Оригинальная статья / Original article
УДК 902/904
DOI: https://doi.org/10.21285/2415-8739-2020-4-43-69

St. Lawrence Island *angyapik*/baidara according to archaeological and ethnographic data

© Evguenia V. Anichtchenko

Museum of the North, University of Alaska, Fairbanks, USA

Abstract: The study of human migrations between northern Asia and North America occupies a prominent position in North American archaeology. The geographical proximity of two continents in the Bering Strait region provided for ample opportunities for cultural transmission and exchanges, starting from the initial population of North America over 14,000 years ago, when the land connection existed between Chukotka and Alaska. Exchanges between two continents continued after the Bering Land Bridge disappeared under the ocean waves. Archaeological research demonstrates the existence of several trans-Bering strait cultures (Old Bering Sea, Birnirk and Thule) and millennia-long trade and exchange between two continents. Despite the fact that after circa 10,000 years ago, such transcontinental connections depended on watercraft, prehistoric boat traditions of the region remain under-researched. This article aims at inspiring a more robust inquiry into the subject of the deep history of Siberian and Alaskan watercraft by examining ethnographic and archaeological records on open skin boats (*angyapiks*/baidaras/umiaks) of St. Lawrence Island. By its geographical position, St. Lawrence Island is linked to both North-eastern Asia and Alaska. For over 2000 years boats played a key role in the islanders' maritime subsistence and interregional communications. This article examines to what degree the constructional features of St. Lawrence open skin boats and related economic and ritualistic activities reflect the islanders' contacts with coastal cultures of north-eastern Siberia and Alaska. The analysed archaeological data includes previously unpublished artefacts from Otto Geist's excavations on St. Lawrence Island (Museum of the North, University of Alaska) and Henry Collins collection (Museum of Natural History, Washington, DC).

Keywords: archaeology, ethnography, maritime adaptation, whaling, open skin boat, umiak, *angyapik*, St. Lawrence Island, Yupik, Alaska, Chukotka

Acknowledgements: This research was supported in part by the Smithsonian Institution pre-doctoral fellowship program.

For citation: Anichtchenko E.V. (2020) St. Lawrence Island *angyapik*/baidara according to archaeological and ethnographic data. *Izvestiya Laboratorii drevnikh tekhnologii = Reports of the Laboratory of Ancient Technologies*. Vol. 16. No. 4. P. 43–69. https://doi.org/10.21285/2415-8739-2020-4-43-69

Ан'япик (байдара) острова Св. Лаврентия по археологическим и этнографическим данным

© Е.В. Анищенко

Музей Севера Университета Аляски, г. Фэрбэнкс, США

Аннотация: Трансконтинентальные миграции между Евразией и Северной Америкой – одна из центральных тем археологии циркумполярья. Начиная с заселения людьми Северной Америки более 14 000 лет назад, географическая близость между двумя материками в районе Берингова пролива содействовала трансконтиненальным миграциям. Связь между континентами не прекратилась и после того, как Берингов сухопутный мост погрузился под воду. Археологические исследования указывают на существование в северо-восточной Сибири и Аляске нескольких трансконтинентальных культур (культура Древнего Берингоморья, Бирнерк, Туле) распространение которых напрямую зависило от передвижений по морю: зимой – пешком или на собачьих упряжках по ледяному покрову, летом – на лодках по открытой воде. Несмотря на очевидную роль морского транспорта в этих процессах, изучение археологических данных по доисторическим лодкам является малоизученной темой. Данная статья посвящена комплексному анализу этнографических и археологических данных об открытых кожаных лодках (байдарах – ан'ньяпиках) острова Св. Лаврентия. По своему географическому положению остров Св. Лаврентия является связующим звеном между северо-восточным побережьем

Евразии и Аляской. На протяжении более двух тысяч лет лодки играли существенную роль как в местном морском промысле, так и в межрегиональных сообщениях. В статье рассматривается вопрос, в какой степени строение байдар острова Св. Лаврентия и связанный с ними комплекс хозяйственных и ритуальных представлений отражает контакты с Северной Америкой и Евразией. В задействованные археологические данные включены не публиковавшиеся прежде находки из археологических раскопок Отто Гайста (Музея Севера Университета Аляски, Фэрбенкс, Аляска), а также предметы из коллекции Генри Коллинса (Музей Естественной Истории, Вашингтон).

Ключевые слова: археология, этнография, морская адаптация, китобойный промысел, кожаные лодки, байдары умиак, байдары ан'япик, остров Св. Лаврентия, эскимосы-юпики, Аляска, Чукотка

Благодарности: Исследования, которые легли в основу этой статьи, были частично спонсированы программой стажировки для кандидатов докторских диссертаций Смивсонианновского института.

Для цитирования: Анищенко Е.В. Ан'япик (байдара) острова Св. Лаврентия по археологическим и этнографическим данным // *Известия Лаборатории древних технологий*. 2020. Т. 16. № 4. С. 43–69. https://doi.org/10.21285/2415-8739-2020-4-43-69

Introduction

Study of human migrations between Eurasia and North America occupies a prominent position in North American anthropology. Geographical proximity of two continents in the Bering Strait region provided for ample opportunities for cultural transmission and exchanges, starting from the initial population of North America over 14,000 years ago, when the land connection existed between Chukotka and Alaska. Exchanges between two continents did not cease after the Bering Land Bridge disappeared under the ocean waves. Archaeological research demonstrates existence of several trans-Bering strait cultures (Old Bering Sea, Birnirk and Thule) and millennia-long trade and exchange between two continents (Mason, 2016). Despite the fact that after circa 10, 000 years ago, such transcontinental connections depended on and were carried by watercraft, prehistoric boat tradition of the region remains under-researched. Much of the theories about prehistoric maritime connections and adaptations are either based on analysis on non-boat finds (Fitzhugh, 2016), or ethnographic boat studies (Antropova, 1961; Kankaanpää, 1989[1]). The archaeological boat data is slowly gaining its place as the subject of focused studies (Arima, 1999; Anichtchenko and Crowell, 2010; Anichtchenko 2016a[2]; Alix et al., 2018). This article aims at inspiring a more robust inquiry into the subject of deep history of Siberian and Alaskan watercraft by examining ethnographic and archaeological records on skin boats of St. Lawrence Island, which is chosen for its geographical position between two continents.

One of the last exposed portions of the Bering Land Bridge, St. Lawrence Island is located at the south-western extreme of Bering Strait (fig. 1). With its western end positioned only about 65 km from the Siberian coast and its eastern proximity located 160 km east from the Alaskan coast, the island played a significant role in the history of cultural connections between the two continents. The indigenous name of the island is Sivuqaq, which means "to be wrung out", and the Yupik story about its creation emphasizes the island's connection to both Alaska and Siberia:

> *When the Creator finished the mainland of Alaska and Siberia, he felt that a part in the middle was still missing. He took a great handful of earth from the bottom of the ocean, squeezed it dry, and placed it between the two continents. Then he said, "There, it is complete" (Koonooka, 2010. P. 73).*

In terms of cultural orientation, the island has stronger ties with Siberia than with Alaska, due to the proximity to the Eurasian continent. Indigenous

[1] Kankaanpää, J. 1989, *The kayak, a study in typology and culture history.* Unpublished Master's Thesis, Helsinki: University of Helsinki, Department of Archaeology.

[2] Anichtchenko, E.V. 2016a, *Open Passage: Ethno-Archaeology of Skin Boats and Indigenous Maritime Mobility of North-American Arctic.* Unpublished PhD thesis, University of Southampton, UK.

Fig. 1. Map of the Bering Sea and Bering Strait
Рис. 1. Карта Берингова моря и Берингова пролива

population of St. Lawrence Island belongs to the Siberian Yupik group, the same people that inhabit the Chukotka Peninsula on the Russian coast of Bering Strait, and the contacts between coastal and insular populations remained consistent through at least two millennia. At the same time, archaeological finds testify to fairly active traffic between coastal Alaska and St. Lawrence Island (Ackerman, 1961. P. 1)[3], and traditional stories specifically reference boat voyages to both the Alaskan and Siberian coasts and to other Bering Sea islands (Nelson, 1889. P. 220; Chlenov, 1988; Krupnik and Chlenov, 2013. P. 34; Anichtchenko, 2017).

Like most of the inhabitants of treeless zones of circumpolar north, St. Lawrence islanders relied on skin boats – watercraft constructed of driftwood and covered with skins of marine mammals. There are two types of circumpolar skin boats: smaller (typically for one person use) decked kayaks and larger, undecked or "open" boats for multi-person crew (Adney and Chappelle, 2007. P. 175). In English language the latter are called *umiaks*, while Russian scholarship favours term *baidara* (Ainana et al., 2003; Bogoslovsky 2004; Luukkanen et al., 2020. P. 155–179). Each circumpolar indigenous nation that utilizes such boats, however, has its own term for them, and to honour cultural identity and ownership, this article uses Siberian Yupik term *angyapik*.

Although kayaks played an important role in maritime subsistence and mobility of St. Lawrence Islanders, this article focuses exclusively on open skin boats for two main reasons. Firstly, St. Lawrence Island kayaks are discussed in another article (Anichtchenko, 2017); and secondly, as angyapiks had a larger socio-economic impact on local society and long-distance connections. Up until the second half of

[3] Ackerman, R. E. 1961, *Archaeological investigations into the prehistory of St. Lawrence Island*, Alaska. Unpublished PhD dissertation, University of Pennsylvania.

the twentieth century these boats were used for whale and walrus hunting and for the trading expeditions to the mainland. Whaling and trading were key elements of achieving social status, which ultimately positioned *angyapiks* as both means and symbols of power, social hierarchy and prestige. Today, two St. Lawrence Island villages of Gambell and Savoonga are among the last places in circumpolar north where open skin boat building and use is still a living tradition. How did this tradition change over time and how does it relate to the open skin boats of other regions? Both ethnographic and archaeological data provide some useful insights and allow tracing chronological development of this boat type.

Prior to discussing these datasets, a quick terminological explanation is in order. Skin boat frame consists of dozens of individually carved elements fastened together with wooden and ivory pegs, baleen, and in case of post contact watercraft – metal fasteners. A diagram below provides basic boat construction terms solely for the sake of current discussion (fig. 2). St. Lawrence Yupik language contains rich boat vocabulary, some of which is provided in Stephen.

Ethnographic evidence

Early ethnographic accounts mention skin-covered watercraft frequently, although the information is usually brief (Sarychev, 1969. P. 43; Merck, 1980. P. 185). On July 21, 1791 Captain Joseph Billings made a short landing at the Koozata lagoon on the south shore, west of Siknik Cape. He reported seeing a distant habitation and a large skin boat with about 30 men aboard which retreated when warning shots were fired (Sauer, 1972). A quarter of a century later, in July of 1817, Otto von Kotzebue, the captain of the Russian brig *Rurik*, stopped at Kialegeak at the south-east point of the island. While he was conversing with local inhabitants an umiak "was drawn along the strand by dogs, which just came from the Tschukutskoi" (Chukchi Peninsula) (Kotzebue, 1967. P. 175). In the course of the same conversation Kotzebue learned that the ice had left the shore of the island only three days prior to his landing. Evidently, skin boat navigation was possible immediately after or likely simultaneously with the retreat of the ice. Kotzebue also stated that the Natives of St. Lawrence Island "call the inhabitants of the continent of America their brethren, as they have constant intercourse with them, and their language is also the same" (Ibid).

