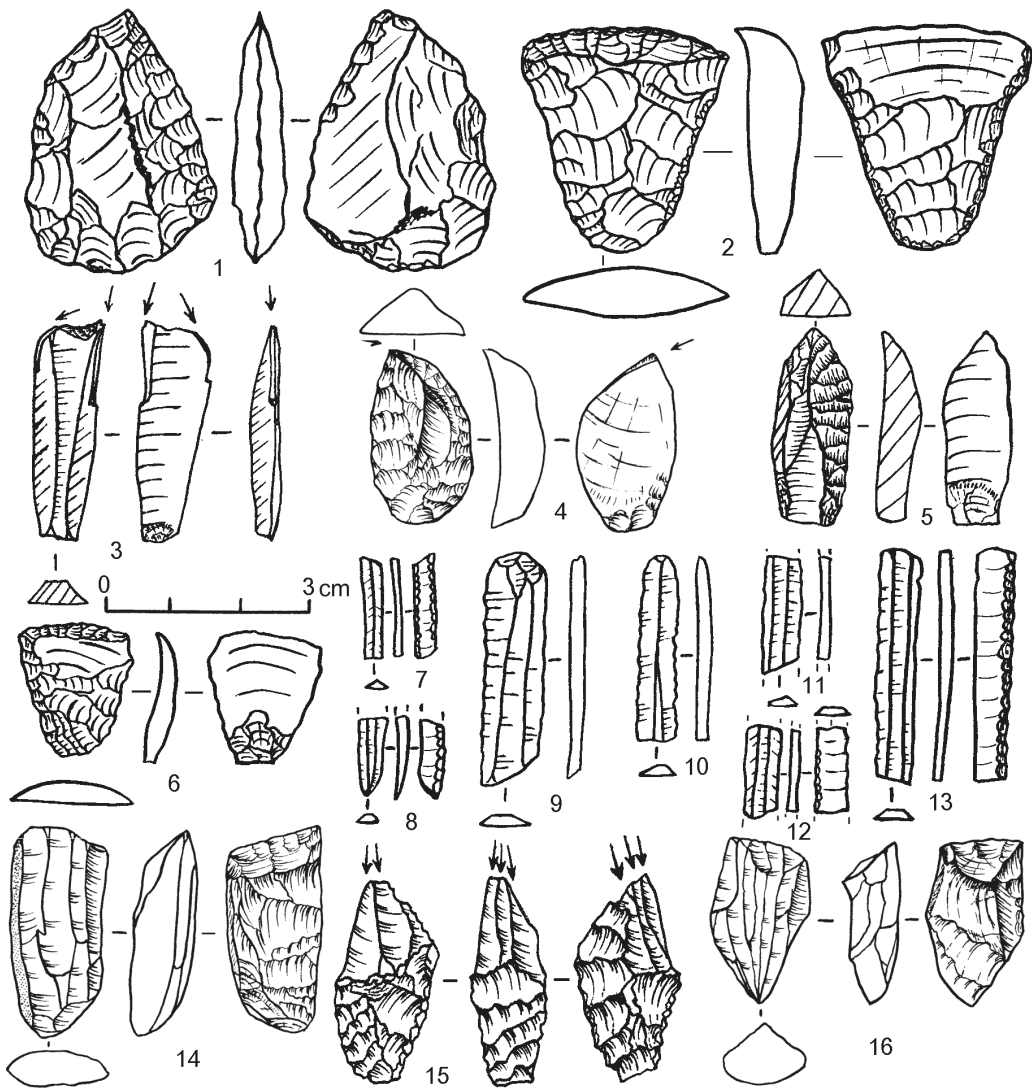


Fig. 3. Stone tools assemblage of the Middle Neolithic Kolyma sites (1-16):

1 — biface; 2, 6 — scrapers; 3 — corner burin; 4, 5 — graters; 7-13 — microblades; 14, 16 — microblade cores; 15 — multifaceted burin (created by S. Slobodin)

Charcoal from the hearth was AMS dated to 4790 ± 50 (Beta-140689). The lack of any complex dwelling structures indicates that the Neolithic population was using light above-ground tents with a wooden pole frame and a skin covering, similar to the ones used by the local Even reindeer hunters to this day.

This complex is complemented by tools from the sites Nemichan and Migai, such as small leaf-shaped and triangular arrow points (some are notched and have a pointed stem); endscrapers on flakes with dorsal retouch, and on a blade with an angled working edge; conical and prismatic cores, dihedral, angle and multifaceted burins, burins on microblades, bifacially retouched oval, a ground/polished implement (see Figs 1, 2).

The raw materials include local chert, quartz crystal, and obsidian from Chukotka. Decorations consist of round flat disks-pendants. A charred bone from Migai was dated to 4470 ± 25 and 4190 ± 30 (UGAMS 20282-83).

The archaeological record of the Okhotsk-Kolyma uplands alpine tundra and woodlands indicates that the area was actively inhabited²². The geographic conditions of the uplands determined the characteristics of the deep-rooted hunting specialization of the tribes living here. Reindeer were the main prey species. Since there were no large rivers that would be obstacles for migrating reindeer herds, a different hunting technique developed here compared to that practiced by the Chukotka and Yakutia Neolithic hunters, who would dispatch reindeer at river crossings or moose in taiga²³.

Despite the major role played by hunting, it does not appear to have been the only subsistence activity of the Neolithic population of Okhotsk-Kolyma uplands. Shallow headwaters of the Okhotsk watershed rivers, where chum and pink salmon migrate up to spawn, were more convenient places to fish than the river mouths since it was easier to dam the shallow stream and fish with a leister or create traps, as the local population does to this day.

The collections from sites of this region (Khurendzha-II, III, V, VI, VIII, Neel-Ustye, Kheta (upper level), Neel II, IV, Urtychuk II, III, IX, X, Elikchan Lake, and Burlakich) include prismatic, conical, and flattened cores; microblades, microblade insets retouched along one or both edges; awls on microblades and flakes; arrow points — stemmed on trilateral blade and flat triangular with straight and notched base, bifacially flaked oval and slightly pointed or subrectangular knives; large bifacial knives and spear points, truncated-lanceolate in shape; end and side scrapers of flakes, partially or fully retouched; multifaceted, dihedral burins on blades with retouched edges, and angle burins on blades; burins on microblades, beak-like burins on flakes; and a small polished adze.

Technologically and typologically, the sites in Okhotsk-Kolyma Uplands share many common traits with the Middle Neolithic cultures of Yakutia and Chukotka, but also exhibit significant originality in the types of implements. A striking feature here is the presence of flat oval ground pendants with a hole and disks up to 4 cm in diameter with a hole in the center made from white agalmatolite.

The timing of existence of the Khurendzha complex on the Okhotsk-Kolyma uplands is dated with assays from Khurendzha VIII — 5210 ± 170 (LE-3901), Khurendzha V — 4530 ± 150 (MAG-1261), and Neel-Ustye — 4150 ± 120 (LE-3988), 4220 ± 100 (LE-4653), 4880 ± 170 (LE-4654), 4970 ± 70 (Beta-140692). Thus, the Khurendzha complex had been developing from the end of the 4th to the end of the 3rd millennium BC, during the Middle Neolithic of Yakutia and Chukotka, and as such could very well have been an ASTt ancestor.

One more representative complex of chert tools, including microblades, primary spalls, beak-like burin spalls, multifaceted burins and cores, similar to the ASTt ones, was found in the Upper Kolyma region, at the Ust-Tenkeli site. The cores have one platform; the face of the core, from which microblades were removed, is located on one of the wide surfaces. The platform is tilted back significantly. The cores are 2.4 to 3.1 cm tall, 1.1 to

²² *Slobodin S.* The Upper Kolyma and Continental Priokhot'e during the Neolithic and Early Metal Periods.

²³ *Okladnikov A. P., Mazin L. I.* Pisanitsy basseina reki Aldan. Novosibirsk, 1979; *Dikov N. N.* Early Cultures of Northeastern Asia.

2 cm wide, 0.6 to 1.4 cm thick. One of the cores is made of quartz crystal. The complex may have been older than the Middle Neolithic, but similarities between it and ASTt in the core manufacturing technique are obvious.

In the middle Neolithic of the Northern Okhotsk Sea coast we see a more widespread, compared to the Early Holocene²⁴, entry of the hunters from the interior into the coastal areas of the Okhotsk Sea. This evidence is so far scarce.

A collection of microblades and triangular points was obtained from Kukhtuy I and III sites at the mouth of the Kukhtuy River on the Okhotsk coast²⁵. Excavations at Kukhtuy III exposed a Neolithic level, containing charcoal C14 dated to 4700 ± 100 (Le-995). This indicates the earliest evidence of a maritime adaptation in the Neolithic populations of the Okhotsk Sea coast.

Other evidence of continental tribes' entry onto the Northern Okhotsk Sea coast is known from the sites Malkachan 1–4, Iretskaya (Yama Bay coast in the Shelikhov Gulf), Oksa V, Vesolaya VII, Dukcha, Alevina, Kolchakovskaya (Tauy Bay) and Gizhiga²⁶. There, researchers have found microblades, prismatic microcores, dihedral and multifaceted burins, small triangular points, and a preform of a rectangular in cross-section adze. These artifacts have much in common with the Middle Neolithic tools from the Okhotsk-Kolyma Uplands.

The route of the continental hunters towards the Okhotsk Sea coast was along river valleys, as exemplified by the site Ola I, located 50 km away from the coast, in the Ola River valley. The site, located on a massive remnant of the bedrock at the mouth of a large tributary, with a great view of a large portion of the valley floor, contained microblades (some of them retouched along the edges) and small slightly notched triangular points²⁷.

Neolithic materials from the Okhotsk-Kolyma highlands and the continental Priokhot'e region are important in the discussion of the origins of maritime cultures of the Northern Priokhot'e. Without doubt, continental tribes, which reached the Okhotsk coast in antiquity and explored the coastal ecosystems, played an important role in this process. Since the end of the first millennium BC in the Northern Priokhot'e region, the non-microblade Tokareva maritime culture had formed. The interaction between continental cultures with the developing maritime cultures in Priokhot'e and Chukotka remains unclear due to the scarcity of Neolithic sites in coastal areas.

The Middle Neolithic of the Kolyma region is characterized by the emergence of new tools, but at the same time many elements of the Early Neolithic material culture were preserved. Obtaining microblades from prismatic cores remained a widely used technique; scrapers, burins and blade inserts continued to be used, but their percentage in the toolkit gradually decreases to 10–11% of all finds. The stability of the types in the stone toolkit indicates that the subsistence style of the ancient Kolyma inhabitants did not differ significantly from the style shaped by the new environmental conditions in the Early Neolithic. Hunting remained the main subsistence activity of the population, as evidenced by the arrow points and environmental conditions of the sites, with a smaller role played by fish-

²⁴ Slobodin S. B., Anderson P. M., Glushkova O. Yu., Lozhkin A. V. Western Beringia. P. 239–298.

²⁵ Mochanov Yu. A. Drevneishie etapy zaseleniia chelovekom Severo-Vostochnoi Azii. Novosibirsk, 1977. P. 87.

²⁶ Slobodin S. The Upper Kolyma and Continental Priokhot'e during the Neolithic and Early Metal Periods. P. 9, 27–32.

²⁷ Ibid.

ing and small animal trapping. According to ethnographic data, the native people from Kolyma practiced hare hunting on a great scale (more than 12,000 animals per winter) in the recent past²⁸.

During this time, the Kolyma inhabitants had developed regional networks for raw material trading, as evidenced by their use of obsidian from Krasnoye Lake (Chukotka)²⁹.

In West Chukotka, Middle Neolithic material found at Yagodnaya site and Cape Sinitsina on Malyy Anuy River included retouched microblades, stemmed points on microblades, bifacially flaked lanceolate projectile points, dihedral and multifaceted burins, scrapers, and cord ceramics³⁰. At the Yagodnaya site, artifacts were accompanied by small fragments of reindeer bone.

The following spread of the Middle Neolithic to the Central Chukotka is observed in the Ust-Belskiy burial materials, at Anadyr River, although in general the site dates to the Late Neolithic³¹. First of all, these are: a stepped adze from burial 11, typical of the Belkachi culture in Yakutia³², as well as flat triangular points with asymmetric base and flattened prismatic cores, which are also present in the Middle Neolithic sites of the Kolyma region³³.

