

Circumpolar Shelter

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The far north and its people have fascinated outsiders for centuries. Circumpolar peoples have survived, even flourished, in one of the most extreme environments on earth. Their built environment reflects a creative, dynamic response to severe limitations of resources, climatic conditions, and subsistence options. Yet, the diversity of circumpolar shelter strategies is not widely acknowledged by outsiders. Nor is there recognition of how traditional skills to do with living “on the land” can be incorporated into contemporary housing designs and community planning.

This paper provides an overview of shelter forms and functions in the far north, relating them to their historical and ecological contexts. From a huge database, I select a few examples to convey the geographical, temporal, and seasonal diversity across the extent of the circumpolar world—Greenland, the Canadian Arctic (including Labrador and Arctic Quebec), Alaska, Beringia and the Old Bering Sea area, Siberia, and parts of Mongolia. This cultural continuum has its roots in Central Asia—from here, migrations moved into Beringia, and then into the Americas and Greenland. Pre-Dorset, Dorset, Thule,¹ and other Arctic Peoples adapted to changing climatic conditions to diversify into the wide range of circumpolar cultures found today.

Prior to contact, Arctic Peoples were nomadic with only a few areas able to support a larger, more settled population. Upon contact, new materials and technologies became available along with new social conventions and lifestyles, including new housing designs. Across the North, Arctic Peoples came under state systems (Russian, American, Canadian, or Danish) with unfamiliar sedentarization and assimilation policies; these dramatically altered their relationship to the land and also to each other, as did religious conversion from a shamanist way of life to Christianity and Buddhism. The impact on indigenous ways of knowing and being and their relationship to space and place has not been well studied by the outsiders who introduced and sometimes imposed these changes.

ECOLOGICAL AND CULTURAL DIVERSITY

Described as an ecozone because of its distinctive tundra landscape and high latitude, all areas of the Far North share a characteristic cold climate and extreme seasonal fluctuations in daylight.

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These are ancestral Arctic traditions preceding modern day Inuit and other Arctic Peoples.

Particular flora and fauna (some unique) and distinctive raw materials for building, such as snow and animal hides, are also characteristic. The challenges and opportunities presented here to Indigenous Peoples and newcomers alike are unlike those of any other region in the world. Yet to think of it as homogeneous would be misleading. Siberia and the Russian Arctic, for example, are inhabited by more than thirty distinct ethnic groups, each with their own interpretations of prototypical Arctic shelter strategies.

King Island village, 1949; Bering Sea Patrol. Overall view of village from water; Photo credit: Alaska Historical Library



While it does impose severe limitations in terms of dispersal of materials and subsistence options, the region is extremely diverse ecologically and culturally. In places such as the Mackenzie Delta, for example, there is no clear delineation between tundra and forest, so some peoples had access to wood for building materials. Off Herschel Island, huge driftwood trees were dug into the sand, their root ends upright to support a roof of skins. Along the northern limit of the trees, the southernmost Inuit utilized forest resources for tent poles.

Some Arctic Peoples hunted sea mammals along the coasts, while others relied on inland resources such as caribou and fish; others took advantage of both habitats. Beringia, which escaped the last Ice Age, provides a diversity and concentration of flora and fauna not found elsewhere. Rich marine resources allowed for permanent settlements and a more concentrated population. Alaskans built year-round villages, some of which were inhabited for centuries; these were large, semi-subterranean, log-walled houses covered with turf for insulation and heated by lamps that burned

sea-mammal oil. On King William Island, wooden stilt villages were constructed on the rock faces.

Circumpolar peoples responded with skill and ingenuity to changing climatic conditions, combining local materials with new resources as they became available. They made shelters from sod, bark, animal skins, and whale bone, earth, logs, saplings, grass, moss, sticks, snow, ice, stone, and later introduced materials such as canvas, plywood, and even reworked oil drums. They took advantage of the insulative properties of hollow caribou hair, the waterproof capacity of sealskin, and the thermal benefits of animal fat to heat a living space efficiently. They knew how to distinguish among the different snow types and how to maximize the limited light of the far north. Windows were cut from ice or made from walrus intestine or seal gut. But hides also allowed light in if those with hair on were used for the back of the tent and dehaired hides were placed at the front. Once glass windowpanes were introduced post-contact, people packed them along with their other belongings when they moved camp.