More detailed information became available when the US government began exploring its new acquisition following the purchase of Alaska from Russia in 1867. Visiting Kialegeak at the southeast end of St. Lawrence Island in 1874, naturalist Henry Wood Elliott recorded his observations in both textual descriptions and sketches (fig. 3). Regarding the boats used by St. Lawrence inhabitants he noted that the crew of the boat that approached their ship consisted of both men and women and provided following description:

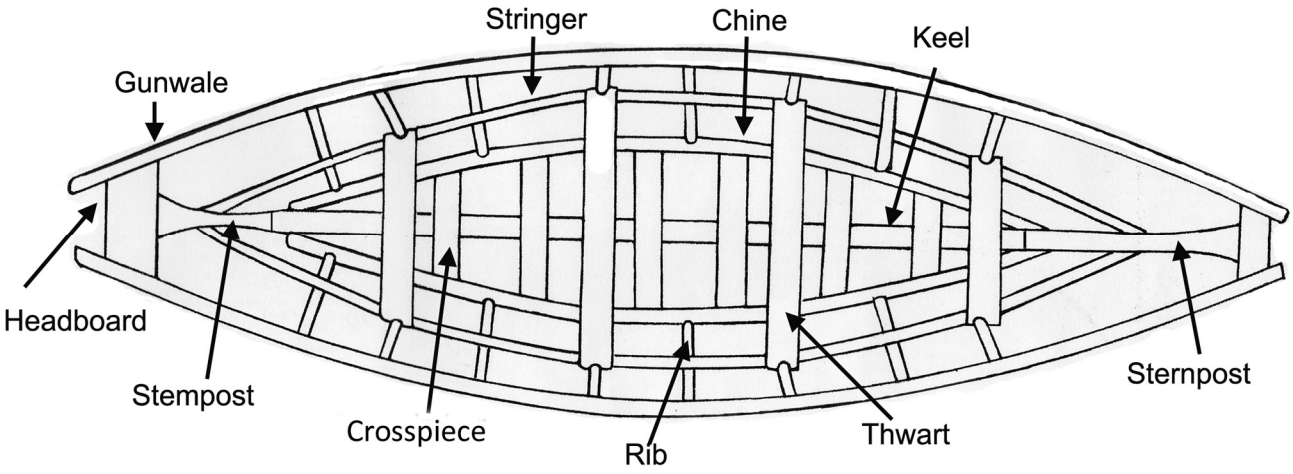

Fig. 2. Open skin boat terminology. Drawing by E. Anichtchenko
Рис. 2. Терминология составляющих элементов байдары

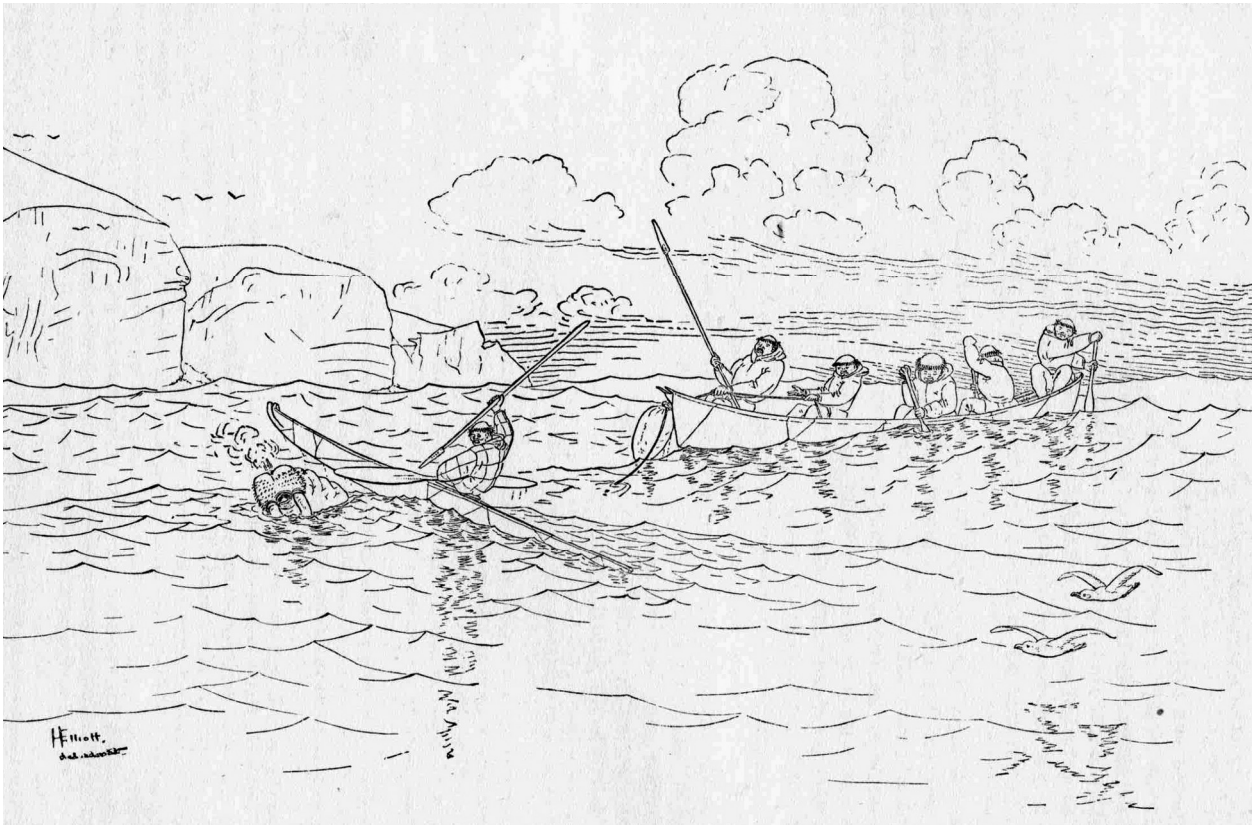

Fig. 3. "A hunter in a kayak ready to strike a walrus with a harpoon" (Elliott, 1886. P. 98)
Рис. 3. "Охотник в каяке, готовый вонзить в моржа свой гарпун" (Elliott, 1886. P. 98)

> *The boats, about 14 feet (4.3 m.) long with 4 feet (1.3 m) beam, consisted of a frame, very neatly lashed together, of pine, with whalebone fastening, over which walrus-hide was stretched; they propelled it with paddles and oars, which were also well made (Elliott, 1875. P. 220–224).*

Riley D. Moore, a medical professional contracted by the Smithsonian Institution to conduct body and facial measurements of St. Lawrence Island indigenous people, recorded larger and narrower *angyapik*s during his stay in Gambell, at the north-western end of the island, in 1919:

> *Kaeluk [Qilak] said canoes were one fathom (6 feet) wide in the middle and four fathoms (24 feet) long, one arm's length (armpit to finger tips) in depth; the width of the bottom in the middle, elbow to elbow, the arms being horizontal and slightly adducted at the shoulder joints. The captain's place is of width equal twice the distance from the tip of the thumb to the tip of the middle finger (with thumb at right angles to hand) plus once the distance from the tip of the thumb to the tip of the middle finger with thumb bent at right angles. The "legs" (ribs) of a boat had a width equal to that of the hand across the palm, and cross-pieces in the bottom of the width of the hand across the fingers at the first phalanx. Paddles are one fathom in length, with hands clasping each extremity (Moore, 1928. P. 349–350).*

Gambell angyapiks at the beginning of the 20th century, therefore, measured up to 7.3 m in length, 1.8 m in width, and 0.6–0.75 m. in depth, with a maximum bottom breadth of about 0.8 m. The length of the "captain's place," a trapezoid bench placed between stringers and the bow of the boat, is equal to the distance between gunwales at the stem. According to Moore's anthropometric measurements this would be around 50 cm. Angyapik ribs were accordingly 18 cm wide, and the bottom cross pieces

were about 15 cm wide. These boats had flat bottoms and could carry 25 to 30 people and two to four tons of cargo (Braund, 1988. P. 64). Stephen Braund, who conducted angyapik study on St. Lawrence island in 1973 reported boats measuring from 9 m. in length and 2 m. in beam to 5 m. in length and 1.5 m. in beam, with average dimensions at 7.3 m by 1.5 m (Ibid. P. 79).

Significant disparity in size between angyapiks described above may reflect the difference between larger boats intended for long-distance travel and whale hunting and smaller watercraft used for hunting smaller sea mammals in the early spring when there is only minimum in open water. At this time of the years smaller and lighter boats offer an advantage as they are easier to drag over sea ice (Ibid. P. 80). Early 20th century photographs and oral traditions also indicate that the Siberian Yupik people of Asia had one-person open skin boats, which could be carried by a single individual and were used for sealing and fishing (Krupnik and Krutak, 2002).

Angyapik frames were made of driftwood and the construction typically took place in summer. According to St. Lawrence elders' knowledge, collected by Gambell whaling captain and artist Roger Silook Sr., birch was particularly sought after: "The people looked for these driftwoods for miles and sometime clear over to the other side of the island" (Silook, 1976). Boat builders used adzes, axes, knives and drills to fashion the wooden frames, which were then fastened with a combination of baleen, walrus rawhide and wooden pegs. Baleen was chosen for lashing the ribs and bottom of the boat because of its water-repellent qualities. Most of the upper part was lashed with rawhide. Before lashing to the rest of frame, gunwales were soaked for several days to make them flexible. The ready frame was smeared with seal or whale blubber to keep it from drying out.

The cover of a St. Lawrence angyapik was typically made of walrus hides, although in one instance bull reindeer was reported to be used for a boat cover in Gambell (Carius, 1979. P. 10). Female walrus skins were preferred because they were softer and less damaged by fighting than males'. Angyapik cover required two or three skins, depending on the boat's size. The skins were first rolled up, covered with an old dried angyapiks skin and left for three weeks in a warm place until the hair came off. The de-haired skins were then stretched on a wooden frame for splitting. Walrus skin is about two inches thick, too thick for a boat cover. Working from the top of the frame, women would split the skin with semi-circular knives, until about two inches to the bottom edge, leaving both halves of the skin attached to each other. The skin was then stretched again and left to dry for almost two months. Then, it was rolled up and soaked in fresh lake water for two or three weeks, after which it was ready to be put on the boats (Carius, 1979. P. 8–9). Three women – two in the middle and one in the bow – sewed the skins with the assistance of one man, who fixed the cover at the stern, "as it needs stronger thread and muscle" (Silook, 1976. P. 2). The thread used to sew the skins was made from twisted whale sinew. Several coats of seal oil were applied to the outside and allowed to dry thoroughly, after which the cover became "impervious to water for a week or ten days" (Nelson, 1889. P. 217). To prevent water-soaking boats were usually hauled up on the shore and dried every night and re-oiled periodically. The longevity of the cover depended on the type of skin used. Typically, it could last about three years. If it was made of male walrus skins, however, it would start leaking and had to be replaced in a year (Oozeva, 1985. P. 169).

Old, used angyapiks skins were often re-used as house floor covers, "because it has been washed itself in salt water for years while they were hunting" (Carius, 1979. P. 8–9). Both practical and ritualistic reasons guided such re-use. The same skin that sheltered mariners in the ocean and camping away from home is made into a part of their house on land.

Angyapiks were traditionally propelled by paddles, which had two different designs: narrower ones (7 inches/17.8 cm wide) used by the crew and wider (1 ft/30.5 cm wide) for the captain of the boat and for the striker or bowman. The legendary "strong men" were reportedly using a big whale's scapula bone for a paddle, which would be about 122 cm wide (Silook, 1976. P. 2). According to Siberian Yupik tradition, if an umiak was successful in taking a whale,

special designs were painted on its paddles with a mixture of the viscous fluid from whale's eyeballs and soot. The eyeball tissues were wrapped in leather and then joined together in pairs and added to the string of amulets belonging to the boat (Bogoras, 1909. P. 408). Interestingly, the design on the Chukchi/Siberian Yupik paddle reproduced in Bogoras is identical to ethnographic miniature paddles from Kukulik site on St. Lawrence island (fig. 12)

In addition to paddles, angyapiks were propelled by sails made of walrus stomachs (fig. 4). The stomachs were cleaned and hung outside for several weeks to allow for "the wind to work them out and make them soft and the weather bleach them. When they are almost white and dry, women cut them open and stretch tissue into 4 ft (122 cm) long strips, which are then sewn together. A hole a size of a pencil is punctuated into every membrane to release the pressure of the wind" (Silook, 1976. P. 2–4).