The large number of microblades in the burial, which is not characteristic of the Late Neolithic Northeast Asian cultures, led Dikov to distinguish two components, early and late, in the Ust-Belskaya culture. To date the lower boundary of the early Ust-Belskaya culture complex to the beginning of the 2nd millennium BC, Dikov³⁴ relied on these Middle Neolithic finds, although, based on the presence of cord impressions ceramics³⁵, they could be dated to the 3rd millennium BC. The same ceramic was found at the Kameshki and Chikayevo sites on the Anadyr River, where it was associated with cores and microblades³⁶. In the Ust-Belskiy burial, there are also ground burins³⁷, similar to the burins found in ASTt of Alaska³⁸ and Eastern Arctic³⁹. Thus, we should distinguish a Middle Neolithic complex of tools and ceramics (including some material from Ust-Belaya, Chikayevo and Kameshki sites) in the Anadyr River Valley. Dikov's note⁴⁰ regarding the

²⁸ *Khersonskiy S.O. Zverinykh promyslakh v Okhotskoi okruge Primorskogo Kraia // Zapiski Amurskogo otdela RGO. Khabarovsk, 1898. Vol. IV, no. I. P. 1–26.*

²⁹ *Yoshitany A., Slobodin S., Tomoda T., Vorobey I. E., Yano T. Studies on the obsidian fragments from the Late Palaeo-, Meso- and Neolithic Sites in the Northeastern Part of Far East of Russia // Memoir of The Museum of Archaeology of Kokugakuin Univ. Shibuta, Tokyo, 2013. No. 29. P. 1–21.*

³⁰ *Kiryak M. A. Arkheologiya zapadnoi Chukotki.*

³¹ *Dikov N. N. Early Cultures of Northeastern Asia.*

³² *Mochanov Yu. A. Mnogosloinaia stoianka Bel'kachi I i periodizatsiia kamennogo veka Iakutii.*

³³ *Slobodin S. The Upper Kolyma and Continental Priokhoťe during the Neolithic and Early Metal Periods; Kashin V. A. Neolit Srednei Kolymy: sbornik trudov.*

³⁴ *Dikov N. N. Early Cultures of Northeastern Asia. P. 113.*

³⁵ *Dikov N. N. Archaeological Sites of Kamchatka, Chukotka, and the Upper Kolyma. Anchorage, 2003. Plate 100.*

³⁶ *Ibid. Plate 95–98.*

³⁷ *Ibid. Plate 98 (17).*

³⁸ *Giddings J. L. The archeology of Cape Denbigh. Providence, 1964. P. 237; Anderson D. D. The Denbigh Flint Complex in Northwest Alaska: A Spatial Analysis // Alaska Journal of Anthropology. 2005. Vol. 3, no. 2. P. 90;*

³⁹ *Sorensen M. Technology and tradition in the Eastern Arctic, 2500 BC–AD 1200: a dynamic technological investigation of lithic assemblages from the Palaeo-Eskimo traditions of Greenland. Copenhagen, 2012.*

⁴⁰ *Dikov N. N. Early Cultures of Northeastern Asia. P. 104.*

spread of the cord ceramics into the Anadyr River Basin indicates that he was also inclined to support this model.

On the Chukchi Peninsula, Dikov identified as Middle Neolithic such sites as Naulyn-gygyyn II and III, Igelkhveyem VIII, XV, and XIV, Tymkyrylen I and II, Tyerkemkyn and others containing ceramics, microblades, and prismatic and conical cores⁴¹. A radiocarbon sample from Terkemkyn dates the site to 4580 ± 40 BP (LE-2661)⁴².

The material discussed here provide evidence for the development of a powerful cultural formation with a high potential in Northeast Asia at the end of the Atlantic and the beginning of the Subboreal periods of the Holocene (its warm phase at 6000–5000 BP). The center of this formation's origin was Yakutia, where at the time the Belkachi Middle Neolithic culture existed. Its local variants spread to the east of the Verkhoyanskiy Range.

Technologically, inhabitants of that time used a sophisticated microblade and inset technology, had a mobile toolkit, which included a wide range of various small chert and bone tools, and demonstrated a high level of adaptability and survival in the harsh Arctic conditions. They explored all types of landscapes, including coastal regions of the Okhotsk Sea. They possessed energy sufficient to transmit a strong cultural signal (most likely by way of direct migration) through the Bering Strait to Alaska, where they gave rise to the Arctic Small Tool tradition, which later spread through the entire American Arctic.

ASTt in Alaska

Many researchers posit that the Neolithic traditions of Kolyma and Chukotka spread into Alaska and North Canada around 5000 years ago, where they gave rise to the Arctic Small Tool tradition⁴³. Genetic data also point to Asian origins of the ancient inhabitants of Arctic Alaska, Canada and Greenland⁴⁴.

Originally, ASTt material was distinguished as the Denbigh Flint Complex (culture; DFC) by J. L. Giddings in 1948 when he was studying a specialized tool complex found in the lowest culture-bearing sediments at Iyatayet, on Cape Denbigh in the Norton Sound (Northwest Alaska)⁴⁵. In a thin, intermittent cultural layer, covered with the ceramics and other artifacts from the 2500-year-old Norton culture, he found a complex consisting of only stone tools, noticeably small in size (on average, 4 cm long), meticulously covered by tiny, uniform, parallel or oblique-parallel pressure flaking. The toolkit included microcores, microblades, unihedral and polyhedral burins, flake knives (beak-like), graters with polished blades, flat bifacially flaked triangular and leaf-shaped projectile points for arrows, darts and harpoons, asymmetrical lanceolate insets, end scrapers on flakes, and others.

⁴¹ Dikov N. N. Asia at the Juncture with America in Antiquity. P. 33–83.

⁴² Ibid. P. 38–40.

⁴³ Powers W. R., Jordan R. H. Human biogeography and climate change in Siberia and Arctic North America in the fourth and fifth millennia BP // Philosophical Transactions of Royal Society of London. Series A, Mathematical and Physical Sciences. 1990. Vol. 330, no. 1615. P. 665–670; Hoffecker J. F. A Prehistory of the north: human settlement of the higher latitudes. New Brunswick, NJ, 2005. P. 125–129; Mochanov Yu. A. Mnogosloinaia stoiianka Bel'kachi I i periodizatsiia kamennogo veka Iakutii; Dumond D. E. The Eskimo and Aleuts; McGhee R. Ancient People of the Arctic. Vancouver, 1996.

⁴⁴ Raghavan M., DeGiorgio M., Albrechtsen A. et al. The Genetic Prehistory of the New World Arctic // Science. 2014. No. 345, iss. 6200. P. 1255832; Rasmussen M. et al. Ancient human genome sequence of an extinct Palaeo-Eskimo // Nature, 2010. Vol. 463. P. 757–762.

⁴⁵ Giddings J. L. The archeology of Cape Denbigh. P. 191–270.

No bone tools were found at the site, but their use was indirectly indicated by the stone tools, which were mostly insets to be used in bone tools. In addition, the site was located near the sea, and the discovery of small seal bones in the same layer as the tools suggested that the inhabitants had the harpoon technology and hunted marine mammals. Small flat triangular points were identified as harpoon end-blades⁴⁶. Large numbers of smaller lanceolate projectile points at ASTt sites implies that these hunters used bow-and-arrow technology⁴⁷.

The history of dating the DFC is a complicated one. Based on the Iyatayet stratigraphy and the artifact provenance, Beringia geologist D. Hopkins and Giddings suggested, in their book, that the complex could be 8500–12,000 years old⁴⁸. They had technological and typological basis to think so: Denbigh microblades and wedge cores were compared to the Campus site materials, which were dated to the Late Pleistocene — early Holocene⁴⁹, while the microcores of Greenland's Suqqaq complexes and ASTt cores from the Matcharak Lake site are even today described as “wedge-shaped,” manufactured using the Yubetshu and Horoko techniques⁵⁰.

When the C-14 results showed that Denbigh is no more than 4000–5000 years old⁵¹, Hopkins and Giddings tried to correct this information in the book, but were told that the book was already in press and the text could not be changed (D. Hopkins, pers. comm., 1999). Nonetheless, Giddings did not immediately accept the radiocarbon dates he obtained pointing out that the real age of the Denbigh complex had not yet been established⁵² and drawing parallels between the Denbigh microblades and the Trail Creek Complex dated to around 6000 ¹⁴C years⁵³, although the association of this date with the artifacts is doubtful⁵⁴. Hopkins, based on the C-14 dates, believed that «...the age of DFC is more than 4200 and less than 5000 years»⁵⁵. In reality, as we now know, Denbigh Flint complex is even younger.

Ten years after the DFC was discovered at Iyatayet, in the late 1950s, W. Irving noted typological similarities between the sites in the Brooks Range (Imaigenik) and the south side of the Alaskan Range (Susitna River valley) with the characteristic Denbigh toolkit items, and combined these sites into the Arctic Small Tool tradition (ASTt)⁵⁶. Irving em-

⁴⁶ Giddings J. L. The archeology of Cape Denbigh. P. 233.

⁴⁷ Ibid. P. 232.

⁴⁸ Hopkins D. M., Giddings J. L. Geological background of the Iyatayet archaeological Site, Cape Denbigh, Alaska // Smithsonian Miscellaneous Collection. Vol. 121, no. 11. Washington D. C., 1953. P. 29.

⁴⁹ Giddings J. L. The archeology of Cape Denbigh. P. 203, 206; Nelson N. C. Notes on cultural relations between Asia and America // American Antiquity. 1937. Vol. 2, no. 2. P. 267–272.

⁵⁰ Tremayne A. H. The Design of Arctic Small Tool Tradition Toolkits: An Example from Matcharak Lake, Alaska // North American Archaeologist. 2015. Vol. 36. P. 1–31; Sorensen M. Technology and tradition in the Eastern Arctic, 2500 BC–AD 1200. P. 120.

⁵¹ Giddings J. L. The archeology of Cape Denbigh. P. 244–250.

⁵² Giddings J. L. The Denbigh Flint Complex is Not Yet Dated // American Antiquity. 1955. Vol. 20, no. 4. P. 375–376.

⁵³ Giddings J. L. The archeology of Cape Denbigh. P. 252, 270.

⁵⁴ Larsen H. Trail Creek: Final Report on the Excavation of Two Caves on Seward Peninsula, Alaska // Acta Arctica. Vol. XV. Copenhagen, 1968. P. 71; Slaughter D. C. Radiocarbon dating the Arctic Small Tool tradition in Alaska // Alaska Journal of Anthropology. 2005. Vol. 3, no. 2. P. 117–134.

⁵⁵ Giddings J. L. The archeology of Cape Denbigh. P. 248.

⁵⁶ Irving W. N.: 1) Evidence of early tundra cultures in northern Alaska // Anthropological Papers of the University of Alaska. 1953. Vol. 1, no. 2. P. 55–85; 2) An archaeological survey of the Susitna Valley // Anthropological Papers University of the Alaska. 1957. Vol. 6, no. 1. P. 37–52.

phasized that the ASTt name signaled a difference between the Northern Alaskan sites of the Denbigh complex from the microblade complexes of the Northern Microblade Tradition (Campus and Pointed Mountain)⁵⁷ in the taiga zones of the Central and Southern Alaska and Yukon⁵⁸.

At the same time, in the Canadian Arctic and Greenland, researchers examined a number of sites, grouped into Independence I, Pre-Dorset, Saqqaq cultures, which revealed typologico-technological and chronological similarities with the Alaskan sites⁵⁹.

Irving finished formulating the idea of the ASTt tradition and culture in 1962 after excavating the Punyik Point site (Etivlik Lake) in the central Brooks Range, where he found a typical Denbigh toolkit. He noticed similarities between the tool complexes in the sites in Northern Alaska, Northern Canada and Greenland dating to 4500–2500 years ago and included them into the ASTt⁶⁰. He noted that “no single trait is known with certainty to be peculiar to this tradition”⁶¹. Such defining characteristics were determined later⁶². Observing that all ASTt sites were located above the tree line in the Arctic (except those in the Susitna River Valley and Alaska Peninsula), he emphasized the differences between coastal and inland sites, where the main prey focus was different (marine mammals vs. reindeer)⁶³. Like Giddings, he thought that ASTt may have been as old as 6000 years⁶⁴.

Archaeologists started actively using the term ASTt, defined by Irving⁶⁵, for materials similar to the Denbigh Complex, dating to 2000–5000 years ago throughout the North American Arctic and even in the more southern regions, down to the Alaska Peninsula and the Aleutians⁶⁶.