In addition there are always individual aesthetics that go beyond the strictly functional. I asked Sandy Tongola why he was so particular about where he left the ventilation hole in a snowhouse he was building. In the Inuit way of “show, don’t tell,” he laid a caribou hide out for me on the interior platform, then told me to lie down and look up. “I like to look at the sky when I’m lying in my snowhouse,” he said. “It’s so you can see a star.”

CULTURAL VALUES

Outsiders’ views of northern lands and peoples reveal as much about the chroniclers as about the subjects of the encounters. Labrador was one of the first places newcomers landed in the Americas—Jacques Cartier called it “the land that God gave Cain.” Europeans struggled to find something to connect with, something familiar in this vast landscape they named as barren, an Arctic wasteland, and an untamed wilderness. And what about the people they met? Not much about native spirituality seemed to fit into the European dichotomy of “man” versus “nature,” but impressions and judgments were as varied as the backgrounds and aspirations of the newcomers themselves.

The Aharmiut, among the best-known Inuit of Canada at the time, were featured on the April 12, 1956, cover of *Life* magazine for a story on primitivism. As inland people of the Ennadai Lake area near Churchill, Manitoba, they relied almost entirely on caribou—in the cover photo they are dressed in caribou-skin cloth-

ing. Winter homes were made of snow blocks topped with a roof of caribou skins, all supported by wooden tent poles, which they obtained from the forests at the southern limits of their range.

Summer dwellings were conical tent poles made of caribou skins and canvas. Labeled “Stone Age Survivors” on the cover, they were stereotyped as childlike innocents who lacked any concept of time in the Western sense and were unwilling or unable to take present action for future needs. Other Inuit were portrayed as cruel, bloodthirsty, superstitious heathens whose souls (if they had any) could be saved by settling them into permanent southern-style dwellings.



Alaskan sod house. Photo credit: Anchorage Historical and Fine Arts Museum, Alaska

Labrador Inuit required a highly mobile lifestyle to access the varied resource base on which they relied. Aboriginally, they lived in small scattered bands. After Moravian missionaries established their first Labrador mission at Nain in 1771, the Inuit nomadic lifestyle was subsumed by Moravian ideas of a Christian community. Moravians imposed order on the chaos they perceived by building sod-covered huts in a straight line, a practice that the Inuit initially resisted but eventually gave in to.² An 1861 estimate noted that about seventy-five percent of Labrador Inuit along the Labrador coast were under Moravian influence and living in single-family homes with clocks and mirrors, iron stoves, and glass win-

dows. The remainder—“heathens” or northlanders—continued to live in earth and sod-covered semi-subterranean huts heated with traditional oil lamps and portable stoves.

As a primary indicator of cultural transition, shelter chronicles the historical impact of external contact: direct contact with Cossacks and Russians, Europeans, Subarctic and other Arctic Peoples and with traders, missionaries, explorers, adventurers, and government officials, whalers, and fur traders. It also records indirect contact and cultural transmission from regional conflicts, travel, disease, and trade. Early impressions—romantic or realistic—became archived in the public imagination. Still today, outsiders hold many misconceptions about life in the North, including about its shelter. How many of us associate the North with the snowhouse? Webster’s, for example, defines *igloo* as “a domed Eskimo hut, made of blocks of snow and ice.” In Inuktitut, however, *igloo* or *iglu* means any house regardless of the material from which it is built. The snowhouse was actually a seasonal dwelling used in parts of the Arctic and dependent on suitable snow conditions.

THE SOURCES—HISTORICAL AND ETHNOGRAPHIC

Archaeology provides evidence of the precontact built environment. Thule winter houses, for example, were semi-subterranean dome-shaped structures constructed of a whalebone rib frame and covered with sod and hides. Thule homes were often built directly over Dorset and sometimes pre-Dorset dwellings as all peoples sought the best campsites—availability to their subsistence base, beaches with landing sites for their watercraft, protection from high winds, vantage points to look for animals, or places where the tides floated in detritus such as driftwood. In the high Arctic, Dorset peoples built the longest dwelling of its kind in North America as communal living space. Measuring 45 x 5 meters, it probably served as a foundation for a row of skin tents for a seasonal summer community of about 100 people.³

Field sketches, wood engravings, and lithographs are a rich source of archival information on circumpolar shelter at the time of early contact by outsiders. Once printmaking was introduced to the Canadian Arctic in the nineteen-fifties, dwellings were a not uncommon topic and even the carving industry used shelter as subject matter. Photographs provide an especially rich database

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Periodical Accounts 26:365-6, 1866. Periodical Accounts were published annually between 1790 and 1961 by the Society for the Furtherance of the Gospel.