It is debatable if sail was traditional indigenous technology or technological innovation borrowed from Asian and European industrial societies, but even in the latter case, the transmission of this technology likely occurred well before the beginning of regular direct contacts between the St. Lawrence islanders and Russian, European and American sailors. The earliest definitive evidence for the use of sails on open skin boat is Peary Land umiak from Northern Greenland, which dates to AD 1420–1480 (Jensen, 2003. P. 209–218; Anichtchenko, 2016b. P. 302) In the Bering Strait the sail was well known by 1818, as reported by Captain Otto von Kotzebue (Kotzebue, 1821. P. 199, 202). Oars were likely introduced in the second half of the 19th century, after Yankee whalers began hunting in Bering Strait in 1848, and gasoline motors made their appearance in 1916 (Braund, 1988. P. 73).

Angyapiks were used for hunting (predominantly whale and walrus), travelling along the coast of the island (such as going between the villages, travelling to summer camp or to the various locations of subsistence activities), and long distance voyages. Trading parties from Oongazik (Chaplino or Indian Point in Siberia) and Gambell exchanged visits early

Fig. 4. Ivory smoking pipe NMNH E280599 collected by R.D. Moore in Gambell in 1912. Note image of open skin boat under sail. Photo by E. Anichtchenko

Рис. 4. Курительная трубка из моржового клыка NMNH E280599, приобретенная Р.Д. Муром в Гембеле в 1912-м году. Обращает на себя внимание изображение байдары под парусом. Фото Е. Анищенко

every summer. The distance between Chaplino and Gambell is 50 miles (80.5 km), which took about 20 hours of paddling and less by sailing (Silook, 1976. P. 1). Along with other articles, such as hides, clothing, ammunition and clothes, Siberian traders sought out St. Lawrence Island umiak frames. George Imergan Yaagmiqun of Taphook (a camp between Savoonga and Gambell) in the second decade of 20th century recalled:

> *In these days, every spring people come from Siberian side, for trade. They have parkas, fancy balls, and fancy boats and some deer-skins, and deer legs for sale. So this peoples buy them, Siberian women like some pans, wooden marrow plate which we use for luncheon time only, and any kinds of American things, sewing needles and calico, dress, any kind kettles, and toys for their children. And their men like canoe, paddles, walrus hides, big seal skins, and any kinds of American tools, firearms, ammunitions, shirts. Sometimes they stay here many days (Krupnik and Krutak, 2002. P. 125).*

Trading parties from Siberia typically made a stop in Gambell, and then continued sailing along the coast from village, visiting friends and relatives, sometimes going all the way around the island before returning home (Silook, 1976. P. 16).

St. Lawrence islanders also visited the Asian coast, often venturing farther north from Indian Point, all the way to Lavrentiya Bay in the northern part of the Chukchi Peninsula. Trade with inland Chukchi reindeer herders supplied St. Lawrence Islanders with reindeer meet and skins. Reindeer fat also played a role in their ritualistic offerings. Oral lore and historical accounts attest that some traffic existed between St. Lawrence Island and other islands in the Bering Strait region, although these voyages were likely less regular than those to Siberia (Chlenov, 1988; Krupnik and Chlenov, 2013. P. 34).

The visits from Siberia were not always peaceful. Conflicts often occurred and the retaliation was swift: "an arrow is returned with an arrow, and a spear with a spear and knife is returned with a knife and so on" (Silook, 1976. P. 11). Warring parties also arrived in umiaks, and usually included several boats. These were likely the same vessels as those used for trading. Because of this, all watercraft approaching the island were met with initial suspicion if not aggression, and the ultimate reception depended on many factors, including adherence to social protocols and display of established gestures and objects signalling peaceful intentions. Parties suspected in hostile intentions were met with a rain of arrows and often prevented from landing. Siberians were rumoured to have prayers that could slow down their opponents' boats. Their umiaks, it was said, had special helping spirits, which sometimes made themselves visible as killer whales following the boats (Ibid, P. 13).

Angyapiks are featured prominently in St. Lawrence Island tales, often as a vehicle of transportation between different worlds. In the tale "When the Pale Moon Went Fainting" a woman fleeing her abusive husband is aided first by a skin boat paddled by a crew wearing the same dull white colour, who turned out to be gulls, and then by another angyapik with black-tipped paddles, manned by Arctic terns. In this manner the woman arrives to her new husband, the Creator, who also goes around in an angyapik (Slwooko, 1979. P. 74–79).

In another tale, *The Lost Sister of Ivongo* (Silook, 1929)[4], also known as *Clashing Rocks* (Slwooko, 1979), three brothers are in need of a very special watercraft to find their sister taken away by a supernatural whale/walrus skull. They are instructed to build an angyapik that can outrun flying ducks. After several unsuccessful attempts, the brothers finally build such an angyapik with a birch wood frame covered with beluga whale skins. Their boat's speed is tested when they reach clashing cliffs, which closed behind them as soon and they passed, snapping the end of their boat, but leaving them unharmed and able to continue the journey (Slwooko 1979, P. 55; Silook, 1929[5]).

[4] Silook, P. 1929, *Paul Silook's St. Lawrence Island Stories Recorded by Henry Bascom Collins*, Papers of Henry Bascom Collins, Box 108, American Anthropologists Archives, Washington DC.

[5] Silook, P. 1929, *Paul Silook's St. Lawrence Island Stories Recorded by Henry Bascom Collins*, Papers of Henry Bascom Collins, Box 108, American Anthropologists Archives, Washington DC.

Angyapik also played a central role in one of the most important rituals of St. Lawrence Island, the *Autughuk,* "Moon worshipping," ceremony. Held at the beginning of spring during the new moon from February to April by all boat captains, this was a ceremony of giving thanks for successful hunting in the previous year and of asking for favourable weather in the coming hunting season, particularly during the whale hunt. Some food, including marine mammal blubber and reindeer fat was stored all year for offerings. In preparation for the ceremony it was heaped on two wooden platters. Marine mammal blubber was ground, mixed with oil and rolled into five balls, which are placed on top of the heap, four of them forming the corners of rectangle, and the fifth positioned in the centre. On another platter five little balls made of deer fat were arranged in similar way. The number five had special significance for Native whalers. A whaling captain, for instance, was considered to be a real captain only after he has taken five whales.

The offerings were placed on the floor near the centre post in the captain's house, to which a spear, paddle, and a skin visor worn by the boat captain when a whale is killed, were tied. When it became dark, the boat captain took a small amount of each kind of food and threw it into the sea. Early in the morning before sunrise the umiak crew went to the boat rack and took down the umiak. Hunting equipment was placed inside as if they were going on a hunting expedition. The steersman and other crew members brought platters from the captain's house. With the captain's wife in the lead, they returned to the boat and marched once around it in the direction in which the sun travelled across the sky. After the woman returned home, the whaling crew took the umiak to shore with the captain in the lead carrying a wide steering paddle.

At sunrise a hole was cut in the ice in front of the boat, and the crew took their places in the boat and mimicked the hunt, fanning the air with the paddles. After the sun rose all left the canoe and the captain made a sacrifice, throwing all the little balls, dried codfish and tobacco into the hole. Then two members of the crew took some of the food and touched each part of the boat and each of the hunting implements with it. After this all present finished the rest of the food, and returned to the captain's home, replacing the boat on the boat rack (Moore, 1912, P. 1–2)[6]. Paul Silook added that:

> *Two or three weeks after the ceremony of moon worshipping, the captain and striker take turns in watching the whale boat to see that no one tries to put a piece of human bone or articles belonging to dead people, or a knife that had been used for severing a baby's umbilical cord, the baby dying subsequently. This would frighten the spirit of the whale that they are going to kill (Silook, 1929, P. 2)*[7].

Although the focus of this ceremony is on maintaining a beneficial relationship with the ocean and the involved spirits, it is very informative for understanding the place of watercraft in this relationship. "Sharing" the sacrificial food with the umiak is an acknowledgement of the boat's agency. Like other members of the crew, it has its own spirit and luck, its responsibilities during the voyage or hunting expedition and rights and duties to partake in ceremonies. Similar ceremonies were performed by Siberian Yupik people and by the Maritime Chukchi on Asian shores (Bogoras, 1909), and by Yup'ik and Inupiaq whalers of Alaska (Bernardi, 1912; Fair, 2005. P. 240). Despite missionaries' effort to uproot "pagan practices" the moon worshiping ceremony was practiced on St. Lawrence Island up until 1940s.

Contacts with commercial whalers introduced the indigenous people of the Bering Strait to a new form of watercraft – wooden whale boats. Yankee whalers heading south at the end of the whaling cruise were eager to get rid of used whaleboats and traded them for 20 to 30 baleen pieces, a price that many Native families could afford if at least one whale was taken (Bogoras, 1909. P. 629; Braund, 1988, P.

[6] Moore, R. D. 1912, *Field report from St. Lawrence Island*. Unpublished manuscript. National Anthropological Archives, Smithsonian Institutions, Washington, DC. Aleš Hrdlička Collection, box 97.

[7] Silook, P. 1929, *Paul Silook's St. Lawrence Island Stories Recorded by Henry Bascom Collins*, Papers of Henry Bascom Collins, Box 108, American Anthropologists Archives, Washington DC.

100). Although significantly heavier and harder to maintain than umiaks, whaleboats were popular because of their manoeuvrability under sail, and because they did not become waterlogged. By the end of the 19th century whaleboats were widely used by the St. Lawrence Islanders, along with traditional skin watercraft (Braund, 1988. P. 104–107).

This situation changed again in the 1930s following the collapse of commercial whaling, when wooden boats became both more scarce and harder to barter for. Instead of returning to the traditional flat-bottomed design, however, the islanders began building round-bottomed skin boats, which incorporated elements of both. This innovation originated from the Bering Strait community of King Island, where a local man Jimmy Atłuk devised skin boat with an inboard motor well and steam-bent ribs, which made the boat more seaworthy under increased power (Bogojavlensky, 1969. P. 215)[8]. By 1930s, the bent-rib umiaks spread into St. Lawrence and Little Diomede Islands, completely replacing traditional flat-bottom boats (Ibid. P. 115). All angyapiks currently built and used on St. Lawrence belong to this type. Only a handful flat bottom boats survived in the island's communities and museum collections providing examples of "old style "construction technique.

Despite the difference in the lower hull design, contemporary round-bottom angyapiks and surviving examples flat bottom St. Lawrence boats exhibit noticeable similarities. While flat-bottom boats have a lower board, which makes them more practical for paddling, both boats have nearly vertical stern and very slightly angled stem. The gunwales terminate at the stem and stern posts without protruding forward or aft (fig. 5). This design is similar to open skin boats of Chukotka. Interestingly, some early ethnographic evidence depicts a noticeably different watercraft construction. Ludwig Choris, the artist aboard of Otto von Kotzebue's ship Rurik, which visited St. Lawrence Island in 1817, sketched a boat with long protruding gunwales and seemingly bent ribs (fig. 6) while an angyapik depicted on ivory smoking pipe collected by R.D. Moore in Gambell in 1912 (fig. 4) is a boat with angled bow and nearly vertical stern. Are these images results of freedom of artistic rendering, or evidence of changes in St. Lawrence boat construction? To find out the answer to this question we need to consult archaeological data.