As early as 1959, MacNeish⁶⁷ included ASTt in the list of ten traditions (cultures) that he distinguished in the Yukon, remarking that the Northern Microblade tradition overlaps with ASTt, many sites of which stretched “from the Seward Peninsula in western

⁵⁷ MacNeish R.S.: 1) Pointed Mountain Site near Fort Liard, Northwest Territories, Canada // *American Antiquity*. 1953. Vol. 19, no. 3. P.234–253; 2) The Engigstciak Site on the Yukon Arctic Coast // *Anthropological Papers of the University of Alaska*. 1956. Vol. 4, no. 2. P.91–111.

⁵⁸ Irving W.N. An archaeological survey of the Susitna Valley. P.47.

⁵⁹ Giddings J.L. A Flint Site in Northernmost Manitoba // *American Antiquity*. 1956. Vol. 11, no. 3. P.255–268; Harp E. Jr. Prehistory in the Dismal Lake area, N.W.T., Canada // *Arctic*. 1958. Vol.1, no.4. P.219–249; Knuth E. The Paleo-Eskimo Culture of Northeast Greenland Elucidated by Three New Sites // *American Antiquity*. 1954. Vol.19, no.4. P.367–381; Maxwell M.S. *Prehistory of the Eastern Arctic*. Orlando, 1985.

⁶⁰ Irving W.N. A provisional comparison of some Alaskan and Asian stone industries // *Prehistoric cultural relations between the Arctic and temperate zone of North America*. Arctic Institute of N. America. Technical paper. No.11. 1962. P.55–68.

⁶¹ *Ibid.* P.56.

⁶² Dumond D.E. The Eskimo and Aleuts; Anderson D.D. Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska // *Anthropological Papers University of the Alaska*. 1988. Vol. 22, no. 1–2. P.1–163.

⁶³ Irving W.N. A provisional comparison of some Alaskan and Asian stone industries. P.56.

⁶⁴ *Ibid.* P.57.

⁶⁵ Irving W.N. An archaeological survey of the Susitna Valley. P.37–52.

⁶⁶ Dumond D.E.: 1) The Eskimo and Aleuts; 2) Western Arctic Small Tool // *Encyclopedia of Prehistory*. Vol. 2. Arctic and Subarctic. Boston, 2001. P.213–224; Helmer J.W. Arctic Small Tool Tradition // *Archaeology of Prehistoric Native America*. New York; London, 1998. P.28–31; Odess D. The Arctic Small Tool Tradition // *Encyclopedia of the Arctic*. Routledge; New York, 2005. P.146–147.

⁶⁷ MacNeish R.S. Men out of Asia: as seen from the Northwest Yukon // *Anthropological Papers University of the Alaska*. 1959. Vol. 7, no. 2. P.41–70.

Alaska to the Independence culture in Greenland”⁶⁸. He identified Engigstciak and Firth River complexes as ASTt and combined them into the New Mountain phase⁶⁹. Griffin, who studied Arctic ceramics, stated that the culture of ASTt inhabitants, who adapted to the coastal and tundra areas of the East Arctic “did not penetrate as a complex through the boreal forest zone”⁷⁰. In general, the spread of ASTt from southwestern Alaska to Greenland is accepted⁷¹.

In his summary monograph about the archaeology of Cape Denbigh, Giddings traced general connections of the DFC across Alaska, including the Aleutian Islands (Chaluka site) as well as Canada and Greenland (Independence I) based on the presence of microblades and small retouched tools in the site’s collection⁷². Attempting to solve the question of the Denbigh complex origins, Giddings noted that he “doubt[s] strongly that the DFC is to be derived from any well-known aspect of the Siberian Neolithic...”, but at the same time wrote that the “Mesolithic diffusion out of the Old World appears to have sent Denbigh-like waves along the coasts and northern interior of America”⁷³. Since the Neolithic cultures of Northeast Asia were not well-known, and the research into the Paleolithic was only at its infancy, this was a rather adequate position. Concluding the description of Iyatayat’s DFC, Giddings wrote that “...the microblade and burin technology, as it was practiced in the DFC, spread to Alaska from Asia about 4000 BC”⁷⁴. Similarly to Giddings, Irving did not see any connections between ASTt and the Baikal Region Neolithic cultures and wrote that the Chukotka’s complexes known at the time were “too recent to be considered among its [ASTt] antecedents”⁷⁵.

New Northeast Asian Neolithic material obtained in the 1960s by Mochanov and Dikov, and later by Kiryak, Slobodin, Kashin and others⁷⁶, reveals technical and typological analogies between the ASTt complexes and the Middle and Late Holocene complexes of Yakutia, Chukotka, and Alaska in more detail. This allowed scholars to talk about the spread of Asian Neolithic cultures through the Bering Strait to Alaska and regard them as ancestral to the North American Holocene cultures⁷⁷, although some research-

⁶⁸ *MacNeish R.S.* Recent finds in the Yukon Territory of Canada // Prehistoric cultural relations between the Arctic and temperate zone of North America. AINA, Technical paper No. 11. 1962. P. 25.

⁶⁹ *Ibid.* P. 22; *MacNeish R.S.* The Engigstciak Site on the Yukon Arctic Coast. P. 95–99.

⁷⁰ *Griffin J.B.* A discussion of Prehistoric Similarities and Connections Between the Arctic and Temperate Zones of North America // Prehistoric Cultural Relations Between the Arctic and Temperate Zones of North America. Arctic Institute of N. America. Technical paper No. 11. 1962. P. 159.

⁷¹ *Dumond D.E.* The Eskimo and Aleuts. P. 91.

⁷² *Giddings J.L.* The archeology of Cape Denbigh. P. 252–254.

⁷³ *Ibid.* P. 266.

⁷⁴ *Ibid.* P. 270.

⁷⁵ *Irving W.N.* A provisional comparison of some Alaskan and Asian stone industries. P. 57.

⁷⁶ *Mochanov Yu.A.* Mnogosloinaia stoiianka Bel’kachi I i periodizatsiia kamennogo veka Iakutii; *Dikov N.N.* Early Cultures of Northeastern Asia; *Kiryak M.A.* Arkheologiya zapadnoi Chukotki; *Slobodin S.* The Upper Kolyma and Continental Priokhot’e during the Neolithic and Early Metal Periods; *Kashin V.A.* Neolit Srednei Kolymy: sbornik trudov.

⁷⁷ *Griffin J.B.* A discussion of Prehistoric Similarities and Connections Between the Arctic and Temperate Zones of North America. P. 154–163; *Mochanov Yu.A., Fedoseeva S.A.* Main Periods in the Ancient History of North East Asia. P. 669–693; *Powers W.R., Jordan R.H.* Human biogeography and climate change in Siberia and Arctic North America in the fourth and fifth millennia BP. P. 665–670; *Hoffecker J.F.* A Prehistory of the north: human settlement of the higher latitudes. P. 125–129; *Dikov N.N.* Drevnie kostry Kamchatki i Chukotki. Magadan, 1969. P. 69–72.

ers proposed that ASTt originated from the Paleolithic American Paleoarctic Tradition⁷⁸.

ASTt is at the center of solving the question of development of the maritime adaptation and the formation of the Early Maritime Traditions in northern Alaska since ASTt sites yielded the first evidence of seal hunting⁷⁹. However, the specifics of the marine adaptation of ASTt population are still not known: it could have been either summer rookery hunting or winter (spring) ice hunting, or it could have included open-sea hunting in boats.

The existence of a harpoon complex at the maritime Alaskan ASTt sites is for now hypothesized, based on singular finds of marine animal bones, the typology of the stone tools (end blades), and ethnographic parallels⁸⁰. The possibility of hunting sea animals in their haul-out sites cannot be excluded; such hunting does not require a developed harpoon technology or boats. At the same time, if the Alaskan ASTt cultures originated from Northeast Asian Neolithic cultures, they would have had to cross the Bering Strait, presumably in boats. In addition, data from the East Arctic ASTt sites indicate that a completely developed maritime adaptation (with boats and harpoons) existed by around 4300 years ago, i. e. concurrent with the earliest stages of ASTt⁸¹. This supposes a similar level of maritime adaptation for ASTt in Alaska, which seems to have been the core territory of this culture, taking into account its incredibly fast (almost instantaneous, judging from available radiocarbon dates) spread into the entire Arctic of North America.

Some material from Western Canada is older or contemporaneous with the known North Alaskan sites⁸², although this data needs to be verified. Technological evolution could not have been that fast, especially in such a complicated industry as maritime hunting, which means there was a developmental stage of this maritime culture in the Bering Strait area, which has not been identified yet.

It has also been suggested that the ancestors of the ASTt people, identified as continental Neolithic cultures of reindeer hunters from Northeast Asia, crossed the Bering Strait around 5000 years ago (Middle Holocene) over ice⁸³. Paleocological studies have shown

⁷⁸ *Anderson D. D.* Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska. P.1–163; *Maxwell M. S.* Archaeology of the Arctic and Subarctic Zones // *Annual Review of Anthropology*. 1980. No. 9. P.161–185.

⁷⁹ *Dumond D. E.* Coastal adaptation and cultural change in Alaskan Eskimo prehistory. *Prehistoric Maritime Adaptations of the Circumpolar Zone*. Paris, 1975. P.168–180; *Ackerman R. E.* Early Maritime Traditions in the Bering, Chukchi and East Siberian Seas // *Arctic Anthropology*. 1998. Vol. 35, no. 1. P.247–262; *Giddings J. L., Anderson D. D.* Beach Ridge archeology of Cape Krusenstern. Washington D. C., 1986.

⁸⁰ *Giddings J. L.* The archeology of Cape Denbigh. P.241.

⁸¹ *Gronnow B.* An archaeological reconstruction of Saqqaq bows, darts, harpoons, and lances // *Inuit Studies*. 2012. Vol. 36, no. 1. P.23–48; *Savelle J. M., Dyke A. S.* Variability in Palaeoeskimo Occupation on South-Western Victoria Island, Arctic Canada: Causes and Consequences // *World Archaeology*. 2002. Vol. 33, no. 3, P.508–522; *Moberg T.* New Adaptive Strategies in the Saqqaq Culture of Greenland, c. 1600–1400 bc // *World Archaeology*. 1999. Vol. 30, no. 3. P.452–465; *Maxwell M. S.* Archaeology of the Arctic and Subarctic Zones. P.161–185; *McGhee R.* Paleoeskimo occupations of Central and High Arctic Canada // *Memoirs of the Society for American Archaeology*. 1976. Vol. 31. P.15–39.

⁸² *Savelle J. M., Dyke A. S.* Variability in Palaeoeskimo Occupation on South-Western Victoria Island, Arctic Canada: Causes and Consequences. P.508–522.

⁸³ *Mochanov Yu. A., Fedoseeva S. A.* Main Periods in the Ancient History of North East Asia in the Cenozoic Era. P.669–693; *McGhee R.* Ancient People of the Arctic.

that around 5000–4000 years ago, i. e. by the time ASTt had spread to Alaska, environmental conditions (flora, fauna, and climate) similar to the modern ones were established⁸⁴.

Looking at Alaskan ASTt as a result of Neolithic (mid- to late-Holocene) migration of a population from Northeast Asia, we need to define the timing and available evidence for the formation of maritime adaptation in the Asian section of the Pacific Ocean, where such adaptations are identified starting with mid-Holocene at Primorye (Boysman Site)⁸⁵.

Reliable evidence of a profoundly specialized maritime adaptation on the Asian side of the Bering Strait comes from the Unenen and Chertov Ovrage sites, identified as belonging to the Old Wailing culture and dated to ca. 3300 BP⁸⁶, which is significantly younger than the oldest ASTt sites of Alaska and Greenland. Of course, it is clear that this culture was not a “*tabula rasa*” in terms of its origins. The high level of specialization in maritime subsistence activities at Unenen (hunting whales from boats, harpoon complex, whalebone dwellings) suggests an earlier time for the beginning stages of its formation, approximately 5000–4000 years ago. The stone toolkit of the site bears definite Neolithic traits, pointing to its connection with continental Neolithic cultures of Chukotka. Their emergence on the shores of the Okhotsk, Bering and Chukchi Seas defines the beginning of a maritime adaptation, i. e. a specialized subsistence complex focused on hunting not only terrestrial but also maritime animals. The development of a maritime hunting complex contributed to the emergence of boats and the ability of the ASTt ancestors to cross the Bering Strait, which separates Chukotka and Alaska by no more than 100 km, with islands midway.

Within the entire range of ASTt distribution, researchers currently distinguish **Western ASTt**, in Alaska⁸⁷, and **Eastern ASTt**, in Arctic Canada and Greenland⁸⁸. In addition to certain differences in stone tools between the Western and Eastern ASTt toolkits, one significant feature is the presence in Eastern ASTt materials of many well-preserved bone tools: harpoons, lances, inset projectiles, needles, etc.