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Excavated by Peter Schledermann, Director, Arctic Institute of North America, Calgary.

that documents new technologies, structural adaptations, and life-style changes.

The ill-fated last Franklin expedition was the first to the polar regions to include photographic equipment, but no photographic plates or equipment from it have been located. The Franklin rescue expeditions that followed carried photography equipment. One of these was the 1848 overland expedition led by Sir John Richardson, but the equipment was apparently never put to use.

Captain George Comer took early photos in the Hudson Bay area of Inuit snowhouse interiors dated 1901 and 1902. Comer also collected data and specimens for Franz Boas and the American Museum of Natural History; however, Boas's pioneering report on the Central Eskimo⁴ does not include photographs, relying instead on diagrams and drawings of house plans.

The British Arctic Expedition of 1875–76 photographed the Canadian Arctic and Greenland. A series of Greenlanders was taken between 1860 and 1865 by Dr. Hinrik Johannes Rink and includes photos of Greenland dwellings. It was not until the mid-eighteen-seventies, however, that photographic equipment became standard on exploring expeditions.

Roald Amundsen (1872–1928), a Norwegian who overwintered on King William Island 1903–05 north of Hudson Bay, came to admire the Netsilik⁵ of what is now Gjoa Haven. During his stay, he amassed a large collection of tools, tents, sledges, and other items as well as photographs. He and his crew studied native ways, learning to hunt and fish and to build snow huts. Amundsen observed a Netsilik camp consisting of sixteen snow huts, the largest he ever saw. While he recognized the sophistication of the snow hut, Amundsen did not regard their summer tents in the same way. These he saw as “no triumph of art. Most of them are made of reindeer and seal skins sewn together. The best seal catchers have theirs made entirely of seal skin. . . . Seal skin is more precious than reindeer skin.”⁶

The Canadian Arctic Expedition (1913–18) produced a large collection of photographs of Copper Inuit camp life from Alaska through the central Canadian Arctic.⁷ Among the photographers

⁴ Franz Boas, “The Central Eskimo” in *6th Annual Report of the Bureau of American Ethnology for the Years 1884–1885* (Washington, 1888), pp. 399–669.

⁵ *Netsilik* is the term used in the original text. *Netsilingmiut* means “people of the ringed seal” as a term of self-designation.

⁶ Roald Amundsen, *The North West Passage—The Voyage and the Exploration of the Gjoa 1903–1907* (London, 1908), p. 121.

⁷ For a review of Copper Eskimo snowhouse use, see Diamond Jenness, “The Life of the Copper Eskimos.” *Report of the Canadian Arctic Expedition, 1913–1918 Vol. 12A* (Ottawa, 1922), pp. 65–76.

were Vilhjalmur Stefansson and Diamond Jenness. Stefansson was respectful of his subjects and fascinated by their dwellings, especially the snowhouse which he saw as technologically ingenious and extraordinarily adaptive in its design. It appears to be the most common image in his collection; of his Arctic lantern slides, ten percent are of snowhouses including a sequence of nineteen that depict the building of one. He also photographed joined snowhouses. As interested in the process by which dwellings were built as in their form and function, Stefansson included a diagram of a sod and timber house as well as photo documentation of Eskimos⁸ excavating the ground and erecting the framework. He portrayed the Inuit as exemplary in their adaptation to an environment they viewed not as “barren” but as a land of plenty for those who knew how to access its riches. Perhaps Stefansson is the originator of the snowhouse as a symbol of the Arctic in the popular imagination.