Archaeological evidence

According to the archaeological data, St. Lawrence Island was populated by circa 50 BC, by people with close cultural affiliations with contemporaneous inhabitants of the Chukotka Peninsula (Dumond, 2009. P. 72; Blumer, 2002). Settlements of this culture, which became known as Old Bering Sea (OBS), were positioned along the island's north shore in locations that allowed easy access to maritime resources. Walrus and seals were particularly important for these people's subsistence, and the lack of OBS sites along the southern shore is attributed to the scarcity of walrus in that area (Ackerman, 1961[9]; Ackerman, 1962). Zooarchaeological analysis demonstrates that animals were taken year-round, which implies hunting both on sea ice and open water (Crowell, 1985. P. 10).

Scholars maintain that the initial colonizers came to St. Lawrence from Chukotka with a fully developed Arctic adaptation specifically and expertly geared to sea ice-edge habitat, which by default included watercraft (Crowell, 1985. P. 11). Regrettably, the only archaeological evidence of OBS boats uncovered to date are wooden and ivory miniatures depicting kayaks. These kayak miniatures display notable consistency of style across the sites on both sides of Bering Strait, such as Ekven cemetery on the Chukotka Peninsula (Bronshtein, 2007; Bronshtein and Dneprovsky, 2009. P. 94), Miyowagh on St. Lawrence Island (Collins, 1937. P. 413–414. Plate 59; fig. 1–7) and Point Hope in north-western Alaska (Anichtchenko, 2017. P. 33–36). Open skin boats representations began appearing in more recent

[8] Bogojavlensky, S. 1969, *Imaangmiut Eskimo careers: skin boats in Bering Strait*. Unpublished Ph.D. dissertation, Cambridge, Massachusetts: Harvard University.

[9] Ackerman, R. E. 1961, *Archaeological investigations into the prehistory of St. Lawrence Island*, Alaska. Unpublished PhD dissertation, University of Pennsylvania.

Fig. 5. Butchering whale from umiak. Gambell, St. Lawrence Island, April 20–29, 1966
Photographer: Ward W. Wells. Anchorage Museum at Rasmuson Centre, wws-4393-223
Рис. 5. Разделка кита с байдары, Гембел, остров Св. Лаврентия, 20–29 апреля 1966 года
Фотограф: Вард Вэлс. Музей Анкореджа при Центре Расмусона, wws-4393-223

archaeological sites belonging to Punuk and Thule cultures, starting from circa 1100 A.D (fig. 7).

During the Thule/late Punuk period, organized crew whaling became a focal point of both subsistence and social organization. This shift had a tremendous and lasting effect on every area of people's life. Much of the St. Lawrence island technologies and social and ceremonial practices recorded ethnographically originated at that time, which prompts some scholars to consider Punuk phase of St. Lawrence material culture to last from 700 AD to circa 1600 AD (Anderson, 1978; Bandi, 1969; Collins, 1937). By comparison with the OBS period, boat remains are more frequent in the Punuk and Thule layers of all St. Lawrence Island sites, and are represented by both miniatures and full-scale boat fragments and paddles. Much of archaeological boat data was uncovered during the excavation of

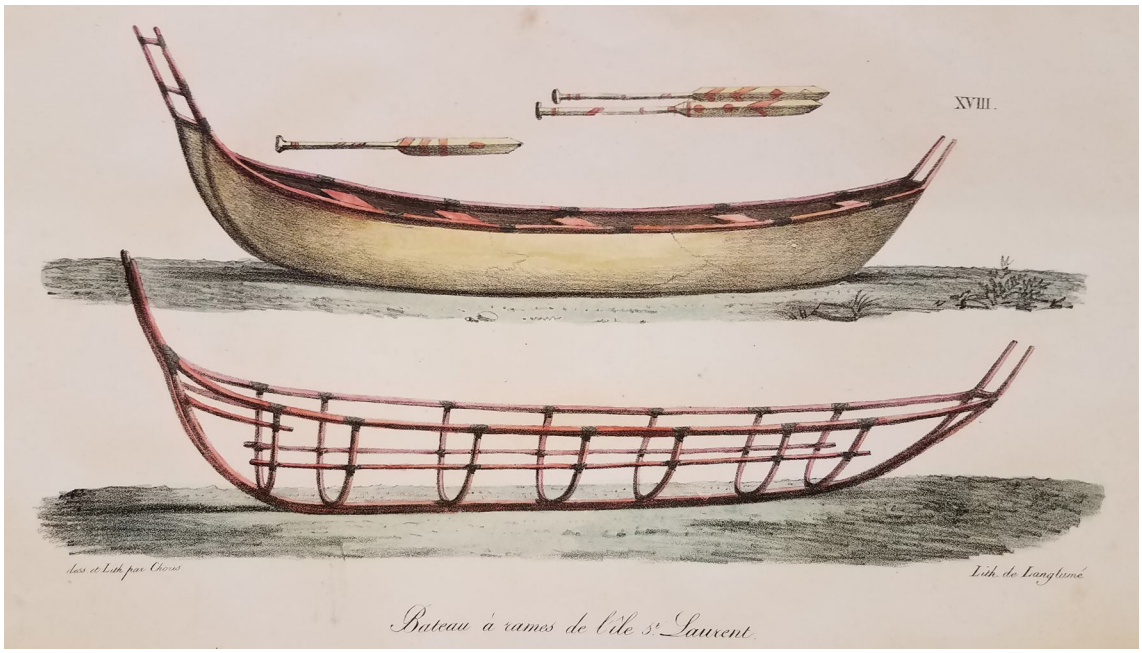

Fig. 6. Boat of St. Lawrence Island, Ludwig Choris (Choris, 1822. Plate XVIII)
Рис. 6. Лодка острова Св. Лаврентия, Людвиг Чорис (Choris, 1822. Plate XVIII)

Fig. 7. Ivory boat model from Old Gambell site, St. Lawrence Island, NMNH A-333165. Photo by E. Anichtchenko
Рис. 7. Модель лодки из моржового клыка из археологического раскопа Старый Гембел, остров Св. Лаврентия. Фото Е. Анищенко

settlement sites, some of which, such as Kukulik site, were inhabited for circa two thousand years. Long history of habitation and poor providence information often make it challenging to date individual artefacts. All examples of archaeological boat data provided in this article come from two main collections: artefacts excavated by Otto Geist in 1926–1935 curated at the University of Alaska museum of the North (UAMN), and the Smithsonian National Museum of Natural History (NMNH) Henry Collins collection, which resulted from Collins' work on St. Lawrence Island in 1928–1929.

Miniatures

Despite of varied level of craftsmanship, different materials and likely multiple purposes, all St. Lawrence island boat miniatures could be divided into two groups: 1) composite artefacts consisting of individually carved miniature frame pieces that were at some point fastened together in the same manner as full scale boats; and 2) models carved as a single piece depicting watercraft. The examples of former include miniature keels, cross pieces and head boards, of which headboards are particularly numerous (fig. 8). Composite models may have served a double

Fig. 8. Miniature angyapik headboards (UAMN, 5-1934-1692, 1693, 1694) and keel (UAMN 5-1934-1690) from the Kukulik archaeological site, Otto Geist collection. Photos by E. Anichtchenko
Рис. 8. Миниатюрные кормовые и носовые доски (UAMN, 5-1934-1692, 1693, 1694) и киль ан'япика (UAMN 5-1934-1690) из археологического раскопа Кукулик, коллекция Отто Гайста. Фото Е. Анищенко

purpose as a child's toy and a practical illustration for skin boat construction.

Miniatures representing complete boats are also comparatively frequent and depict several stylistically different open boats. The majority of them attest to flat bottomed watercraft with nearly identical treatment of stem and stern (double ender design) (fig. 9 bottom), but some also show "asymmetric" boats with stern visibly wider than the bow (fig. 9 top). Both types are found in the same archaeological sites. In Kukulik "asymmetric" design appear to be in stratigraphic layers pre-dating "recent prehistoric "assemblages, which may potentially imply the existence of this design at some point prior to the 1600s AD. The expertly fashioned model UA 1-1935-8996 shows a boat with a stem end slightly sharper than the stern. This asymmetry is emphasized by gunwales which are joined forward of stem post, but remain separated at the stern (fig. 9 top).

With the exception of a single umiak model (UA 3-1934-3741; fig. 9 bottom) agnyapik miniatures lack thwarts, making it difficult to assess the size of the crew. An ivory bag handle (NMNH A344600), excavated by local Native people from an unknown location in the Kukulik midden and purchased by Henry Collins, shows five individuals in a boat pursuing

Fig. 9. Wooden angyapik miniatures from Kukulik site, St. Lawrence Island. Top: UAMN 1-1935-8996; bottom: UAMN 3-1934-3741. Photo by E. Anichtchenko
Рис. 9. Деревянные миниатюрные ан'япики из археологического раскопа Кукулик, остров Св. Лаврентия: *вверху : UAMN 1-1935-8996; внизу: UAMN 3-1934-3741.* ***Фото Е. Анищенко***

a diving whale (fig. 10). This may be interpreted either as a crew of ten, or, more likely, as six paddlers plus a harpooner at the stem and steersman/captain at the stern.

One of the St. Lawrence Island angyapik representations differs significantly from other miniatures in its appearance and functional and ritualistic meanings. Found in a structure near the entrance of House 3 of the Kukulik site, the artefact is a boat-shaped box with fins carved into one end of it and a six-legged creature painted in black over red-stained sides (Geist and Rainey, 1936. P. 66; fig. 11). The image is unusual for the St. Lawrence Island material culture, but well-rooted in the mythology of Central Yup'ik people of mainland Alaska, where this creature is known as *polraiyuk,* an alligator-like monster dwelling in lakes, creeks and marshes. In Central Yup'ik creation legend the Raven cautions the First Man not to drink from the lakes because *polraiyuk* would seize and destroy any one who ventured near. Edward Nelson reported that "nearly all of the umiaks in the country of lower Yukon and to the southward have a picture of this animal drawn along the entire length on each side of the boat, with the head near the bow" (Nelson, 1889. P. 445).

The box contained two drinking tubes, five sinkers and an incomplete whale harpoon head. Geist and Rainey called this artefact an "idol boat" indicating a presumed ritualistic meaning (Geist and Rainey, 1936. P. 66). While this artefact is

Fig. 10. Ivory handle depicting angyapik hunting scene, NMNH A344600. Photo by E. Anichtchenko
Рис. 10. Ручка из моржового клыка с изображением охотничьей сцены, NMNH A344600. Фото Е. Анищенко

Fig. 11. "Idol boat" from the Kukulik archaeological site. UAMN 01999-200. Photo by E. Anichtchenko
Рис. 11. "Лодка идола" из археологического раскопа Кукулик, остров Св. Лаврентия. UAMN 01999-200 Фото Е. Анищенко

unprecedented for St. Lawrence Island, similar boxes often carved in shape of marine mammals are known from different Chukchi Sea sites. According to ethnographic accounts, such boxes containing whaling harpoons and various charms were kept on board umiaks while hunting whales. The Kuklik idol boat, thus, combines elements of two Alaskan indigenous cultures: Yup'ik people living south of Bering Strait, and Inupiaq nation of Chukchi Sea littoral.

Paddles

Along with boat models, archaeological assembly of St. Lawrence Island contains multiple examples of miniature paddles. Both kayak and angyapik paddles of St. Lawrence Island were single bladed, which makes it difficult to establish if these miniatures refer to open or decked watercraft. It is, however, notable that miniature paddles are the largest group of boat-related objects across the entire data set, which contrasts sharply with full scale paddles – the least

represented group – and poses the question of purpose and significance of these miniatures.