Based on ca. 100 C-14 dates⁸⁹, the age of Alaskan ASTt is currently determined to be 4500–2200 years⁹⁰, although many dates need to be verified. The legitimacy of both the oldest (over 4000 years) and the youngest (less than 3000 years) dates is questioned⁹¹.

⁸⁴ Anderson P. M., Brubaker L. B. Vegetation History of Northcentral Alaska: A Mapped Summary of Late-Quaternary Pollen Data // Quaternary Science Reviews. 1994. No. 13. P. 71–92.

⁸⁵ Popov A. N. Burial Assemblages of Boisman-2 — a Stratified Site in Southern Primorye. Archaeology, Ethnology and Anthropology of Eurasia. 2008. Vol. 34, no. 2. P. 68–76.

⁸⁶ Dikov N. N. Early Cultures of Northeastern Asia; Gusev S. V. Raskopki poseleniia Unenen na Vostochnoi Chukotke (drevnekitoboinaia kul'tura) v 2007–2014 gg. // Arkheologiiia Arktiki. 2014. No. 2. P. 205–212.

⁸⁷ Dumond D. E. Western Arctic Small Tool. P. 213–224; Odess D. The Arctic Small Tool Tradition. P. 146–147.

⁸⁸ Park R. Eastern Arctic Small Tool // Encyclopedia of Prehistory. Vol. 2. Arctic and Subarctic. Boston, 2001. P. 27–45; Helmer J. W. Arctic Small Tool Tradition. P. 28–31; Odess D.: 1) An Early Arctic Small Tool Tradition Structure from Northwestern Alaska // Inuit Studies. 2003. Vol. 27, no. 1–2. P. 13–28; 2) The Arctic Small Tool Tradition. P. 146–147; 3) The Arctic Small Tool Tradition Fifty Years On // Alaska Journal of Anthropology. 2005. Vol. 3, no. 2. P. 5–16.

⁸⁹ Slaughter D. C. Radiocarbon dating the Arctic Small Tool tradition in Alaska. P. 117–134;

⁹⁰ Giddings J. L. The archeology of Cape Denbigh. P. 244–248; Dumond D. E. The Eskimo and Aleuts; McGhee R. Ancient People of the Arctic; Powers W. R., Jordan R. H. Human biogeography and climate change in Siberia and Arctic North America in the fourth and fifth millennia BP. P. 665–670; Kunz M. L.: 1) The Mosquito Lake Site (PSM-049). Pipeline Archaeology. Fairbanks, 1977. P. 747–982; 2) The Denbigh Flint Complex at Punyik Point, Etivlik Lake, Alaska // Alaska Journal of Anthropology. 2005. Vol. 3, no. 2. P. 101–116.

⁹¹ Reuther J. D., Gerlach S. C. Testing the “DICARB Problem”: A Case Study from North Alaska // Radiocarbon. 2005. Vol. 47, no. 3. P. 359–366; Tremayne A. H., Rasic J. T. The Denbigh Flint complex of northern Alaska // The Oxford handbook of the prehistoric Arctic. Oxford, 2016. P. 349–370.

The issue of the age of Alaskan ASTt and the timing of the migration of its ancestors from Asia remains open since C-14 AMS dates from western Canada (Victoria Island) show, that people were already living there 4500 years ago⁹², which is practically the same age as the oldest securely dated materials from Alaska⁹³.

Western ASTt

Regarding the Western ASTt materials (i. e. Alaska), it is important to note that some researchers follow the ASTt concept suggested by Giddings and Anderson, in which they changed William Irving's original definition of ASTt (1957), by including in it not only the DFC, but also cultures which followed: Choris, Norton and Ipiutak (3000–950 years old)⁹⁴. This scheme did not gain traction with Alaskan archaeologists⁹⁵. Without taking this peculiarity into account, blind comparisons of stone tool complexes with the ASTt definition of Giddings and Anderson leads some researchers⁹⁶ to erroneous constructions and conclusions⁹⁷.

In addition, D. Anderson working at Onion Portage, a well-stratified site with a series of C-14 dates, distinguished Proto-Denbigh, Classic Denbigh, and Late Denbigh stages⁹⁸. Later D. Anderson concluded that this segmentation does not demonstrate some evolution of the Denbigh Complex⁹⁹ (pers. comm. 2002). No such evolution is seen by other researchers¹⁰⁰.

Within the Western ASTt distribution, researchers distinguish a Northern and a Southern sub-traditions¹⁰¹.

Northern Sub-tradition of the Western ASTt is represented by the regional complex Denbigh ASTt, located in the Arctic part of Alaska from the Norton Sound (where Iyatayet site was found) and Seward Peninsula in western Alaska to the Canadian border and lower reaches of the Mackenzie River delta in the Northwest Territories, including the entire Brooks Range, British Mountains, and the Yukon Territory.

A total of around 150 ASTt sites have been discovered. They are located near lakes, in mountain passes, on coastal spits, and in river valleys. Often, there are concentrations

⁹² Savelle J. M., Dyke A. S. Variability in Palaeoeskimo Occupation on South-Western Victoria Island, Arctic Canada: Causes and Consequences. P. 508–522.

⁹³ Tremayne A. H. The Design of Arctic Small Tool Tradition Toolkits. P. 1–31.

⁹⁴ Giddings J. L., Anderson D. D. Beach Ridge archeology of Cape Krusenstern.

⁹⁵ Odess D. The Arctic Small Tool Tradition Fifty Years On. P. 6; Tremayne A. H., Brown W. A. Mid to Late Holocene Population Trends, Culture Change and Marine Resource Intensification in Western Alaska // Arctic. 2017. Vol. 70, no. 4, P. 365–380; Dumond D. E. Denbigh Flint Complex // Archaeology of Prehistoric Native America. New York, NY; London, 1998. P. 207–208.

⁹⁶ Orekhov A. A. Severnaia Pacifika v golotsene (problemy primorskoj adaptatsii). Avtoref. dis. ... dokt. ist. nauk. St. Petersburg, 2001. P. 13–15.

⁹⁷ On discussion, see: Slobodin S. B.: 1) K voprosu o vydelenii protoeskimoskikh kul'tur v Beringii // II Dikovskie chteniia: Materialy nauchno-prakticheskoi konferentsii. Magadan, 2002. P. 372–379; 2) Neolit Severo-Vostoka Azii i traditsiya Arktik Smol Tul Severnoi Ameriki // III Dikovskie chteniya: materialy nauchno-prakticheskoi konferentsii. Magadan, 2004. P. 343–355.

⁹⁸ Anderson D. D. Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska. P. 1–163.

⁹⁹ Anderson D. D. The Denbigh Flint Complex in Northwest Alaska... P. 81–100.

¹⁰⁰ Tremayne A. H., Rasic J. T. The Denbigh Flint complex of northern Alaska // The Oxford handbook of the prehistoric Arctic. Oxford, 2016. P. 349–370.

¹⁰¹ Dumond D. E.: 1) Denbigh Flint Complex. P. 207–208; 2) Archaeology on the Alaska Peninsula: the Naknek Region, 1960–1975 // Anthropological papers No. 21. Eugene, 1981.

of sites in some locations, up to several dozen. Many were visited over a long period of time, like Onion Portage¹⁰². However, only about 30 sites have secure C-14 dates¹⁰³, ranging from 4700 to 2500 years. The most fully studied sites are Iyatayet (4500–3290 BP) at Norton Sound (recent studies have shown the age of 3717 ± 39 BP on charcoal from a hearth)¹⁰⁴, Mosquito Lake (3515–2135 BP)¹⁰⁵, Punyik Point (4660–2260 BP)¹⁰⁶, Kurupa Lake (3540–3450 BP)¹⁰⁷, Matcharak Lake (4200–3430 BP)¹⁰⁸, Croxton (4420–2219 BP)¹⁰⁹ at the Brooks Range, Cape Espenberg (4100–3880 BP)¹¹⁰; Kuzitrin Lake (4770–3750 BP) at Seward Peninsula¹¹¹, Onion Portage (3950–3530 BP) at the Kobuk River¹¹², Imaigenik (3330 BP)¹¹³; Engigstciak¹¹⁴, Walakpa, Coffin, Prudhoe Bay sites¹¹⁵ and others.

Most of these sites in Alaska are located above the Arctic Circle and in the nearby regions, so they are often characterized by a poorly preserved thin cultural layer disturbed by cryoturbation and solifluction, which often destroy stratigraphy and inverts radiocarbon dates. At coastal sites, archaeologists have dated driftwood and marine mammal bone, which requires applying reservoir effect corrections. This raises questions regarding the “outlier” radiocarbon dates, both the oldest, over 4500 years for Iyatayet and Kuzitrin Lake, otherwise dated to 4200–4300 years old, and the youngest (2135–2260 years old) for Mosquito Lake, Croxton, and Punyik Point. Revising the age of the available organic samples from these sites using the AMS method in several cases yielded dates 1000–1500 years older, around 3300–3600 years ago¹¹⁶. Thus, the most likely age for these complexes of the

¹⁰² Anderson D. D. Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska.

¹⁰³ Slaughter D. C. Radiocarbon dating the Arctic Small Tool tradition in Alaska. P.117–134; Tremayne A. H., Brown W. A. Mid to Late Holocene Population Trends, Culture Change and Marine Resource Intensification in Western Alaska // *Arctic*. 2017. Vol. 70, no. 4. P.365–380.

¹⁰⁴ Giddings J. L. The archeology of Cape Denbigh. P.244–248; Tremayne A., Darwent Ch. M., Darwent J., Rasic J. T. Iyatayet revisited: Report on Renewed Investigations of a Stratified Middle-to-Late Holocene Coastal Campsite in Norton Sound, Alaska // *Arctic anthropology*. 2018. Vol. 55, no. 1. P.1–23.

¹⁰⁵ Kunz M. L. The Mosquito Lake Site (PSM-049). Pipeline Archaeology. Fairbanks, 1977. P.747–982.

¹⁰⁶ Irving W. N. Punyik Point and the Arctic Small Tool Tradition. Ph.D. dissertation. University of Wisconsin, Madison, 1964.

¹⁰⁷ Schoenberg K. M. The archeology of Kurupa Lake. Research / Resources management report ARE-10, U. S. Department of the Interior, National Park Service, Anchorage, 1985.

¹⁰⁸ Tremayne A. H. An Analysis of Denbigh Flint Complex Burin Technology from Matcharak Lake, Alaska // *Alaska Journal of Anthropology*. 2010. Vol. 8, no. 1. P.73–85.

¹⁰⁹ Reuther J. D., Gerlach S. C. Testing the “DICARB Problem”: A Case Study from North Alaska // *Radiocarbon*. 2005. Vol. 47, no. 3. P.359–366.

¹¹⁰ Tremayne A. H., Brown W. A. Mid to Late Holocene Population Trends, Culture Change and Marine Resource Intensification in Western Alaska // *Arctic*. 2017. Vol. 70, no. 4. P.365–380.

¹¹¹ Harritt R. Paleo-Eskimo Beginnings in North America: A New Discovery at Kuzitrin Lake, Alaska // *Inuit Studies*. 1998. Vol. 22, no. 1. P.59–81.

¹¹² Anderson D. D. Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska. P.1–163.

¹¹³ Wilson A. The Imaigenik Site: Irving’s Arctic Small Tool Prior to Punyik // Paper presented at the 36th Annual Alaska Anthropological Association Meeting, Anchorage, Alaska, 2008.

¹¹⁴ MacNeish R. S. Men out of Asia: as seen from the Northwest Yukon. P.41–70.

¹¹⁵ Slaughter D. C. Radiocarbon dating the Arctic Small Tool tradition in Alaska. P.117–134; Lobdell J. E. North Alaskan Pingos: Ephemeral Refugia in Prehistory // *Arctic Anthropology*. 1995. Vol. 32, no. 1. P.62–81.

¹¹⁶ Reuther J. D., Gerlach S. C. Testing the “DICARB Problem”: A Case Study from North Alaska // *Radiocarbon*. 2005. Vol. 47, no. 3. P.359–366; Tremayne A. H., Rasic J. T. The Denbigh Flint complex of northern Alaska // *The Oxford handbook of the prehistoric Arctic*. Oxford, 2016. P.349–370; Tremayne A. H.,

Northern Sub-tradition of the Western ASTt is approximately 4300 to 3300 years B. P. (3500–4500 cal B. P.).