Eskimos at Cape Prince of Wales in front of sod house (barabara).
Whale rib and sod house; Photo credit: Alaska Historical Society



Peter Pitseolak (1902–1973), the first native documentary photographer of the Canadian Arctic, photographed, drew and painted the south Baffin Island area. His celebrated work provides

⁸ Where the original title, text, or photograph uses the term *Eskimo* it is retained. In early accounts, *Eskimo* was spelled *Esquimaux*. The use of either term is problematic in that both were applied historically to “Indian” groups such as the Micmac, or other Subarctic aboriginal peoples. In contemporary use, self-designation as *Inuit* is common in west Greenland and Canada; *Inupiat* is common in North Alaska; and *Yuit* for Siberia and Saint Lawrence Island.

In the nineteen-seventies, the term *Inuit* replaced *Eskimo* in government and scientific publications and the Inuit Circumpolar Conference meeting in Barrow, Alaska, in 1977 officially adopted *Inuit* as the designation for all Eskimos, regardless of their local uses. Linguistics refers to the Eskimo language family or to the Inuit-Inupiaq language grouping; archaeology refers to an Eskimo/Arctic complex, e.g., *Inua: Spirit World of the Bering Sea Eskimo* by W.W. Fitzhugh and S.A. Kaplan.

an insider's view of the last days of camp life, emphasizing material culture including dwellings. He wrapped his camera in caribou skins when traveling and stored it on top of his hunting iglu until the film was used up so as not to subject it to temperature changes. He and his wife, Aggeok, developed the film on top of their sleeping platform using two kudluks (oil lamps) for heat.⁹

Eskimo Point (now Arviat) 1932/3; Photo credit: Fleming Collection, Prince of Wales Northern Heritage Centre, Yellowknife



Among the first photographs to be taken in western Alaska of Alaskan Native Peoples are those shot between 1879 and 1881 by Edward W. Nelson. These document the lives of Yupik, Inupiat, Ingalik, Siberian Yupik, and Chukchi Peoples of western Alaska and their neighbors in Chukotka. They are also among the first to document Native Peoples of the Bering and Chukchi Seas region at a time when Alaska was little known and contact with Anglo-American outsiders was just beginning. One photo shows a Yupik family wearing trade cloth in front of a canvas tent, while another, of Chukchi near Cape North, Siberia shows little evidence of European materials in the clothing. Another pictures a native village alongside a European log house. Documented are village scenes and architectural details of dwellings, a Chukchi tent made of walrus hide over a pole support, Aleut villages in Unalaska, and sod houses at a Yupik village on the lower Yukon.¹⁰

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Dorothy Harley Eber, "Peter Pitseolak: A History for Seekooseelak", in D. Bellman, ed., *Peter Pitseolak (1902–1973): Inuit Historian of Seekooseelak* (Montreal, 1980), p. 14.

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William W. Fitzhugh, "The Alaska Photographs of Edward W. Nelson, 1877–81" in J.C.H. King and Henrietta Lidchi, eds., *Imaging the Arctic* (Vancouver, 1998), pp.125–142.

Another important Alaskan photograph collection is that of Marvin Sagvan Peter (1911–1962), the son of a reindeer herder. Depicting Barrow life in the nineteen-thirties, forties, and fifties, it shows an Inupiat community that was adapting to the twentieth century but before statehood and the oil pipeline era. By the time Marvin was born, southern-style houses were being built and the *qargi* or community house, had fallen into disuse.¹¹ One of Marvin's photos shows a Barrow family in the later nineteen-forties in front of houses made of boards with metal chimneys and banked on the viewer's side with snow. On the roof are hides and a seated dog that presumably finds the roof warmer than the ground.

The Arctic collection of "frontier" photographer Edward S. Curtis (1899) includes a Siberian winter house of whalebone and sod with a walrus hide roof. Another is of a village of summer tents in Plover Bay; some are canvas, others skin. Curtis posed many of his photos and even added foreign elements to some but they did capture the public imagination. Curtis's goal was not just to photograph but to document as much traditional life as possible before that way of life "disappeared."