According to the ethnographic information, paddles, both full scale and miniature, played a prominent role in the Kozeevuh/Kaziva (going around) ceremony, held over five days in the beginning of January. The festivities took place in a tent-like structure made of wooden poles, paddles, seal skins and snow to house. William Furman Doty, a school teacher who attended the Kaziva ceremony hosted by the whaling captain Assoone in 1899 in Gambell, described the construction:

> *A long steering oar was firmly tied in a horizontal position aloft, supporting the frame work of paddles and ropes, while a paddle which had been successfully used by Assoone [Asunaghaq] in steering his canoe in several prosperous whale-hunting trips, was secured to a pole. The blade of this paddle had been painted black, except a strip a couple inches wide, painted from water taken from the eye of a whale and boiled for quite a long time. This paddle was highly prized for by its aid Assoone claimed to have taken four whales" (Krupnik and Krutak, 2002. P. 288).*

A stone lamp was placed in the centre of the room and wooden idols representing men and women in equal numbers were placed in two rows on each side of the lamp, men facing women. A hundred or more miniature paddles decorated with figures painted in seal's blood were suspended from the rope in pairs. On the first day of celebration, the host invited boys and girls of the village to join in singing and dancing. At the end of the day the boys were seated on the floor under the canoe paddles. When the last of the girls have finished dancing all of the boys jumped up and get as many of the canoe paddles as possible, which they keep for souvenir (Moore, 1912. P. 3–4)[10].

Next day the man of the household took the paddle and ran to the homes of his friends tapping with it on the door to invite them to the ceremony. That evening invited men and their wives arrived to the host with presents of food.

> *When all the guests have arrived the lamp is extinguished and while the host and his wife sing for them, each man of that household catches one of the visiting women about the waist and marches around the lamp with her in the direction which sun travels around the heavens. The woman each man chooses on this occasion is always one with whom he has cohabited at some previous time when the men traded wives. After these have marched around the lamp the husbands of these women each selects a woman of the household and catching her about the waist marches around the lamp as the others had done, after which the guests all go to their homes (Ibid. P. 2)[11].*

On the third day, the host once again goes around with his paddle, calling at the same homes. The ceremony repeats the previous night with the difference that this time the couples walk around the lamp in opposite direction, or "unwind" as they call it. On the following day, the festivities continue with drumming, singing, gifts, and later in the night, exchange of wives. The celebration completes next day when the entire community is welcome and the men entertain guests with a wrestling competition.

Although paddles may appear a mere accessory in this celebration of family alliances re-confirmed with rituals, sharing of food and sexual exchanges, they carry an important meaning. Congregating in the structure constructed of paddles and summoning guests with their aid evokes the partnership of men in maritime pursuits in general, and in angyapik crew in particular, along with social context and impact of this partnership. Each crew member uses one paddle, thus in a practical sense the number of paddles is equated with the size of the crew. In a broader metaphorical context paddles represent an individual's effort in a collective undertaking. Thus, seizing of miniature

[10] Moore, R. D. 1912, *Field report from St. Lawrence Island*. Unpublished manuscript. National Anthropological Archives, Smithsonian Institutions, Washington, DC. Aleš Hrdlička Collection, box 97.

[11] Moore, R. D. 1912, *Field report from St. Lawrence Island*. Unpublished manuscript. National Anthropological Archives, Smithsonian Institutions, Washington, DC. Aleš Hrdlička Collection, box 97.

paddles during the children's ceremony may refer to future alliances that young men need to make to assure their social and economic success. It is possible that such "souvenirs" were kept as charms as the young boys grew to be expert mariners, or, perhaps, were stored in bulk for future ceremonies.

The Kozeevuh ceremony provides a plausible explanation for the abundance of paddle miniatures in Kukulik and other St. Lawrence sites, such as Kialegak and Mesaghmiit. In terms of general site stratigraphy, Kukulik miniature paddles come from comparatively recent layers, corresponding to Gesist's "recent prehistoric" period, i.e. AD 1649–1879, which makes this ethnographic analogy particularly relevant. In the older and more chronologically constrained sites miniature paddles are either much less frequent or absent all together. The artefact assemblage excavated by Collins from the Miyowagh site, dated to 1250–1400 cal AD (Blumer, 2002. P. 74) contains only one miniature paddle. The Ievoghiyoq site, occupied between 880 and 1300 cal AD with a peak of probability around 1085 cal AD, lacks this type of artefact alltogether.

The ceremony is also evidence of the consistence of paddles' ritualistic meaning between peoples from St. Lawrence Island and the Siberian coast. While miniature paddles from the St. Lawrence archaeological context lack pigmentation, ethnographic samples collected by Henry Collins in 1930s are decorated with simple geometrical designs (fig. 12). It is noteworthy that these designs are identical to those the people of Chukotka rendered with liquid from a whale's eye on full-scale paddles during the celebration of a successful whale hunt (Bogoras, 1909. P. 408).

Four different variants can be distinguished on the basis of miniature paddle blade shape and proportions (fig. 13). Only Variant I and III are represented by extant full-scale examples of St. Lawrence Island paddles. All of full-scale paddles located during this research were incomplete, although Geist reported excavating a complete paddle in the House 1 Test Cut, measuring to 110 cm in total length with 37 cm long blade (Geist and Rainey, 1936. P. 121–122).

All extent examples of St. Lawrence Island paddles appear to be composite, meaning that were constructed with individually fashioned blade and handle, lashed together. Artefacts NMNH A355720 and NMNH A355721 from the Ievoghiyoq archaeological site at the western tip of St. Lawrence Island illustrate how the blade was attached to the shaft. The blade's neck is scarphed for attachment to the shaft and has two peg holes with remains of a bluish-greenish residue, possibly clay adhesive applied to secure the joint (Anichtchenko, 2017. P. 40). The paddle shaft has similar diagonal scarf and peg holes that line up with those at the neck of the blade and are smeared with the same clay substance. In addition to pegs and adhesive, the pieces were secured with two rows of lashing as evident from the discoloration on the "neck" of the blade above the scarf.

The shape of the Ievoghiyoq paddle shaft and rectangular mortise carved into it suggest that it was made out of a recycled kayak gunwale. The object was sampled for AMS ^{14}C analysis and yielded an age of Cal BP 735 to 670/Cal AD 1215 to 1280 (Beta-409145), attesting to the longevity of composite paddle technology, the more recent examples of which are provided by miniature paddles from the Kukulik and Kialegeak sites. The angyapik head board NMNH A355722, found in spatial association with the composite paddle NMNH A355720/NMNH A355721, implies that the latter was used for angyapik propulsion.

Full scale boat fragments

Despite fragmentary character of the data, archaeological remains of full scale boats provide some information regarding the size and proportions of St. Lawrence angyapik and their constructional details. These data are particularly rich at the Kukulik archaeological site. Two full scale posts excavated in the main midden of this site measure to approximately the same height (45 and 46 cm respectively) and about the same width. The upper end of the post has two lashing holes for attaching headboards. The end of the horizontal section of the post is scarphed to accommodate connection with the keel (fig. 14 A).

Fig. 12. Ethnographic miniature paddles collected by H. Collins on St. Lawrence Island circa 1930, E260268, National Museum of Natural History, Washington, DC., Photo by E. Anichtchenko

Рис. 12. Этнографические миниатюрные весла, приобретенные Г. Коллинсом на острове Св. Лаврентия около 1930-го года, E260268, Музей Естественной Истории, Вашингтон, США. Фото Е. Анищенко

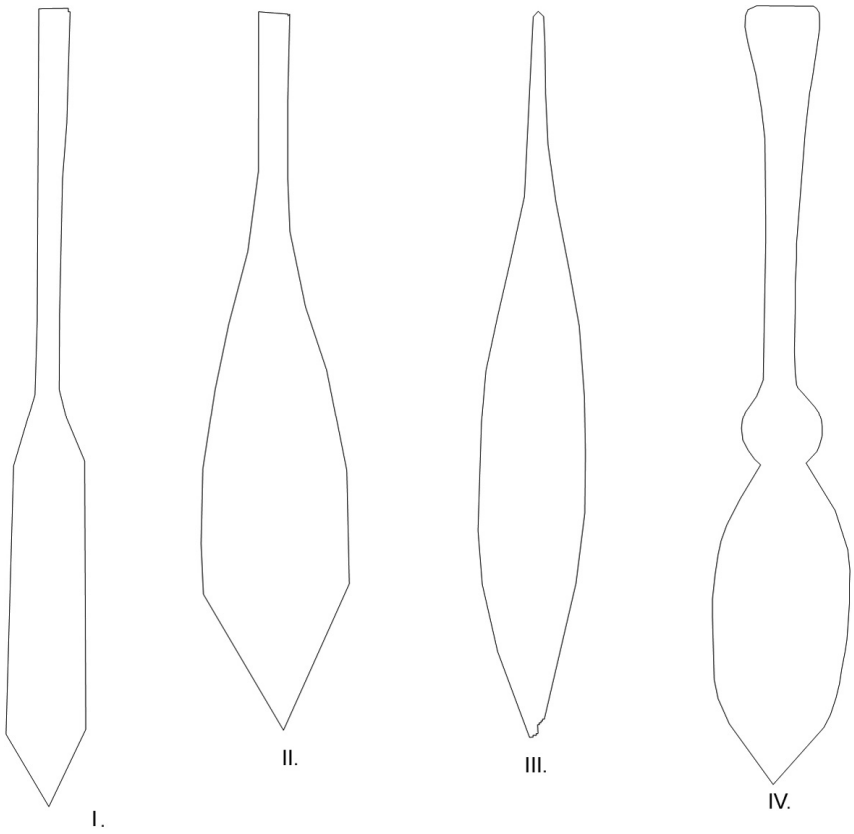

Fig. 13. Kukulik paddle variants based on miniature paddles. Drawing by E. Anichtchenko
Рис. 13. Варианты дизайна весел из археологического раскопа Кукулик по материалам миниатюр Рисунок Е. Анищенко

Headboards were mortised into the post's tenon and further secured with leather thong lashing (fig. 14 A). Headboards excavated at Kukulik are of the same type: T-shaped frames with a triangular back panel and rectangular top carved out of single piece of wood, and ranging in height between 16 and 23 cm. The cumulative height of the angyapik at the posts would then be between 61 and 69 cm, which is close to the height of ethnographically recorded angyapiks. The length of the upper horizontal part of headboards allows for an estimate of the distance between gunwales at the post and ranges between 24 and 44 cm. A flat seat was placed over the T-shaped frame. In the Kukulik data sample these seats have a semi-circular shape lacking the sharply defined corners of trapezoid-shaped seats of more recent angyapiks.

Headboard UAMN 1-1927-582, collected in Gambell by Geist, has a single red bead inserted underneath the horizontal part of the T-shaped headboard (fig. 14 A). Beads often carried a special sacral meaning and this placement is hardly coincidental, however no information regarding the meaning of this treatment is currently available. While many Arctic indigenous maritime nations decorated umiak headboards (Anichtchenko and Crowell, 2010), this particular type of ritualistic embellishment appears to be unique to St. Lawrence Island and has no analogues from Alaska. More data from Siberian sites would provide much needed comparative material.

Two T-shaped headboard frames from the floor of House 2 in the Test Cut of Kukulik site may have belonged to the same boat, in which case the difference in width between gunwales at the stem and stern of this particular watercraft was only 6 cm. This contrasts noticeably with the asymmetric end design suggested by a miniature originating from the same stratigraphic context. The same house feature also contained two more angyapik frames: a 71 cm long bottom cross piece and 57.5 cm timber that may have served as a thwart.