The sites can be divided into winter sites, with semisubterranean houses, and seasonal sites, used briefly and containing above-ground shelters surrounded by stones (sometimes just a few) on the perimeter. There is little evidence regarding the appearance and structure of dwellings of the Northern sub-tradition of the Western ASTt; this information comes only from a few continental sites, but it enables to distinguish two types of dwellings: winter and summer ones.

Summer dwellings are light portable tent-like structures, with a frame made of poles covered with skins whose edges were held by rocks. The tent rings, oval or sub-rectangular in form, measure about 3–4 meters in diameter. Some of the dwellings were only surrounded by a few stones, as at Lake Matcharak¹¹⁷ or Kuzitrin Lake¹¹⁸. At other sites, the dwelling perimeter was contoured quite regularly, with 20–22 pebbles, as at KIR-124 at Kurupa Lake¹¹⁹. Some dwellings have sophisticated stone components with “axial” or “midpassage” structures typical of the Early ASTt in Canada and Greenland¹²⁰. Hearths have not been found in summer dwellings, which means they were likely placed outside the dwellings in other parts of the sites.

Winter ASTt dwellings are identified as semi-subterranean (up to 0.5 m deep) sod houses, oval or sub-rectangular in form, with a central stone fireplace¹²¹. A unique characteristic of the houses at Onion Portage and Punyik Point are a “mid-passage” and an excavated entrance tunnel¹²². Inside the dwellings researchers have noticed the presence of fire-cracked rocks¹²³, presumably used for boiling water.

ASTt stone toolkit includes a large number of thin microblades, microblade cores, bifacially retouched thin projectile points, triangular and lanceolate; side inserts with asymmetrical lanceolate form and an angled base; small end scrapers, burins with multiple rejuvenations; very typical flake knives; burin spalls with ground edges; awls and drills; and retouched adzes with ground edges (Fig. 4). All tools are meticulously covered by tiny, uniform pressure flaking, unifacially or bifacially. Stone points are flaked with narrow parallel, oblique-parallel retouch, fully covering the widest parts of the tools from one edge to the other, giving them a thin lens-like cross-section.

ASTt microblade cores are a special type different from the typical conical or prismatic ones found in the Neolithic sites of Northeast Asia (blocky microblade cores). They

Brown W. A. Mid to Late Holocene Population Trends, Culture Change and Marine Resource Intensification in Western Alaska // *Arctic*. 2017. Vol. 70, no. 4. P. 365–380.

¹¹⁷ *Tremayne A. H.* An analysis of faunal remains from a Denbigh Flint Complex camp at Matcharak lake, Alaska // *Arctic Anthropology*. 2011. Vol. 48, no. 1. P. 35–53.

¹¹⁸ *Harritt R.*: 1) Eskimo Prehistory on the Seward Peninsula, Alaska. Research Report AR 21. Anchorage, 1994. P. 214; 2) Paleo-Eskimo Beginnings in North America: A New Discovery at Kuzitrin Lake, Alaska // *Inuit Studies*. 1998. Vol. 22, no. 1. P. 59–81.

¹¹⁹ *Schoenberg K. M.* The archeology of Kurupa Lake. P. 85, 145–146.

¹²⁰ *Odess D.* An Early Arctic Small Tool Tradition Structure from Northwestern Alaska. P. 17.

¹²¹ *Anderson D. D.* Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska. P. 101; *Irving W. N.* Punyik Point and the Arctic Small Tool Tradition. Ph.D. dissertation. University of Wisconsin, Madison, 1964.

¹²² *Ibid*; *Anderson D. D.* The Denbigh Flint Complex in Northwest Alaska... P. 81–100.

¹²³ *Anderson D. D.* Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska. P. 101; *Kunz M.* The Denbigh Flint Complex at Punyik Point, Etivlik Lake, Alaska // *Alaska Journal of Anthropology*. 2005. Vol. 3, no. 2. P. 110.

have been described as pyramid-like or polyhedral. When drawn or photographed, they often have an unusual projection, which makes their identification difficult. They can be described as short frontal cores with a wide face, and a platform significantly sloping back so that the platform and the face of the core form an acute angle. The platforms, along with the sides, are usually flaked. Microblades, removed from these cores, were used as inserts and were often retouched along one side; many show use-wear.

Flake knives are slightly convex in cross-section, retouched from the dorsal side unilaterally and from the ventral side, with flat retouch only along the cutting edge. The base is narrower than the rest of the knife, while the edge has a sub-rectangular or pointed shape. Scrapers on flakes and blade-like flakes are usually almost completely retouched, except for the lowest part, near the scraping edge; some have distinguishable handles.

Supposedly, the flat triangular projectile points with notches at the base served as harpoon tips¹²⁴. In Alaska, they have only been found at coastal sites¹²⁵, although in the Kolyma region and in Chukotka, such projectile points are quite common at strictly interior sites where harpoons are absent¹²⁶.

Lanceolate projectile point bases vary from pointed to flat or obliquely truncated bases. Many of these tools indicate the presence of the bow and arrow technology¹²⁷. Its presence was also suggested by smoothers with a narrow groove (5–7 mm wide), similar to the diameter of arrows, from Iyatayet¹²⁸ and Onion Portage¹²⁹, and finally confirmed by the discovery of bow parts and multiple arrow shafts from Qeqertasussuk in Greenland¹³⁰. Side blade inserts have an asymmetrically lanceolate shape with a somewhat asymmetric lens-like cross-section. One of the most characteristic Denbigh tools is a “mitten-shaped” burin on a blade-like flake, dihedral and angle burin rejuvenated by spalling multiple times.

Organic tools are rare at the DFC sites. At Punyuk Point, there is a thin arrow point, perhaps slotted, and a digging tool made from caribou antler¹³¹. At Trail Creek, antler and bone “arrow points” (some of them slotted) and a decorated slotted bone handle or arrow point were found¹³², and Engigstciak yielded a slotted bone foreshaft, bone fish gorges, awls, and antler flakers¹³³. However, DFC materials are mixed at these sites with younger levels, and the association of these tools remains unclear. Small stone tools of the ASTt complex imply the presence of various slotted shafts, harpoons, and spears. An example

¹²⁴ Giddings J. L. The archeology of Cape Denbigh. P. 233.

¹²⁵ Anderson D. D. The Denbigh Flint Complex in Northwest Alaska... P. 84.

¹²⁶ Dikov N. N. Early Cultures of Northeastern Asia. P. 112; Kiryak M. A. Arkheologiya zapadnoi Chukotki. P. 186, 193, 194; Slobodin S. The Upper Kolyma and Continental Priokhot'e during the Neolithic and Early Metal Periods. P. 32, 45, 67, 150, 160; Kashin V. A. Neolit Srednei Kolymy: sbornik trudov. P. 171–174, 216.

¹²⁷ Giddings J. L. The archeology of Cape Denbigh. P. 232.

¹²⁸ Ibid. P. 238–239, Pl. 73/11.

¹²⁹ Anderson D. D. Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska. P. 96. Fig. 92.

¹³⁰ Gronnow B. Qeqertasussuk — the archaeology of a frozen Saqqaq site in Disko Bugt, West Greenland // Threads of Arctic prehistory: Papers in honour of William E. Taylor. Quebec. 1994. P. 202–240; Gronnow B. An archaeological reconstruction of Saqqaq bows, darts, harpoons, and lances. P. 23–48.

¹³¹ Irving W. N. Punyuk Point and the Arctic Small Tool Tradition; Dumond D. E. Western Arctic Small Tool. P. 213–224.

¹³² Larsen H. Trail Creek: Final Report on the Excavation of Two Caves on Seward Peninsula, Alaska. P. 49.

¹³³ MacNeish R. S. Recent finds in the Yukon Territory of Canada. P. 22.

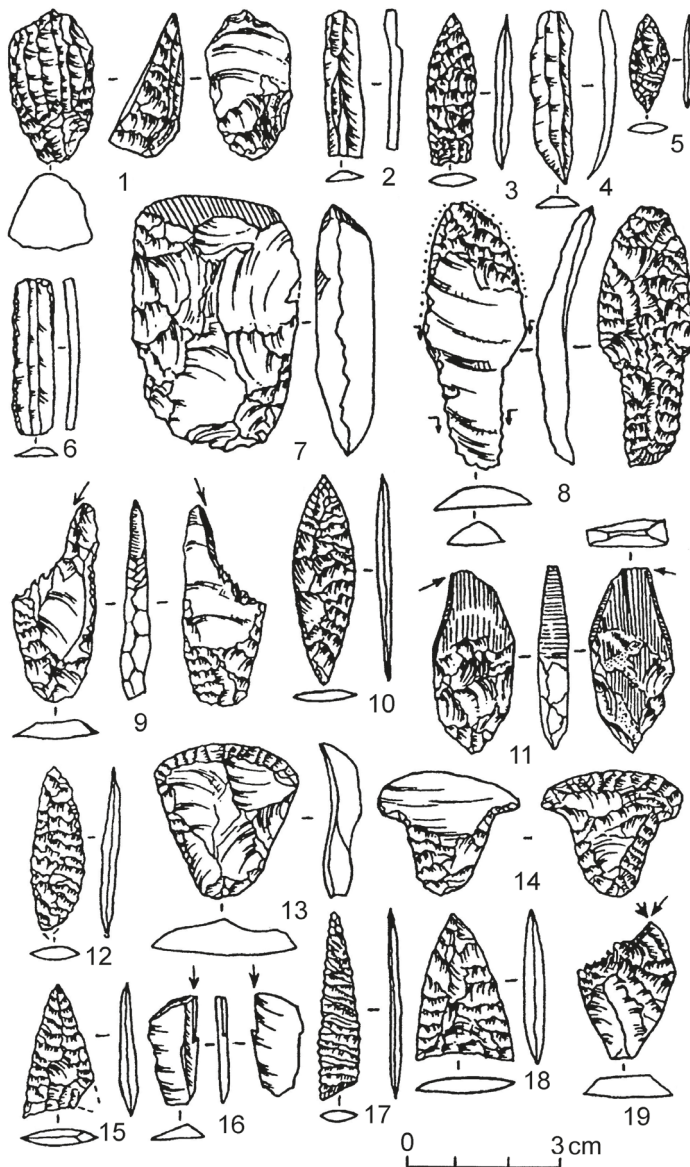


Fig. 4. Stone tools assemblage of the ASTt tradition (1-19):

1 — microblade core; 2, 4, 6 — microblades; 3, 15, 18 — points; 5, 10, 12, 17 — side inserts; 7 — adze; 8 — flake knife; 9, 19 — “mitten-shaped” burins; 13, 14 — scrapers; 16 — corner burin (Nos. 1-6, 9, 10, 13, 15, 16, 18, 19 — are from Punyik Point Site; nos. 8, 12 — are from Kurupa Lake Site; no. 11 — from Margaret Bay Site; no. 17 — from Sell-033 Site, all drawn by S. Slobodin from the collections; nos. 7 and 14 — are redrawn by S. Slobodin, respectively, after D. Dumond [1987] and after D. Anderson [1988])

of organic ASTt tool set was recently obtained from the Matcharak Lake site¹³⁴: several dozen bone and antler tools, including barbs of a leister prong, projectile points, composite fish hooks, a pressure flaker for flint-knapping, a hammer from antler, and a decorated foreshaft from a rib bone.

The economic/subsistence basis for ASTt entailed exploring environmental resources from the home area. A home area encompassing various landscape zones guaranteed greater stability of their subsistence during the lean years. Faunal remains from interior and coastal ASTt sites are very rare and come only from a few ASTt sites, making it difficult to reconstruct their subsistence in detail¹³⁵. Considering the environmental conditions of the ASTt site locations and the few faunal remains of animals and fish found there, researchers conclude that the ASTt inhabitants survived on both continental and maritime (coastal) resources, hunting seasonal terrestrial and maritime animals and fishing based on the regional and local ecological opportunities, using spears, bow and arrows, harpoon, terrestrial traps, and fish traps in streams and lakes¹³⁶.

In the continental/interior ASTt sites in Arctic Alaska people, undoubtedly, relied mostly on caribou, especially during their mass migrations in the fall and spring through the Brooks Range, which continues to this day¹³⁷. Evidence for this comes from caribou remains from Engigstciak¹³⁸, Punyik Point¹³⁹, Imaigenik¹⁴⁰, Onion Portage¹⁴¹ and Matcharak Lake¹⁴².

Fish bones and scales have been found at lakeside sites (Punyik Point, Matcharak Lake), indicating that fishing supported human diets. Near the mountains, people hunted Dall sheep, whose bones were found at Matcharak Lake and Engigstciak. In the summer, while waiting for the caribou, ASTt inhabitants could have hunted Arctic ground squirrels, which are abundant in the Brooks Range¹⁴³. In the boreal forest, they also hunted wapiti, whose remains were identified at Engigstciak¹⁴⁴.