THE SNOWHOUSE

A compilation of words related to ice and snow (from Northern Quebec, Labrador, and Eastern Arctic dialects, the Aivilik dialect, and the Igloolik dialect)¹² totals over 100 words; among them are these words about ice and snow as construction materials:

AUVIQ snow block for iglu construction
 KATAGARJUK frost crystals that fall from the roof or window of a snowhouse
 QANGAALUK fine snow or frost particles which fall from the ceiling of an igloo
 QIKUK hole eroded by the wind in the wall of a snowhouse
 QIKUUTITSAJAQ powdered snow applied to the cracks in the wall of a snowhouse

I am sitting at the breakfast table with a group of Inuit in Churchill, Manitoba—we are talking about snow and iglu build-

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Chris Wooley and Karen Brewster, "More Than Just Black and White: Marvin Peter's Barrow Family Album." J.C.H. King and Henrietta Lidchi, eds., *Imaging the Arctic* (Vancouver, 1998), pp. 143–7.

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Compiled by John MacDonald, Igloolik Research Centre, Science Institute of the Northwest Territories, N.W.T.

ing. Among them is Linda Gibbons who was born in Churchill and grew up in Arviat. I ask her if women build snowhouses. “Yes!” she replied, “I do,” and she described a female relative who was a really good iglu builder— “better than a man.” The elder Sandy Tongola tells me how important it is for women to help in iglu construction. Experienced ones can select the right snow for filling in the cracks between the snow blocks— *qikuutitsajaq*. The right snow ensures proper insulation and makes the iglu last longer. Tongola grew up in Coral Harbour in an outpost camp. In his fifties when I met him, he was living in Rankin Inlet and came to Churchill to teach iglu building to a group of scientists.

Joined skin pole tents, Banks Peninsula, Bathurst Inlet;
Photo credit: R. M. Anderson, National Museums of Canada, Ottawa



Tongola likes to use a harpoon as a snow probe (*sabgut*). He puts a chunk of snow in his mouth to melt it into slush and then presses the slush onto the tip of the probe, leaving the tip exposed by about half an inch. He repeats this a few more times until the end is bulbous with its ice coating. By pushing it into the snow, he can distinguish the different layers to determine if a location will be right for an iglu. I ask him about his *pana* or *pannak* (snow knife): “The length of it doesn’t matter. You don’t have to cut all the way down to split the ‘log’ off. The first block has to be slanted a little bit inwards. If this one is too straight, the iglu will bend ‘out.’ The second block, adjacent to it is full-size. If the first blocks are ‘straight up’ you get a tall iglu—this is not what you want, it won’t be strong. So you angle the blocks to get a nice dome shape.”

“There’s more snow on the south side of a hill so you level a bit first. You put your first block down because snow itself is kind



Dukha Reindeer Herders (Tsaatan) moving summer camp, taiga, northern Mongolia, 2006; Photo credit: Marilyn Walker

of slanted—it's easier to work that way. They always said not to build an iglu against the south side of the hill—it might collapse on you. (A bank is okay.) At the beginning of April, snow is too soft to build with so we make buildings that are half snow with canvas on top. There's a lot of transport snow, which is snow blown in by the wind. It's best to look for a 'good' drift which will have a distinctive sound and feel. Snow needs to be of uniform density and hardness for the whole block so it doesn't split. Layering produces weakness in the blocks so you don't want a mixture—the best snow is deposited by a single storm event."

Mug Up After Christmas Eve Mass. Peilly Bay, N.W.T. c. 1956 in K'agguk (big iglu); Photo credit: Father Guy Mary-Rousselière, Eskimo Museum, Churchill



The snow in Churchill is not good for iglu building. "Here the snow is in deep piles," he says, "We build iglus where the ground is a meter or less down. Close to the ground the snow is usually coarse—that makes it soft; you need it soft at the bottom because then it's easier to make the undercut. When the snow is too hard, it's hard work on your wrist trying to square it."

He uses the probe to draw a circle in the snow around himself as the pivot point. This makes an iglu big enough for two people. For an iglu this size, he works by himself, but for a larger one, say for four people, several people usually work together. "Because of the poor snow quality here," he tells me, "it took me longer than usual to build an iglu earlier—about two hours. But some people can build a two-person iglu in forty-five minutes. At Christmas time there's an iglu building contest for the fastest and the best. I'm not really fast. Some people are—lots of people from Coral Harbor are

really fast! And still today they might build a big iglu to hold twenty to twenty-five people for a meeting or get-together."