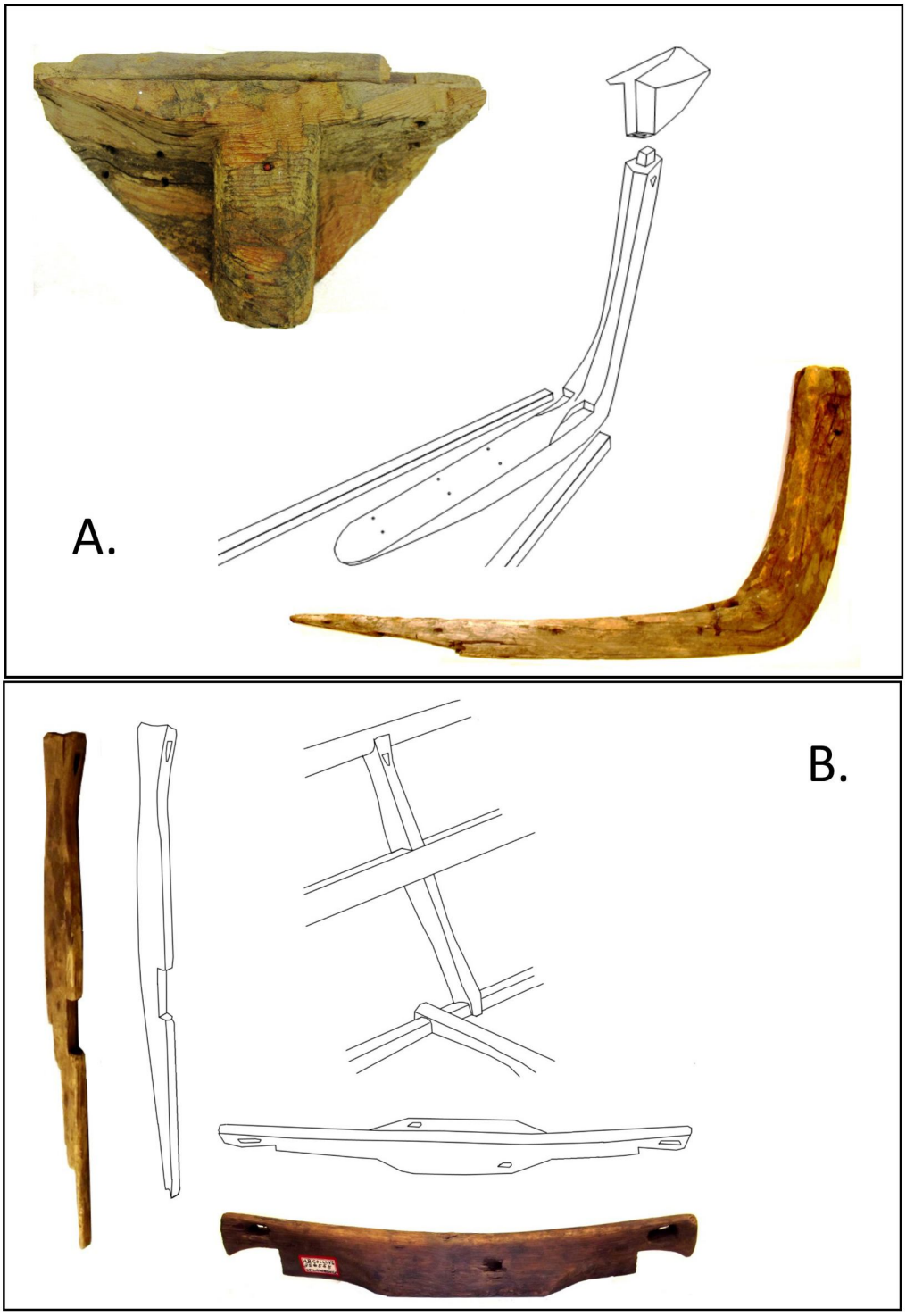

Fig. 14. Reconstruction of angyapik frame construction from St. Lawrence Island: *A – post and keel arrangement showing post UAMN 1-1935-3923 from Kukulik archaeological site measuring to 75:45:6.5cm, and headboard from Gambel. UAMN 1-1927-582; B – angyapik chine, rib and bottom cross piece assembly showing bottom cross piece from Kukulik, UAMN 5-1934-2167 and rib UAMN 3-1934-3877.* ***Photos and drawings by E. Anichtchenko***

Рис. 14. Реконструкция каркаса ан'япика острова Св. Лаврентия: *А – схема соединения форштевня и киля с форштевнем из археологического раскопа Куклик UAMN 1-1935-3923 (75:45:6.5cm) и кормовым навершием из Гембела UAMN 1-1927-582; В – схема соединения донного шпангоута, донного стрингера и штевня с донным шпангоутом UAMN 5-1934-2167 и штевнем UAMN 3-1934-3877 из археологического раскопа Куклик*
Рисунки и фото Е. Анищенко

The cross piece is a slender elongated frame with a width of 5.5 cm at the widest point in the middle and 2 cm at its narrow ends (fig. 14 B). The ends were carved at 4 cm from the tip to fit over the bottom chines. Two sets of holes piercing the timber diagonally from its underside to the side indicate that the frame was lashed to the 10 cm wide keel. With minor variations, most of the bottom cross timbers from Kukulik follow the same design and vary in size between 27 and 71 cm in length and 3.5 and 8 cm in width. Identical shape of open skin boat cross-bottom timbers can also be found in early 20th century umiak models from Chukotka, Russia.

Kukulik angyapik side ribs are represented by 14 artefacts. Judging by the spatial distribution, six of them belonged to the same angyapik dating from the early to mid-19th century (UAMN 5-1934-2169, 2170, 2171, 2172, 2174/57 and 2176/77. The ribs are 60 cm long and 6–7 cm wide, rectangular in profile with a slight curve carved on top and the bottom to fit over the gunwale and lashing holes at each end to secure the joint. A single rectangular opening, 8 cm long and 1 cm deep is carved on the inward facing surface of the rib for side chine (fig. 14 B). This design was apparently used in different St. Lawrence Island locations from at least the 15th century AD, since a single rib fragment of the same appearance was excavated by Moreau Chambers in 1933 at the Miyowagh site (NMNH A371150). In the larger geographical context, a stringer notch carved into ribs is a rather unusual feature. Outside of St. Lawrence Island this element is known from only two other locations: Siberia's Chukotka Peninsula and Greenland.

In addition to paddles, Kukulik angyapiks were propelled by oars. Oar technology is represented by a single miniature oar UAMN 1-1935-3680 and a number of both full-scale and miniature examples of oar locks. Oar lock assembly consisted of two parts: wooden blocks with pegs which received oars and braces with sockets which were lashed to angyapik gunwales and into which oarlock pegs were inserted (fig. 15). Geist writes:

> *Oar locks and sockets of this kind were used on St. Lawrence Island until recently. The tendency now is to use metal oar locks. Old Eskimo say that these were not known before the advent of the white men, as previous to that time all boats were paddled and not rowed. The majority of the specimen in the*

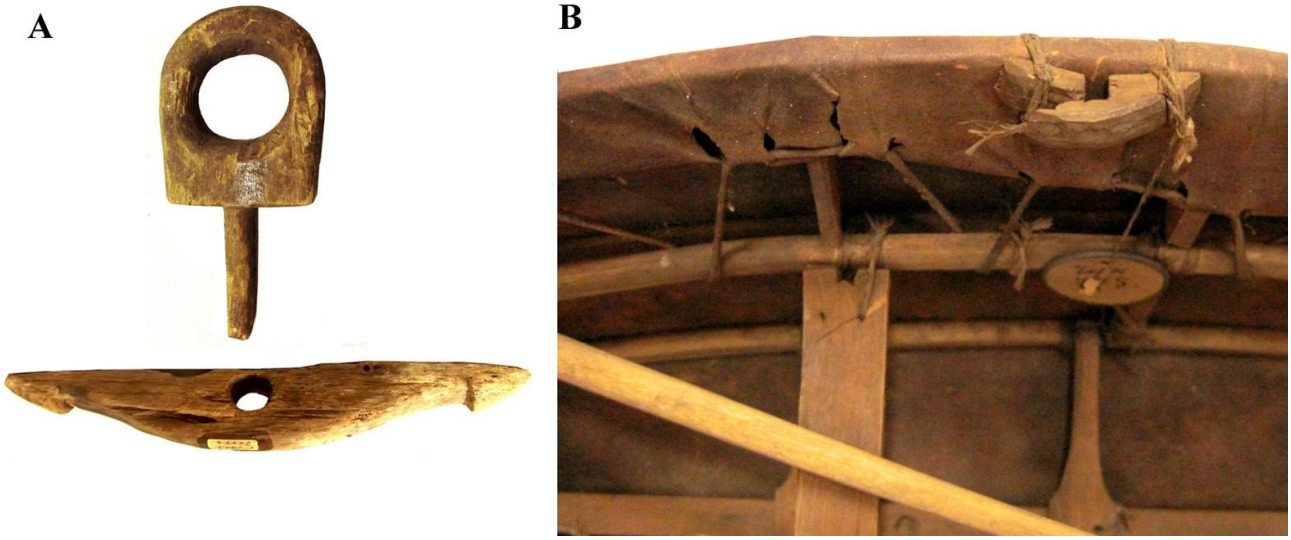

Fig. 15. St. Lawrence angyapik oar attachment system: *A – Oar socket UAMN 3-1934-2562 with brace UAMN 1-1933-6647G, Kukulik, University of Alaska Museum of the North; B – detail of Siberian Yupik umiak model 2083-64 showing gunwales with lashed brace for oar socket, Russian Ethnographic Museum, St. Petersburg.* ***Photos by E. Anichtchenko***

Рис. 15. Система крепления длинного весла в ан'япике острова Св. Лаврентия: *А – ключина UAMN 3-1934-2562 со скобой (UAMN 1-1933-6647G, Кукулик, Музей Севера, Университет Аляски); В – крепление ключины в моделе байдары сибирских юпиков (2083-64, Русский Этнографическиц Музей, Санкт-Петербург, Россия)*

Фото Е. Анищенко

collection are made from oak and, as Nelson points out, were probably copied from those seen on whaling vessels (Geist and Reiney, 1936. P. 121).

The stratigraphic positioning of all Kukulik oarlock artefacts is consistent with this assessment. None of these artefacts can be reliably placed into a temporal context predating contact with non-native newcomers.

Use of sail technology is attested by ivory and bone rigging hooks (UAMM 1-1934-3631, UA2-1934-2463) and two mast steps (UAMN 1-1933-0632 and UA 5-1934-2162). The shape of mast step UAMN 1-1933-0632 resembles the above-mentioned oar lock gunwale cleats, but the round opening is slightly larger and is not carved all the way through (fig. 16 top). Mast steps of this design are known from ethnographic models from Chukotka in which they were lashed to the boat's bottom cross piece (see, for example, Russian Ethnographic Museum Chukchi umiak model 2083–6632 collected in Anadyr region in 1904–1907). St. Lawrence Island mast steps may have

Fig. 16. Angyapik mast steps: *top – UA 1-1933-0632, Kukulik East slope, recent meat cache; bottom – Whale bone mast step purchased by Riley Moore on St. Lawrence Island, Alaska in 1912. NMNH E280347.* ***Photos by E. Anichtchenko***

Рис. 16. Крепления для основания мачты: *вверху – деревянное крепление UA 1-1933-0632, Кукулик, восточный склон, хранилище мяса, 19-й век; внизу – крепление из китовой кости NMNH E280347, приобретенное Райли Муром на острове Св. Лаврентия в 1912-м году.* ***Фото Е. Анищенко***

had several different designs. A mast step collected by Riley Moore in 1912, for instance, is square and made out of whale bone (fig. 16 bottom). All mast steps and rigging hooks in Kukulik artefact assemblage were found in "recent" stratigraphic layers.