Comprehensive data regarding ASTt subsistence and settlement pattern of this area were recently received from the Lake Matcharak site (Upper Noatak drainage)¹⁴⁵, charac-

¹³⁴ *Tremayne A. H.* An Analysis of Faunal Remains from a Denbigh Flint Complex Camp at Matcharak Lake, Alaska // *Arctic Anthropology*, 2011. Vol. 48, no. 1. P. 35–53.

¹³⁵ *Odess D.* The Arctic Small Tool Tradition Fifty Years On. P. 5–16; *Dumond D. E.* Western Arctic Small Tool. P. 213–224.

¹³⁶ *Giddings J. L.* The archeology of Cape Denbigh. P. 239–242; *Dumond D. E.* The Eskimo and Aleuts. P. 79–90; *Anderson D. D.* Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska. P. 148–149.

¹³⁷ *Hemming J. E.* The Distribution and movement patterns of caribou in Alaska. Alaska Department of Fish and Game. Game Technical Bulletin July 1971. No. 1; *Nicholson K. L., Arthur S. M., Horne J. S., Garton E. O., Del Vecchio P. A.* Modeling Caribou Movements: Seasonal Ranges and Migration Routes of the Central Arctic Herd // *PLoS ONE*. 2016. no. 11(4): e0150333. doi:10.1371/journal.pone.0150333

¹³⁸ *MacNeish R. S.* The Engigstciak Site on the Yukon Arctic Coast. P. 91–111.

¹³⁹ *Irving W. N.* Punyik Point and the Arctic Small Tool Tradition.

¹⁴⁰ *Irving W. N.* Evidence of early tundra cultures in northern Alaska. P. 55–85; *Wilson A.* The Imaigenik Site: Irving's Arctic Small Tool Prior to Punyik // Paper presented at the 36th Annual Alaska Anthropological Association Meeting. Anchorage, Alaska, 2008.

¹⁴¹ *Anderson D. D.* Onion Portage: the archaeology of a stratified Site from the Kobuk River, Northwest Alaska. P. 1–163.

¹⁴² *Tremayne A. H.* An Analysis of Faunal Remains from a Denbigh Flint Complex Camp at Matcharak Lake, Alaska. P. 44–45.

¹⁴³ *Odess D.* The Arctic Small Tool Tradition Fifty Years On. P. 5–16.

¹⁴⁴ *MacNeish R. S.* The Engigstciak Site on the Yukon Arctic Coast. P. 91–111.

¹⁴⁵ *Tremayne A. H.* An Analysis of Faunal Remains from a Denbigh Flint Complex Camp at Matcharak Lake, Alaska. P. 35–53.

terized by great faunal preservation. The site is located in the mountains near modern migration routes of caribou to their winter range¹⁴⁶. Excavations yielded over 80,000 bones, 90% of which were caribou bones. Small portions of the collection come from faunal remains of other mammals (Dall sheep, ground squirrel, marmot, snowshoe hare and porcupine), birds (ptarmigan and ducks), and fish (burbot, grayling, lake trout, pike).

Faunal analysis indicates that people lived here from spring to late fall¹⁴⁷, although if the fall hunting resulted in stored reindeer meat, they could have spent part of the winter there as well. Ethnographic data show that a family of six needed 64 reindeer for the winter period (eight months)¹⁴⁸. If dogs were present, that number would have been significantly larger, although fish stockpiles were also used to feed dogs.

Coastal ASTt inhabitants — at Iyatayet, Coffin, Walakpa, Cape Espenberg (KTZ-325) — according to the faunal remains and stone tool types, had a mixed subsistence style, hunting both maritime animals (mostly seals and, perhaps, walruses) and the terrestrial ones (caribou and, perhaps Muskox)¹⁴⁹. The lack of semisubterranean houses appears to indicate that these were seasonal settlements.

Assuming that people based their subsistence on the most accessible and productive resources, it is obvious to suggest that people started to (or continued to, after crossing the Bering Strait) engage in maritime hunting, perhaps using boat (kayaks) and harpoon technology. Triangular projectiles with notched bases are considered to be part of the harpoon technology¹⁵⁰, although harpoons are not necessary or even suitable for haul-out hunting on the shore. However, it is possible that spring hunting took place from the ice edge and required harpoon equipment.

The most accessible animals on the coast are those that haul out to rookeries on the shore. Even using the simple equipment (spears) without specialized harpoon toolkit and boats, people could have plenty of food for their daily needs, in addition to creating a significant stockpile for future (important during late fall and winter). In this respect, seals are the most accessible and could have been hunted not only on the shores but also on the ice in spring. The Cape Espenberg (KTZ-325) radiocarbon date of $4,100 \pm 40$ years indicates a very early maritime adaptation within ASTt¹⁵¹.

In light of the general consensus that the ASTt and ceramic industry in Alaska originated from the Northeast Asian Neolithic cultures¹⁵², it is unclear why ceramics are absent

¹⁴⁶ Hemming J. E. The Distribution and movement patterns of caribou in Alaska. Alaska Department of Fish and Game. Game Technical Bulletin July 1971. No. 1.

¹⁴⁷ Tremayne A. H. An Analysis of Faunal Remains from a Denbigh Flint Complex Camp at Matcharak Lake, Alaska. P. 49.

¹⁴⁸ D'yachkov A. E. *Anadyrskii kraj* [The Anadyr Region]. Magadan, 1992. P. 205.

¹⁴⁹ Giddings J. L. The archeology of Cape Denbigh. P. 241–242; Tremayne A. H. An Analysis of Faunal Remains from a Denbigh Flint Complex Camp at Matcharak Lake, Alaska. P. 35–53.

¹⁵⁰ Giddings J. L. The archeology of Cape Denbigh. P. 233–236.

¹⁵¹ Tremayne A. H. New Evidence for the Timing of Arctic Small Tool Tradition Coastal Settlement in Northwest Alaska // *Alaska Journal of Anthropology*. 2015. Vol. 13, no. 1. P. 1–18; Tremayne A. H., Brown W. A. Mid to Late Holocene Population Trends, Culture Change and Marine Resource Intensification in Western Alaska // *Arctic*. 2017. Vol. 70, no. 4. P. 365–380.

¹⁵² Griffin J. B. A discussion of Prehistoric Similarities and Connections Between the Arctic and Temperate Zones of North America. P. 154–163; Dumond D. E. The Eskimo and Aleuts. P. 91–93; Powers W. R., Jordan R. H. Human biogeography and climate change in Siberia and Arctic North America in the fourth and fifth millennia BP. P. 665–670; Hoffecker J. F. A Prehistory of the north: human settlement of the higher latitudes. P. 227–228; Mochanov Yu. A. Mnogosloinaia stoianka Bel'kachi i i periodizatsiia kamennogo veka lakutii; Dumond D. E., Bland R. L. Holocene Prehistory of the Northernmost north Pacific // *JWP*. 1995. Vol. 9, no. 4. P. 401–451.

from the ASTt sites, while this artifact type is one of the chief characteristics of the Northeast Asian Neolithic¹⁵³. Powers and Jordan suggested that the Alaskan ASTt could be "...an aceramic variant of the Belkachi culture"¹⁵⁴.

Some Alaska sites contain ceramics associated with ASTt, such as Coffin, Walakpa (Linear, Check stamp), Engigstciak, Firth River, Punyik Point (Cord-marked)¹⁵⁵; the mixed character of these complexes casts doubt on the association of ceramics with the rest of the ASTt materials¹⁵⁶. For example, Griffin, after studying the Engigstciak and Firth River ceramics identified it as Norton¹⁵⁷.

The Southern ASTt sub-tradition, uncharacteristically for its original definition¹⁵⁸, demonstrates a distribution of the DFC south of the Bering Strait in the interior boreal forest, but has been found only at a few sites on the Alaska Peninsula, Kenai Peninsula and the Aleutian Islands¹⁵⁹. This distribution process was probably discrete in character. In the vast territory of the Yukon-Kuskokwim Lowland, from the Norton Sound with the Iyatayet site to the Alaska Peninsula, almost no ASTt sites are known, and the routes (continental or coastal) through which it spread south have not been discovered.

According to the C-14 dates, approximately 4220 years ago representatives of ASTt appear in this part of Alaska at Chugachik Island, not far from the Kenai Peninsula in the Kachemak Bay, as evidenced at SEL-033¹⁶⁰. This is almost contemporaneous with the earliest DFC dates from the Arctic Alaskan sites, which brings us back to the question of the timing and routes of ASTt distribution in Alaska. In order to get to Kachemak Bay ASTt groups would have needed a certain amount of time to cross the area from Northwest Alaska through the Yukon-Kuskokwim delta on land or along the coast, using boats. If

¹⁵³ Griffin J.B. A discussion of Prehistoric Similarities and Connections Between the Arctic and Temperate Zones of North America. P.154–163; Dikov N.N. Early Cultures of Northeastern Asia; Mochanov Yu. A. Mnogosloinaia stoianka Bel'kachi I i periodizatsiia kamennogo veka Iakutii; Kiryak M. A. Arkheologiya zapadnoi Chukotki; Slobodin S. The Upper Kolyma and Continental Priokhot'e during the Neolithic and Early Metal Periods; Pitulko V. V. Golotsenovy kamennyi vek Severo-Vostochnoi Azii // Eststvennaia istoriia Rossiiskoi Vostochnoi Arktiki v pleistotsene i golotsene. Moscow, 2003. P.99–145.

¹⁵⁴ Powers W.R., Jordan R.H. Human biogeography and climate change in Siberia and Arctic North America in the fourth and fifth millennia BP. P.666.

¹⁵⁵ MacNeish R. S. Recent finds in the Yukon Territory of Canada. P.22; Slaughter D. C. Radiocarbon dating the Arctic Small Tool tradition in Alaska. P.117–134; Stanford D.E. Evidence of Paleo-Eskimos on the North Coast of Alaska. Paper presented at the 36th annual meeting of the Society for American Archaeology. Norman, 1971; Stanford D. Walakpa Site Alaska: It's Place in the Birnirk and Thule Cultures // Smithsonian Contributions to Anthropology. No. 20. 1975. P.16; Ackerman R. E. The Neolithic-Bronze age cultures of Asia and the Norton phase of Alaskan prehistory // Arctic Anthropology. 1982. Vol. 19, no. 2. P.14. Stimmell C. Going to pot: a technological overview of North American Arctic ceramics // Threads of Arctic prehistory: papers in honour of W. E. Taylor Jr. Ottawa, Quebec. 1994. P.35–56.

¹⁵⁶ Anderson S.L., Tushingham S., Buonasera T.Y. Aquatic adaptations and the adoption of Arctic pottery technology: results of residue analysis. Anthropology faculty publications and presentations, no.125, 2017, 87 p.

¹⁵⁷ Griffin J.B. A discussion of Prehistoric Similarities and Connections Between the Arctic and Temperate Zones of North America. P.161.

¹⁵⁸ Irving W.N. A provisional comparison of some Alaskan and Asian stone industries // Prehistoric cultural relations between the Arctic and temperate zone of North America. Arctic Institute of N. America, 1962. P.56–59.

¹⁵⁹ Dumond D.E. The Eskimo and Aleuts. P.79–86; Dumond D.E. The Alaska Small Tool tradition in Southern Alaska. P.67–78.

¹⁶⁰ Workman W.B., Zollars P. The Dispersal of the Arctic Small Tool Tradition into Southern Alaska: Dates and Data from the Kenai Peninsula, Southcentral Alaska // Anthropological Papers of the University of Alaska. 2002. Vol. 2, no. 1. P.39–49.

the reason for movement of (and exploration of new territories by) groups with an “appropriating” subsistence approach was resource depression of their range, then it would have taken them considerable time to cross these rich territories. Thus, the beginnings of the ASTt movement to the south and east from the Bering Strait should be extended back significantly.

The toolkit from Chugachik Island site demonstrates full consistency with the main ASTt tool types. Even with no faunal remains present, it is clear that the island inhabitants' subsistence activities were focused on hunting marine animals at sea. They most likely had boats. Some rare finds of small stone tools on Kodiak Island presumably indicate the spread of ASTt to the island¹⁶¹.