Is it still important to know how to build an iglu, I ask? "Today, if the younger guys get lost, you have to go out and find them right away. They don't know how to make an iglu and will freeze to death. Always in our region, one person dies each year because they don't know how. And by looking at the wind patterns in the snow as you leave camp to go hunt or whatever, you can find your way back."

I ask him what he thinks about when he is building an iglu. He takes a moment before answering: "I think about what my father taught me. My father taught me how to build an iglu. One thing he told me is never to build an iglu beside a snow bank. If you build close to it and stay in it for a day, it may collapse on you because snow builds around it and on top and there will be too much weight. He also taught me that sometimes the wind is so strong you can't go anywhere; you just have to stay in till the storm is over. Once in a while there's a strong wind and the iglu will get thinner and thinner so it's better to use a snow shovel (*nivautaq*) to make it thicker especially if it's a north wind. This makes it warmer too."

Eskimo Village at Igloodik 1979; Photo credit: Eskimo Museum, Churchill, Manitoba



"My father also told me not to build an iglu in the middle of a lake especially in fall when the ice is not too thick. If you have to stay for a day and there's a storm, snow drifts up to a foot around the iglu. The weight may make the ice crack, water seeps up and you can't get your equipment out. When the ice is thick enough, though, it's warmer to have your iglu on the lake rather than on the land."

“Now, about the temperature inside an iglu. If it’s too warm, you’re going to make a hole through the wall or ceiling pretty quick or you’ll widen your ventilation hole and the iglu won’t last long. If the heat melts the snow from the inside, you’ll get a layer of ice inside—that make it colder not warm. After you live in the iglu for a week or so, the top gets thinner. So you cut the top half off and make another top!”



Sandy Tongola cutting ice blocks; Photo credit: Marilyn Walker

Tongola wears a parka, pants, and *kamiks* (boots) all made of sealskin by his wife Rosemary. “Seal is the best for iglu building,” he tells me. “But caribou is much warmer than seal. You have to take your caribou clothing off before you skin an animal or you’ll get too hot! Caribou skin clothing will make you float if you fall in the water because the hairs are hollow. Before you enter the iglu, you have to use *anaotark* (snow beater) to beat the snow off your clothing. We leave our outer clothes outside. We don’t want them to melt inside or they ice up (and lose their insulative properties). You could bring them into a cabin, where it’s warm, but for an iglu, you put them in a hollow you make—a ledge in the entrance area where you took the snowblocks from.”

“In fall, when there’s not enough snow for an iglu, you use a tent with a camp stove. Then as soon as there’s enough snow, you build an iglu. If snow is hard to find, even if it’s only six inches thick, you can cut the blocks out horizontally instead of vertically. At the end of March, beginning of April, it’s hard to make the top part, so we build halfway up and use a tarp on top—this is still warmer than a tent. For a window, you can use any ice, but try to get clear

ice. Clear the snow off and with a chisel, you chip into it and try to undercut it to get it to crack at the bottom, then thin it off after it’s cracked so you can lift it off.”

“Men by themselves won’t make a window for one night. But if you take your family out you would. At the top and to the side, you make a ventilation hole. Try to keep the hole small, otherwise air coming in will make it bigger and open up other holes. We try to keep the door closed too. When there’s too much air, it makes a lot of holes out of little ones you can’t see. They start and then get bigger and bigger. . . .”

THE CENTRAL ASIAN YURT

The domed or sometimes conical yurt or *ger* is the classic dwelling of Siberian and Mongolian nomadic herders. Like the snowhouse, its shape provides minimum exposed surface and maximum stability. And like the snowhouse, it is adapted to a migratory lifestyle as people move seasonally to forage their animals. The interdependence of herders and their animals is difficult for outsiders to understand. Galsan Tschinag, a Mongolian shaman of Tuvan ancestry, has written about it in his novel, *Blue Sky*.¹³ (The sky in the shamanist tradition is the resting place of the spirits and is master of all things in the universe.) And the children’s drawings and stories from Hovsgol Lake region illustrate how animals are almost family members. During a storm, they are taken inside the yurt if they are ill or nursing.