In sum, St. Lawrence archaeological data provides insight into 600 years of open skin boat use and technological development, from approximately the 1200s AD to 1880 AD. Angyapik miniatures suggest that boat designs may have undergone various changes. Excavated boat frames reveal that the prehistoric St. Lawrence angyapik was a large boat, measuring to 60–70 cm in height and up to at least 71 cm at the maximum bottom width. The length of the boat is harder to estimate. St. Lawrence Island angyapiks were propelled by all three methods: paddles, oars and sail. The exact timing of the introduction of oars and sail cannot be precisely established at this time, but a ^{14}C analysis of oar locks and mast steps from the Kukulik site may shed light on this question in the future.

Conclusion: St. Lawrence angyapik chronology and geographical typology

The analysis of St. Lawrence skin boat data extends our understanding of this technology by about a millennium, taking it from ethnographic time to circa the 11th century AD. It appears that over time angyapiks underwent some changes, but that the basic construction may have not changed significantly between circa the 1400s AD and the second half of the 19th century when intensified contacts with commercial whalers fostered a switch to round-bottomed angyapiks.

The combination of ethnographic and archaeological data demonstrates that in terms of constructional details (stringer notches in side ribs, shape and lashing pattern of bottom cross-timber, mast step configuration) and ritualistic treatment (paddle designs rendered with whale eye liquid, moon worshipping ceremony) St. Lawrence angyapiks were aligned with open skin boats of Chukotka. At the same time, Kukulik "boat idol" and bead decoration in the headboard from Gambell indicate that angyapiks were ritualistically embedded and that skin covers of St. Lawrence angyapiks in the past may have been decorated with animal designs, similar to ethnographically known boats of the Central Yupik people. Such "bi-coastal" influences may have resulted from regular exposure to the cultural and technological traditions of both Siberian and Alaskan costs of Bering Strait. This recognition, in turn, invites a greater awareness of skin-covered watercraft and practice of indigenous seafaring in the Bering Sea region and the Arctic and subarctic zones in general. As agents and artefacts of interregional mobility, indigenous skin boats are not static reflections of people's adaptations to particular environmental conditions and subsistence requirements, but a dynamic record of socio-political exchanges and logistics of mobile maritime societies. Understanding this record is essential for comprehension of prehistoric and recent coastal cultures and maritime networks of Alaska and the circumpolar north in general.

References

Ackerman, R. E. 1962, Culture contact in the Bering Sea: Birnirk-Punuk period, *Prehistoric cultural relations between the Arctic and Temperate Zones of North America,* Montreal: Arctic Institute of North America Technical Paper, No. 11, p. 27–34.

Adney, E. T. and Chappelle, H. I. 2007, *Bark canoes and skin boats of North America*. New York: Skyhorse Publishing, 256 p.

Ainana, L., Tatyga, V., Typykhkak, P. and Zagrebin, I. 2003, *Umiak, The Traditional Skin Boat of the Coast Dwellers of the Chukchi Peninsula*. Compiled in the Communities of Provideniya and Sireniki, Chukotka Autonomous Region, Russia. Anchorage: National Park

Библиографический список

Ackerman, R. E. 1962, Culture contact in the Bering Sea: Birnirk-Punuk period, *Prehistoric cultural relations between the Arctic and Temperate Zones of North America,* Montreal: Arctic Institute of North America Technical Paper, No. 11, p. 27–34.

Adney, E. T. and Chappelle, H. I. 2007, *Bark canoes and skin boats of North America*. New York: Skyhorse Publishing, 256 p.

Ainana, L., Tatyga, V., Typykhkak, P. and Zagrebin, I. 2003, *Umiak, The Traditional Skin Boat of the Coast Dwellers of the Chukchi Peninsula*. Compiled in the Communities of Provideniya and Sireniki, Chukotka Autonomous Region, Russia. Anchorage: National Park

Service Shared Beringian Heritage Program, 79 p.

Alix, C., Mason, O., Norman L. 2018, Whales, wood and baleen in Northwestern Alaska – reflection on whaling through wood and boat technology at the rising whale site, Korean Prehistoric Art II, Whale on the Rock, Ulsan: Ulsan Petroglyph Museum, p. 41–68.

Anderson, D. D. 1978, Western Arctic and Subarctic, *Chronologies in New World archeology*, New York: Academic Press, p. 29–50.

Anichtchenko, E. V. 2017, Reconstructing the St. Lawrence Island kayak: from forgotten watercraft to a Bering Sea Maritime Network, *Alaska Journal of Anthropology*, Volume 15, # 1&2, p. 25–48.

Anichtchenko, E.V. 2016b, Indigenous sailing in the Arctic, *Marine Ventures: archaeological perspectives on human-sea relations. Proceedings from the Marine Ventures symposium in Trondheim 2013.* Sheffield: Equinox Publishing, p. 287–302.

Arima, E. Y. 1999, Barkless Barques, *The Canoe in Canadian Cultures,* Ottawa: Natural Heritage/Natural History Inc, p. 43–61.

Bandi, H-G. 1969, *Eskimo prehistory.* Fairbanks: University of Alaska Press, 236 p.

Bernardi, S. R. 1912, "Whaling with Eskimos of Cape Prince of Wales: woman teacher of local nativity writes of the sport of the sea and attendant weird customs among the aborigines of Alaska*, Louisville Courier Journal*, October 20, Sect. 4, p. 1, 12.

Blumer, R. 2002, Radiochronological assessment of neo-Eskimo occupations on St. Lawrence Island, Alaska, *Archaeology in the Bering Strait region, University of Oregon Anthropological Papers No. 59,* Eugene: Department of Anthropology and Museum of Natural History, University of Oregon, p. 61–106.

Bogoras, W. 1909, *The Chukchee: social organization. Memoirs of the American Museum of Natural History,* Vol. 11, Part 3. New York: E. J. Brill & G. E. Stechert & Co, p. 733.

Braund, S. R. 1988, *The skin boats of Saint Lawrence Island, Alaska*. Seattle: University of Washington Press, 141 p.

Bronshtein, M. M. and Dneprovsky, K. A. 2009, Archaeology at Ekven, Chukotka, *Gifts from the ancestors: ancient ivories of Bering Strait,* New Haven and London: Yale University Press, p. 94–95.

Carius, H. S. 1979, *Sevukakmet: Ways of Life on St. Lawrence Island*. Anchorage, Alaska: Alaska Pacific University Press, p. 46.

Choris, L. 1822, *Voyage pittoresque autour du monde, avec des portraits de sauvages d'Amérique, d'Asie, d'Afrique, et des îles du Grand Océan; des paysages, des vues maritimes, et plusieurs objets d'histoire naturelle; accompagné de descriptions par m. le Baron Cuvier, et m. A. de Chamisso, et d'observations sur les crânes humains, par*

Service Shared Beringian Heritage Program, 79 p.

Alix, C., Mason, O., Norman L. 2018, Whales, wood and baleen in Northwestern Alaska – reflection on whaling through wood and boat technology at the rising whale site, Korean Prehistoric Art II, Whale on the Rock, Ulsan: Ulsan Petroglyph Museum, p. 41–68.

Anderson, D. D. 1978, Western Arctic and Subarctic, *Chronologies in New World archeology*, New York: Academic Press, p. 29–50.

Anichtchenko, E. V. 2017, Reconstructing the St. Lawrence Island kayak: from forgotten watercraft to a Bering Sea Maritime Network, *Alaska Journal of Anthropology*, Volume 15, # 1&2, p. 25–48.

Anichtchenko, E.V. 2016b, Indigenous sailing in the Arctic, *Marine Ventures: archaeological perspectives on human-sea relations. Proceedings from the Marine Ventures symposium in Trondheim 2013.* Sheffield: Equinox Publishing, p. 287–302.

Arima, E. Y. 1999, Barkless Barques, *The Canoe in Canadian Cultures,* Ottawa: Natural Heritage/Natural History Inc, p. 43–61.

Bandi, H-G. 1969, *Eskimo prehistory.* Fairbanks: University of Alaska Press, 236 p.

Bernardi, S. R. 1912, "Whaling with Eskimos of Cape Prince of Wales: woman teacher of local nativity writes of the sport of the sea and attendant weird customs among the aborigines of Alaska*, Louisville Courier Journal*, October 20, Sect. 4, p. 1, 12.

Blumer, R. 2002, Radiochronological assessment of neo-Eskimo occupations on St. Lawrence Island, Alaska, *Archaeology in the Bering Strait region, University of Oregon Anthropological Papers No. 59,* Eugene: Department of Anthropology and Museum of Natural History, University of Oregon, p. 61–106.

Bogoras, W. 1909, *The Chukchee: social organization. Memoirs of the American Museum of Natural History,* Vol. 11, Part 3. New York: E. J. Brill & G. E. Stechert & Co, p. 733.

Braund, S. R. 1988, *The skin boats of Saint Lawrence Island, Alaska*. Seattle: University of Washington Press, 141 p.

Bronshtein, M. M. and Dneprovsky, K. A. 2009, Archaeology at Ekven, Chukotka, *Gifts from the ancestors: ancient ivories of Bering Strait,* New Haven and London: Yale University Press, p. 94–95.

Carius, H. S. 1979, *Sevukakmet: Ways of Life on St. Lawrence Island*. Anchorage, Alaska: Alaska Pacific University Press, p. 46.

Choris, L. 1822, *Voyage pittoresque autour du monde, avec des portraits de sauvages d'Amérique, d'Asie, d'Afrique, et des îles du Grand Océan; des paysages, des vues maritimes, et plusieurs objets d'histoire naturelle; accompagné de descriptions par m. le Baron Cuvier, et m. A. de Chamisso, et d'observations sur les crânes humains, par*

m. le Docteur Gall. Par m. Louis Choris, peintre. Paris: De l'Imprimerie de Firmin Didot, 149 p.

Collins, H. B. 1937, *Archaeology of St. Lawrence Island, Alaska*, Washington, D.C: Smithsonian Miscellaneous Collections, 96 (1), 431 p.

Crowell, A. 1985, *Archaeological survey and site condition assessment of Saint Lawrence Island, Alaska, August 1984*, Washington, D.C.: Department of Anthropology, Smithsonian Institution, 122 p.

Dumond, D. 2009, Chronology of Bering Strait cultures, *Gifts from the ancestors: ancient ivories of Bering Strait*. Haven and London: Yale University Press, p. 70–77.

Elliott, H. W. 1875, *A Report upon the condition of affairs in the territory of Alaska*. Washington: Government Print Office, 277 p.

Elliott, H. W. 1886, *Our Arctic Province: Alaska and the Seal Islands. Library of Contemporary Exploration and Adventure,* New York: Charles Scribner's Sons, 473 p.

Fair, S. W. 2005, The northern umiak: shelter, boundary, identity, *Perspectives in Vernacular Architecture,* Issue 10, p. 233–248.

Fitzhugh, B. 2016, The origins and development of Arctic maritime adaptation, , *The Oxford handbook of the prehistoric Arctic*, Oxford University Press, p. 253–278.

Geist, O. and Reiney, F.G. 1936, *Archaeological Excavation at Kukulik, St. Lawrence Island*, *Alaska*, Washington, D.C.: U.S. Government printing office, 391 p.

Jensen, J. F. 2003, Coastal Plains Towards the Polar Sea – The Eastern Shore of Peary Land. *Northernmost Ruins of the Globe. Egil Knuth's Archaeological Investigations in Peary Land and Adjacent Areas of High Arctic Greenland*, Copenhagen: Meddelelser om Grønland, Man and Society 29, Danish Polar Center, p. 209–218.