The well-studied Alaska Peninsula sites, located approximately 20–60 km from the Bering Sea coast, along the shores of small salmon rivers Brooks and Ugashik, which enter Bristol Bay of the Bering Sea, are slightly younger. At these sites, researchers distinguish the Ugashik Hilltop Phase dated to 3900–3600 BP, and Brooks River Gravels Phase (Naknek drainage) dated to 3600–3100 BP, corresponding to the Gravels phase¹⁶². Located on the terraces of shallow salmon streams, the sites confirm active use of fish resources (summer and fall salmon runs) by their inhabitants. This group might have had a diverse subsistence strategy since the hunting character of the toolkit indicates active use of terrestrial resources, facilitated by the Alaska Peninsula landscape favorable for caribou herds.

Contemporaneous with the last stage of the Gravels phase ASTt, an “island” or “coastal” variant of ASTt started developing on Unalaska Island in the Aleutian Islands (Margaret Bay Site). Its unique trait, in addition to the small chert tools similar to the ASTt assemblages, is a strong maritime adaptation represented by a developed sea mammal hunting strategy from boats in open water and from the ice, with such artifacts as a harpoon complex, stone lamps, netsinkers, composite hooks, and labrets, which indicates their connection with the ancient Aleut culture¹⁶³.

The toolkit at all these sites, although somewhat unique, in general matches the ASTt complex and includes: small lanceolate points with a narrower base (almost a stem); wide flat bifacially flaked insets for knives; meticulously worked end and side scrapers; small retouched adzes with polished edges; burins; burin spalls with polished edges; microblades. Unlike the northern ASTt sites (Denbigh complex), the southern sites of this tradition contain somewhat larger implements, have fewer microblades, not well shaped, and burins on microblades. Microblades were obtained from amorphous subprismatic cores and sometimes are absent altogether.

The sites are located in river valleys and next to lakes rich in fish during the salmon runs. Small hunting stone toolkit indicates that caribou hunting continued to be an important activity on the southern ASTt sites, but fishing and perhaps maritime hunting at Margaret Bay (Unalaska Island), and at SEL-033 were much more important for the inhabitants' subsistence needs than at the Denbigh Flint complex sites. Marine mammal bones, fish bones, and numerous salmon teeth support this conclusion. Inhabitants of these sites had long-term settlements with winter dwellings.

¹⁶¹ Steffian A. F., Saltonstall P. G. Tools but not Toolkits: Traces of the Arctic Small Tool Tradition in the Kodiak Archipelago // *Alaska Journal of Anthropology*. 2005. Vol. 3, no. 2. P. 17–49.

¹⁶² *Dumond D. E.* The Alaska Small Tool tradition in Southern Alaska. P. 67–78.

¹⁶³ *Knecht R. A., Davis R. S., Carver G. A.* The Margaret Bay Site and Eastern Aleutian Prehistory // *Recent Archaeology in the Aleut Zone of Alaska*, 2001. University of Oregon Anthropological Papers. No. 58. P. 35–69.

At the Brooks River site, around 100 of such dwellings presumably existed. Excavations show that they were sub-rectangular in shape, measured about 4 × 4 m, and were 0.5 m deep, with a stone hearth (some hearths have a square shape and are constructed of flat stone slabs) in the center of the dwelling and an angled exit passage way. The frame of the dwelling was likely wooden, with posts at the base, and was probably covered with sod¹⁶⁴. Numerous salmon and trout bones and teeth, found in the houses, indicate that they were inhabited in summer and winter. It was noted that the shape of Gravels phase ASTt dwellings resembles the dwellings of the Norton tradition, which follows ASTt¹⁶⁵.

Margaret Bay site dwellings were semi-subterranean (about 1 m deep), oval in shape, approximately 6 m in diameter with stone walls, stone hearth boxes and other domestic objects¹⁶⁶.

East ASTt is found in the Arctic region of Canada (north of the treeline, Arctic Archipelago) and Greenland, and represents the earliest human settlement period of this part of the world. Humans reached this area after the ice shield had retreated, no later than 4,500 years ago.

Although some sites in the East Arctic date to around 5000 BP (for example Pre-Dorset ObPj-6 at Victoria Island dated to 5245 ± 42 [AA-40853] and TkAt-4 [Sojourn] at Ellesmere Island dated 4685 ± 70 (S-2423) or even 4900), they still require confirmation¹⁶⁷. Researchers posit that Central and East Arctic was inhabited from Alaska around 4500 BP¹⁶⁸.

Eastern ASTt consists of the following regional and chronological complexes: Independence I (High Arctic, Greenland, 4500–3600 years ago), Pre-Dorset (Central and East Arctic, 4500–2700 years ago) and Saqqaq (Greenland, 3900–2700 years ago).

Knuth, who described the Independence I Culture, Meldgaard, who described Saqqaq, and Collins, who described Pre-Dorset, noted the similarity between these cultures and Western ASTt¹⁶⁹. Ross suggested that Independence I and Pre-Dorset are

¹⁶⁴ *Dumond D. E.* Western Arctic Small Tool. P.213–224.

¹⁶⁵ *Maschner H. D., Jordan J. W.* The Russell Creek Manifestation of the Arctic Small Tool Tradition on the Western Alaska Peninsula // *Archaeology in the Aleut Zone of Alaska: Some Recent Research.* University of Oregon Anthropological Papers. 2001. No. 58. P. 151–171.

¹⁶⁶ *Knecht R. A., Davis R. S., Carver G. A.* The Margaret Bay Site and Eastern Aleutian Prehistory // *Recent Archaeology in the Aleut Zone of Alaska,* 2001. University of Oregon Anthropological Papers. No. 58. P.35–69.

¹⁶⁷ *Ross J. M.* Peopling of the Eastern Canadian Arctic // *Human Colonization of the Arctic: The interaction between early migration and the paleoenvironment.* London; Cambridge, 2017. P.341–364; *Sutherland P. D.* Continuity and change in the Paleo-Eskimo prehistory of Northern Ellesmere Island // *The Paleo-Eskimo Cultures of Greenland, New Perspectives in Greenlandic Archaeology.* Copenhagen, 1996. Publ. No. 1. P.271–294; *Hood B. C.* Theory on ice: the discourse of eastern Canadian Arctic Paleo-Eskimo archaeology // *Acta Borealia.* 1998. No.2. P.3–58; *Milne B., Park R.* Pre-Dorset Culture // *The Oxford handbook of the prehistoric Arctic.* Oxford, 2016. P.807–806.

¹⁶⁸ *Maxwell M. S.* Prehistory of the Eastern Arctic. Orlando, Florida, 1985; *Dumond D. E.* The Eskimo and Aleuts; *McGhee R.* Ancient People of the Arctic; *Rasmussen M. et al.* Ancient human genome sequence of an extinct Palaeo-Eskimo // *Nature.* 2010. Vol. 463. P.757–762; *Odess D.:* 1) The Arctic Small Tool Tradition. P.146–147; 2) The Arctic Small Tool Tradition Fifty Years On. P.5–16; *Dyke A. S., Saville J. M.* Paleoeskimo Demography and Sea-Level History, Kent Peninsula and King William Island, Central Northwest Passage, Arctic Canada // *Arctic.* Vol. 62, no. 4. 2009. P.371–392.

¹⁶⁹ *Knuth E.* An outline of archaeology of Peary Land // *Arctic.* 1952. Vol. 5, no. 1. P.17–32; *Giddings J. L.* The archeology of Cape Denbigh. P.258–261; *Meldgaard J. A.* Paleo-Eskimo Culture in West Greenland // *American Antiquity.* 1952. Vol. 17, no. 3. P.222–230; *Collins H. B.* Archaeological research in the North American Arctic // *Arctic.* 1954. Vol. 7. P.296–306.

regional variations representing the same culture¹⁷⁰. Together with Western ASTt they were referred to as the Paleoeskimo culture¹⁷¹, a concept put forward 100 years ago by H. P. Steensby¹⁷².

The most characteristic complexes of this tradition are known today in Canada, at such sites as Lake View, Cape Storm Beaches, Kettle Lake, Camp View (Ellesmere Island); Closure, Mittimatalik, LdFa-1, 12, LeDx-42, Mosquito Ridge, Kapuivik, Parry Hill, Annawak, Shaymarc (Baffin Island); Port Refuge, Gneiss, Far Site, Icy Bay, Hind, Rocky Point (Devon Island); Buchanan, Wellington Bay (Victoria Island); Kaleruserk (Igloodik Island); Crane (Mackenzie Delta), Stanwell Fletcher Lake (Somerset Island); Bettison Point (Prince of Wales Island); Umingmak, Shoran Lake (Banks Island); Engigstciak, Dismal, Bloody Falls (Northwest Territories); Saglek Bay (Quebec). In Greenland, they include Qeqertasussuk, Deltaterrasserne, Saqqaq, Niivertussannuaq, Nipisat, Qajaa, Sermermiut, Tuapassuit, Tupersui, Nuussuaq, Pearylandville, Midternaes and others¹⁷³.

These complexes later gave the basis for the development of the Dorset culture (2600–700 (500) BP). Dorset is often viewed within the Eastern ASTt as the last stage of the Paleoeskimo culture, dating ASTt to 4500–1000 (500) BP¹⁷⁴. Not all researchers agree with this scheme; some archaeologists limit the ASTt timeframe to the existence of Denbigh, Independence I, Saqqaq and Pre-Dorset, i. e. to 4500–2500 years ago¹⁷⁵.

The archaeological record shows that the exploration of this territory was rather quick and intensive despite the low population numbers in the Arctic during that time, according to the general consensus. In the Canadian Arctic, around 1900 sites have been found¹⁷⁶ (but the area has yet to be extensively covered by archaeologists), and in Greenland, just in the very north, at Peary Land, archaeologists have found 51 sites with remains of 244 dwellings¹⁷⁷. East Greenland's Saqqaq sites provide evidence of the first people in

¹⁷⁰ Ross J.M. Peopling of the Eastern Canadian Arctic // Human Colonization of the Arctic: The Interaction Between Early Migration and the Paleoenvironment. London; Cambridge, 2017. P. 341–364.

¹⁷¹ Knuth E. The Paleo-Eskimo Culture of Northeast Greenland Elucidated by Three New Sites // American Antiquity. 1954. Vol. 19, no. 4. P. 367–381; Meldgaard J.A. Paleo-Eskimo Culture in West Greenland // American Antiquity. 1952. Vol. 17, no. 3. P. 222–230; Odess D. The Arctic Small Tool Tradition. P. 146–147; Jensen J.F., Odgaard U., Funder S., Plumet P. First people in Greenland // Human Colonization of the Arctic: the interaction between early migration and the Paleoenvironment. London, Cambridge, 2017. P. 367–404; Ross J.M. Peopling of the Eastern Canadian Arctic // Human Colonization of the Arctic: The Interaction Between Early Migration and the Paleoenvironment. London, Cambridge, 2017. P. 341–364.

¹⁷² Steensby H.P. An Anthropogeographical study of the origin of the Eskimo Culture // Meddelelser om Gronland, 1916. Vol. 53. P. 170–174.

¹⁷³ Maxwell M.S. Pre-Dorset and Dorset Prehistory of Canada // Handbook of North American Indians: Arctic. Vol. 5. Washington, 1984. P. 359–368; Maxwell M.S. Prehistory of the Eastern Arctic. Orlando, Florida, 1985; Park R. Eastern Arctic Small Tool. P. 27–45; Gronnow B. Qeqertasussuk — the archaeology of a frozen Saqqaq site in Disko Bugt, West Greenland. P. 202–240; Jensen J.F., Odgaard U., Funder S., Plumet P. First people in Greenland // Human Colonization of the Arctic: the interaction between early migration and the Paleoenvironment. London; Cambridge, 2017. P. 367–404.

¹⁷⁴ Helmer J.W. Arctic Small Tool Tradition. P. 28–31; McChee R. Dorset Culture. Archaeology of Prehistoric Native America. New York, NY; London, 1998. P. 216–217.

¹⁷⁵ Dumond D.E. The Eskimo and Aleuts; Park R. Eastern Arctic Small Tool. P. 27–45.

¹⁷⁶ Ross J.M. Peopling of the Eastern Canadian Arctic // Human Colonization of the Arctic: The Interaction Between Early Migration and the Paleoenvironment. London; Cambridge, 2017. P. 341–364.

¹⁷⁷ Jensen J.F., Odgaard U., Funder S., Plumet P. First people in Greenland // Human Colonization of the Arctic: the interaction between early migration and the Paleoenvironment. London; Cambridge, 2017. P. 367–404.

Greenland using kayak-like vessels¹⁷⁸, so the migration may have to some extent relied on sailing in open waters during the warm months.