Koonooka, P. M. 2010, St. Lawrence Island Yupik, *Living our cultures, sharing our heritage*. *The First Peoples of Alaska*, Washington, DC: Smithsonian Books, p. 73–81.

Kotzebue, O. 1967, *A voyage of discovery into the South Sea and Beering's Straits*. Amsterdam, N. Israel; New York, Da Capo, 358 p.

Krupnik, I. and Chlenov, M. A. 2013, *Yupik Transition,* Fairbanks: University of Alaska Press, 391 p.

Krupnik, I. and Krutak, L. 2002, *Akuzilleput Igaqullghet, Our Words Put to Paper: Sourcebook in St. Lawrence Island Heritage and History.* Washington D.C.: Arctic Studies Center, National Museum of Natural History, 463 p.

Luukkanen, H., Fitzhugh, W. and Anichtchenko, E. 2020, *The Bark Canoes and Skin Boats of Northern Eurasia*, Washington DC: Smithsonian Books, 276 p.

Mason, O. K. 2016, The Old Bering Sea florescence about Bering Strait, *The Oxford handbook of the prehistoric Arctic*, Oxford University Press, p. 417–442.

Merck, C. H. 1980, *Siberia and Northwestern America, 1788–1792: the Journal of Carl Heinrich Merck, naturalist with the Russian scientific expedition led by captains Joseph*

m. le Docteur Gall. Par m. Louis Choris, peintre. Paris: De l'Imprimerie de Firmin Didot, 149 p.

Collins, H. B. 1937, *Archaeology of St. Lawrence Island, Alaska*, Washington, D.C: Smithsonian Miscellaneous Collections, 96 (1), 431 p.

Crowell, A. 1985, *Archaeological survey and site condition assessment of Saint Lawrence Island, Alaska, August 1984*, Washington, D.C.: Department of Anthropology, Smithsonian Institution, 122 p.

Dumond, D. 2009, Chronology of Bering Strait cultures, *Gifts from the ancestors: ancient ivories of Bering Strait*. Haven and London: Yale University Press, p. 70–77.

Elliott, H. W. 1875, *A Report upon the condition of affairs in the territory of Alaska*. Washington: Government Print Office, 277 p.

Elliott, H. W. 1886, *Our Arctic Province: Alaska and the Seal Islands. Library of Contemporary Exploration and Adventure,* New York: Charles Scribner's Sons, 473 p.

Fair, S. W. 2005, The northern umiak: shelter, boundary, identity, *Perspectives in Vernacular Architecture,* Issue 10, p. 233–248.

Fitzhugh, B. 2016, The origins and development of Arctic maritime adaptation, , *The Oxford handbook of the prehistoric Arctic*, Oxford University Press, p. 253–278.

Geist, O. and Reiney, F.G. 1936, *Archaeological Excavation at Kukulik, St. Lawrence Island*, *Alaska*, Washington, D.C.: U.S. Government printing office, 391 p.

Jensen, J. F. 2003, Coastal Plains Towards the Polar Sea – The Eastern Shore of Peary Land. *Northernmost Ruins of the Globe. Egil Knuth's Archaeological Investigations in Peary Land and Adjacent Areas of High Arctic Greenland*, Copenhagen: Meddelelser om Grønland, Man and Society 29, Danish Polar Center, p. 209–218.

Koonooka, P. M. 2010, St. Lawrence Island Yupik, *Living our cultures, sharing our heritage*. *The First Peoples of Alaska*, Washington, DC: Smithsonian Books, p. 73–81.

Kotzebue, O. 1967, *A voyage of discovery into the South Sea and Beering's Straits*. Amsterdam, N. Israel; New York, Da Capo, 358 p.

Krupnik, I. and Chlenov, M. A. 2013, *Yupik Transition,* Fairbanks: University of Alaska Press, 391 p.

Krupnik, I. and Krutak, L. 2002, *Akuzilleput Igaqullghet, Our Words Put to Paper: Sourcebook in St. Lawrence Island Heritage and History.* Washington D.C.: Arctic Studies Center, National Museum of Natural History, 463 p.

Luukkanen, H., Fitzhugh, W. and Anichtchenko, E. 2020, *The Bark Canoes and Skin Boats of Northern Eurasia*, Washington DC: Smithsonian Books, 276 p.

Mason, O. K. 2016, The Old Bering Sea florescence about Bering Strait, *The Oxford handbook of the prehistoric Arctic*, Oxford University Press, p. 417–442.

Merck, C. H. 1980, *Siberia and Northwestern America, 1788–1792: the Journal of Carl Heinrich Merck, naturalist with the Russian scientific expedition led by captains Joseph*

Billings and Gavriil Sarychev. Kingston, Ontario: Limestone Press, 215 p.

Moore, R. D. 1928, Notes on St. Lawrence Island. *American Anthropologist*, Volume 30, # 2, p. 349–350.

Nelson, E. W. 1889, *The Eskimo about Bering Strait*. Washington, D.C.: Smithsonian Institution Press, 518 p.

Oozeva, C. 1985, How walrus-skin boats were made, *Sivuqam Nangaghnegha Siivanllemta Ungipaqellghat: lore of St. Lawrence Island, echoes of our Eskimo elders*, *Gambell*, Unalakleet, Alaska: Bering Strait School District, Volume 1, p. 167–169.

Sarychev, G. 1969, *Account of a voyage of discovery to the North-East of Siberia, the Frozen Ocean and the North-East Sea*. Amsterdam: Da Capo Press, 191 p.

Sauer, M. 1972, *Expedition to the northern parts of Russia. Reprint of an account of a Geographical and Astronomical Expedition to the northern parts of Russia in the years 1785 to 1794,* Richmond, UK.: The Richmond Publishing Co, 332 p.

Silook, R.S. 1976, *Seevookuk: Stories the Old People Told on St. Lawrence Island*. Anchorage, Alaska Publisher Company.

Slwooko, G. 1979, *Sivuqam Ungipaqhaatangi: St. Lawrence Island Legends*, Anchorage, Alaska, National Bilingual Materials Development Center, University of Alaska.

Anichtchenko, E.V. and Crowell, A.L. 2010, Suqpiaq baidaras according to archaeological and ethnographic data. *Etnografiya i arkheologiya korennogo naseleniya Ameriki = Ethnography and archaeology of the indigenous population of America.* St. Petersburg: Nauka, p. 198–227.

Antropova, V.V. 1961. Boats. *Istoriko-etnograficheskii atlas Sibiri = Historical-Ethnographic Atlas of Siberia.* Moscow, Leningrad. P. 107–129.

Bogoslovsky, S. 2004, "Ang'yapik-Umiak" (reconstruction of Eskimo baidara with author's detailed blueprints, drawings and photos). *Severnye Prostory, spetsvypusk "Beringiya" = Northern Expanses, special issue "Beringia"*. No 1–2.

Bronshtein, M. M. 2007, The world of Arctic animal hunters: steps into the unknown. Moscow-Anadyr: The State Museum of Oriental Art. 215 p.

Chlenov, M.A. 1988, Ecological Factors of Ethnic History of the Bering Strait Area. *Ekologiya amerikanskikh indeitsev i eskimomov. Problemy indeanistiki = Ecology of American Indians and Eskimos. Problems of Indian Studies.* Moscow: Nauka. P. 64–75.

Kotzebue, O. 1821–1823, Voyage to the Southern Ocean and Bering Strait for the purpose of finding North-Eastern Passage undertaken with the support of Duke Rumiantsev on the ship *Rurik* under the command of naval lieutenant Kotzebue in the years 1815, 16,17 and 18. St. Petersburg: Nick. Grech. 358 p.

Billings and Gavriil Sarychev. Kingston, Ontario: Limestone Press, 215 p.

Moore, R. D. 1928, Notes on St. Lawrence Island. *American Anthropologist*, Volume 30, # 2, p. 349–350.

Nelson, E. W. 1889, *The Eskimo about Bering Strait*. Washington, D.C.: Smithsonian Institution Press, 518 p.

Oozeva, C. 1985, How walrus-skin boats were made, *Sivuqam Nangaghnegha Siivanllemta Ungipaqellghat: lore of St. Lawrence Island, echoes of our Eskimo elders*, *Gambell*, Unalakleet, Alaska: Bering Strait School District, Volume 1, p. 167–169.

Sarychev, G. 1969, *Account of a voyage of discovery to the North-East of Siberia, the Frozen Ocean and the North-East Sea*. Amsterdam: Da Capo Press, 191 p.

Sauer, M. 1972, *Expedition to the northern parts of Russia. Reprint of an account of a Geographical and Astronomical Expedition to the northern parts of Russia in the years 1785 to 1794,* Richmond, UK.: The Richmond Publishing Co, 332 p.

Silook, R.S. 1976, *Seevookuk: Stories the Old People Told on St. Lawrence Island*. Anchorage, Alaska Publisher Company.

Slwooko, G. 1979, *Sivuqam Ungipaqhaatangi: St. Lawrence Island Legends*, Anchorage, Alaska, National Bilingual Materials Development Center, University of Alaska.

Анищенко Е.В., Кроуэлл А. Байдары тихоокеанских эскимосов по данным археологии и этнографии // Этнография и археология коренного населения Америки. СПб. : Наука, 2010. С. 198–227.

Антропова В.В. Лодки // Историко-этнографический атлас Сибири. М., Л., 1961. С. 107–129.

Богословский С. **«**Ан'япик-Умиак**»** (реконструкция эскимосской байдары, авторские подробные схемы изготовления в рисунках и фотографиях) // Северные Просторы, спецвыпуск "Берингия". 2004. № 1–2.

Бронштейн М.М. Мир арктических звероловов: шаги в непознанное. М.; Анадырь: Государственный музей Востока, 2007. 215 с.

Членов М.А. Экологические факторы этнической истории района Берингова пролива // Экология американских индейцев и эскимомов. Проблемы индеанистики. М.: Наука, 1988. С. 64–75.

Коцебу О.Е. Путешествие в Южный Океан и в Берингов пролив для отыскания северо-восточного морского прохода, предпринятое в 1815, 16, 17 и 18 годах, иждивением гр. Румянцева, на корабле Рюрике под начальством флота лейтенанта Коцебу. СПб.: Типография Ник. Греча, 1821–1823. 358 с.

Information about the author
Evguenia V. Anichtchenko,
PhD, Museum of the North research associate,
University of Alaska,
7009 Madelynne Way, Anchorage, AK 99504, USA,
✉ e-mail: anichenkojenya@gmail.com

Contribution of the authors

E.V. Anichtchenko conducted original research work in the US museums and archives, prepared the manuscript and illustrations for this publication, and submitted the final version for the review.

Conflict of interest

The author declares no conflict of interest.

The author has read and approved the final manuscript.

Article info
Received November 17, 2020.
Received December 10, 2020.
Accepted December 21, 2020.

Сведения об авторе
Анищенко Евгения Викторовна,
доктор исторических наук, научный консультант Музея Севера,
Университет Аляски,
7009 Madelynne Way, Anchorage, AK 99504, USA,
✉ e-mail: anichenkojenya@gmail.com

Заявленный вклад авторов

Е.В. Анищенко выполнила исследовательскую работу в музеях и архивах США, на основании которых была написана эта научная работа. Автор подготовила рукопись и иллюстрации и предоставила их к публикации.

Конфликт интересов

Автор заявляет об отсутствии конфликта интересов.

Автор прочитал и одобрил окончательный вариант рукописи.

Информация о статье
Поступила в редакцию 17 ноября 2020 г.
Поступила после рецензирования и доработки 10 декабря 2020 г.
Принята к публикации 21 декабря 2020 г.