The Eastern ASTt toolkit in general, is compared by the researchers to the Denbigh Complex and consists of similar small tools with elaborate flaking (Fig. 5); it also has unique characteristics, for example, much better preservation of organic tools (bone, antler, and wood). It contains microblades, which were removed from the microblade cores of the same shape as those in the Denbigh Complex; burins (mitten-shape) and burin spalls removed from them, which were used as chisel tips to work on bone, antler, and wooden implements; end and side scrapers of various shape, including those with a side notch; retouched and polished burin spalls; awls; stemmed and lanceolate knives and spear points; flat triangular projectile tips, which were supposedly used to arm harpoons; and adzes with a slightly ground/polished edge¹⁷⁹.

During Pre-Dorset, people started using ground slate spearheads and insets¹⁸⁰, which were widely used during the following period (Dorset). We should note that there is a significant typological similarity between several Denbigh tools, described as «flake knives»¹⁸¹ and tools described in the Eastern ASTt as side scrapers¹⁸².

Eastern ASTt sites contain a wide array of organic tools, which practically never preserve in the West ASTt sites. These tools include bone harpoons, leister prongs, serrated single- and double-row dart points, pressure flakers, sewing needles, bone and wood handles for burins and spalls, and bow fragments¹⁸³.

During the early stages of ASTt development (Independence I complex), serrated harpoons emerged, with a tanged base, flat wide hitch, non-toggling, with a space at the end for a stone end blade. At Qeqertasussuk researchers discovered over 50 toggling and tanged heads of harpoons¹⁸⁴. Later (Saqqaq and Pre-Dorset), in addition to the barbed harpoons, toggle harpoons, serrated, with an open socket for foreshaft, some with a groove for a stone side or end blade were developed¹⁸⁵.

In the continental regions, ASTt inhabitants hunted muskox, caribou, and to a lesser extent, arctic fox, hare, and polar bear. On the coast, they took seals, at the edge of the ice or at breathing holes, and walrus at their rookeries. Fragments of kayak-like watercraft¹⁸⁶ indicate that in the summer people hunted marine animals, perhaps even whales, in open waters. Leisters point to fishing activities, and perhaps bird hunting. Plant foods were not

¹⁷⁸ Gronnow B. Qeqertasussuk — the archaeology of a frozen Saqqaq site in Disko Bugt, West Greenland. P. 202–240.

¹⁷⁹ Sorensen M. Technology and tradition in the Eastern Arctic, 2500 BC–AD 1200...

¹⁸⁰ Maxwell M. S. Prehistory of the Eastern Arctic. Orlando, Florida, 1985. Fig. 5.4 — OO, QQ.

¹⁸¹ Giddings J. L. The archeology of Cape Denbigh. Pl. 69, 15, 19.

¹⁸² Maxwell M. S. Prehistory of the Eastern Arctic. Orlando, Florida, 1985. Fig. 4.3; 4.7; 5.4; 5.14.

¹⁸³ Gronnow B. Qeqertasussuk — the archaeology of a frozen Saqqaq site in Disko Bugt, West Greenland. P. 205–220.

¹⁸⁴ Gronnow B. A. The backbone of the Saqqaq culture: Study of the Nonmaterial Dimensions of the Early Arctic Small Tool Tradition // Arctic Anthropology. 2012b. Vol. 49, no. 2. P. 61–62; Park R. Eastern Arctic Small Tool. P. 27–45.

¹⁸⁵ Maxwell M. S. Pre-Dorset and Dorset Prehistory of Canada. P. 359–368; Maxwell M. S. Prehistory of the Eastern Arctic. Orlando, 1985; Gronnow B. Qeqertasussuk — the archaeology of a frozen Saqqaq site in Disko Bugt, West Greenland. P. 202–240.

¹⁸⁶ Gronnow B. Qeqertasussuk — the archaeology of a frozen Saqqaq site in Disko Bugt, West Greenland. P. 216–222.

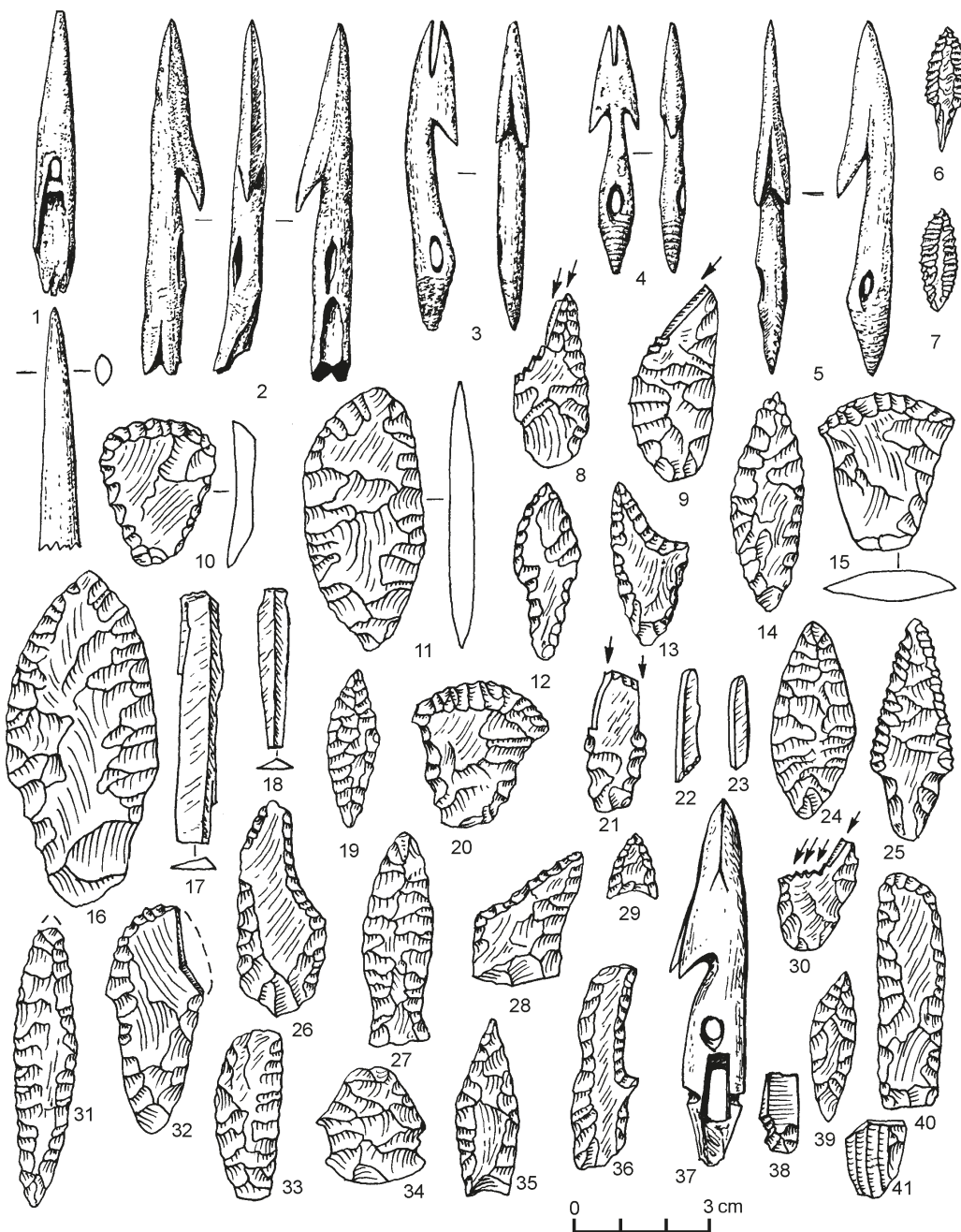


Fig. 5. Stone and osseous (bone and antler) tool assemblage of Eastern tradition ASTt (1-41):

1-5, 37 — osseous tools; 6, 12, 14, 16, 19, 24, 25, 27, 29, 35 — points; 7, 31, 33, 39 — side inserts; 8, 9, 30 — “mitten-shaped” burins; 10, 15, 20, 38 — scrapers; 11, 28, 32, 36, 40 — knives; 13, 26 — side scrapers; 17, 18 — microblades; 21 — corner burin; 22; 23 — burin spalls; 34 — side-notched knife; 41 — microblade cores ([Redrawing after: 1-5 — [Gronnow, 1994]; 6-40 — [Maxwell, 1985])

a significant part of people's diet here. Meat was stored for the winter in stone-lined pits covered with stone plates¹⁸⁷.

Due to the nomadic lifestyle, people lived in mobile small single-family dwellings, with skins over the driftwood frame. According to the remains of such dwellings, their edges were held down by gravel, small cobbles, or, in winter, snow blocks. The dwellings contained stone "midpassages" and a central hearth, which separated the dwelling into a residential area and a work area. Box hearth was constructed from vertically set flat stone plates, with stone boxes at either side for various practical needs (fuel storage, meat thawing)¹⁸⁸. Researchers suppose that the Eastern ASTt dwellings were lit by stone lamps¹⁸⁹, although there is some doubt regarding their existence in that area¹⁹⁰. Several dwellings, housing up to six families, commonly formed a settlement¹⁹¹.

Conclusion

The archaeological record shows, that the unique continental Belkachi culture of taiga hunters, which formed in the Lena River drainage around 5200 BP and whose roots appear to have been traced to the Transbaikalia¹⁹², quickly spread to the east of the Verkhoyansk Range through the Kolyma region and Chukotka¹⁹³, all the way to the Bering Strait. The accumulated cultural energy allowed it to preserve its basic traits along the entire route, although, under the external or internal factors, certain aspects of it had changed, forming local Kolyma and Chukotka variants with their own unique characteristics.

The cultural impulse accumulated by this tradition allowed the Belkachi groups to transmit it across the narrow Bering Strait, separating Asia and North America, to Alaska, where it formed as a distinctive AST tradition with microblade cores, microblades, and a set of small chert insert tools¹⁹⁴. Archaeological and genetic data suggest that this event dates to no later than 5000 BP¹⁹⁵. Crossing the Bering Strait implies that they had boats, although the strait could have been crossed over ice.

On the American continent, the population of this tradition spread from Alaska to its entire Arctic region all the way to Greenland, just as fast, over a few hundred years. They settled in regions, which had not previously seen humans, and developed specific territo-

¹⁸⁷ *Meldgaard M.* Ancient Harp Seal Hunters of Disko Bay // Subsistence and Settlement at the Saqqaq Culture Site Qeqertasussuk (2400–1400 BC), West Greenland. *Meddelelser om Gronland, Man and Society*, 2004. Vol. 30. P. 196–200.

¹⁸⁸ *McGhee R.* Ancient People of the Arctic.

¹⁸⁹ *Park R.* Eastern Arctic Small Tool. P. 27–45.

¹⁹⁰ *Jensen J.F., Odgaard U., Funder S., Plumet P.* First people in Greenland // Human Colonization of the Arctic: the interaction between early migration and the Paleoenvironment. London; Cambridge, 2017. P. 367–404.

¹⁹¹ *Ross J.M.* Peopling of the Eastern Canadian Arctic // Human Colonization of the Arctic: The Interaction Between Early Migration and the Paleoenvironment. London; Cambridge, 2017. P. 341–364.

¹⁹² *Mochanov Yu. A.* Mnogoslainaia stoinka Bel'kachi I i periodizatsiia kamennogo veka Iakutii.

¹⁹³ *Dikov N. N.* Early Cultures of Northeastern Asia; *Kiryak M. A.* Arkheologiya zapadnoi Chukotki; *Slobodin S.* The Upper Kolyma and Continental Priokhot'e during the Neolithic and Early Metal Periods; *Kashin V. A.* Neolit Srednei Kolymy: sbornik trudov.

¹⁹⁴ *Giddings J.L.* The archeology of Cape Denbigh; *Irving W.N.* A provisional comparison of some Alaskan and Asian stone industries. P. 55–68.

¹⁹⁵ *Harritt R.* Paleo-Eskimo Beginnings in North America: A New Discovery at Kuzitrin Lake, Alaska // *Inuit Studies*. 1998. Vol. 22, no. 1. P. 59–81; *Rasmussen M. et al.* Ancient human genome sequence of an extinct Palaeo-Eskimo // *Nature*. 2010. Vol. 463. P. 757–762.

rial complexes: Denbigh, Gravels, Pre-Dorset, Independence I, Saqqaq. These complexes demonstrate a superb adaptation of the inhabitants to interior and marine subsistence situations, with a developed harpoon complex and marine mammal hunting from boats in the open seas. The development of the classic ASTt concluded around 3000–2500 BP¹⁹⁶, but some of its features were preserved in the succeeding cultures, Choris and Norton in Alaska¹⁹⁷, and Dorset in Canada and Greenland¹⁹⁸.

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