The frame is a collapsible lattice-like structure made of wooden slats that folds up for easy transport. The covering of wool, felted from their herd animals (sheep, goat, yak, camel, or horse) is laid over the frame as the roof and walls. The same structure is used year round, with the felt acting as effective insulation to keep the heat in during the cold months and as shade from the hot sun in the summer months. On hot summer days, or for ventilation, the felt is rolled from ground level up; the walls are tied and the door is left open. For cold summer nights after the sun has set, it is easily rolled back down. (Wool retains its insulative properties even when wet.) The open interior allows for multi-use.

The circular design of the yurt is important structurally and also energetically or spiritually. Six spokes meet at the center circle of the roof, like a cartwheel. The center circle is supported by two slender posts, which fix into sockets and extend to be supported by the lattice around the exterior yurt wall. The design thus

represents the sacred nexus of spiritual energy. The stove, sometimes with an attached chimney, is located between the roof posts at the center of the interior so that the smoke escapes between the spokes of the sacred circle above. The ceiling hole can be covered or opened from inside by means of a long pole. The ingenuity of this framework allows it to be set up or taken down within half an hour.



Fenced-in ger, Ulaanbaatar, Mongolia, 2007;
Photo credit: Marilyn Walker

Sacred plants, such as juniper or cedar, are burned on the stove top. The smoke travels upwards, connecting people in this world with their ancestors in the spirit world, who are asked for protection and guidance. The opening is thus a portal into the unseen world of spirits and ancestors; it invites, locates, and integrates the essential forces of the universe. The Mongolian writer Purev describes how the fire is sacred and how it continues to be honored as the cosmogony out of which humans were born:

Dorje Banzarov wrote that in ancient times, Heaven and Earth were a single entity. As a result of their separation, fire was created. Heaven became a masculine force that animated life, while earth was a female force that gave all things their form. Therefore, the Mongols called them 'Heaven-Father' and 'Earth-Mother' respectively.¹⁴

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Purev Otgony and Purvee Gurbadaryn, *Mongolian Shamanism* (Ulaanbaatar, 2005).

Purev also writes that the roof ring flap is the most sacred part of the yurt and that it must be rectangular. Since I began researching sacred geometry in indigenous cultures, I am interested in finding out whether the rectangle is in the proportions of the golden mean.

The hearth separates the women's place from the men's, and family from visitor. As a visitor, it is extremely disrespectful to sit with your feet pointing toward the sacred space at the rear of the yurt or to cross in front of it behind the stove. Buddhism has become the official religion of Mongolia now, and it can be accommodated in the traditional layout as shamanism has been. The Buddhist altar, on which are placed photographs of deceased family members or wrapped candies offered to the spirits, is located at the back of the yurt across from the entrance. Thus the yurt offers visual instruction about spiritual truths and actualizes metaphysical insight into physical form. It also acts as a symbolic model of the cosmos. The yurt acts as a sort of blueprint for the ecological, aesthetic, social, and cosmological relations that are both shaped by and reflected in the built environment. When people move into prefabricated houses, these relationships are reconfigured or they may not make the transition.



Owner in front of log ger with satellite dish, Darhad Valley, Mongolia, 2006; Photo credit: Marilyn Walker

The center circle serves as a focal point for shamanic ritual, underscoring how the ritual space has coevolved with the use of the yurt shape as shelter. I was told of some shamans who made use of the acoustics of the yurt in their *khamlanie* (shamanic ritual). Standing at the center, a skilled drummer/singer is said to

be able to direct the drum beats or vocalizations to deflect off the yurt walls and onto a particular part of the body of a participant in need of a powerful impact. Also, as the originator of the sound, the shamans' energy or power would be enhanced as the walls of the yurt reflect and amplify the energy back to the originator.

It is speculative but interesting as to whether this shamanic use of the interior is consistent with a western scientific understanding of the structural properties of the yurt. A parabola, in a technical sense a mathematical expression of a particular geometry, is a variation on the circle, which exists on a two-dimensional plane. Simply put, a parabola is a circle that has been warped. Thus it is elemental in the same way that a circle or a square is iconic. An orthographic view of a yurt reveals it to be a circle with no corners where energies might intersect and where all energies are continuous around the edge. A parabola retains the structural simplicity of a circle, but in 3-D form. If one puts a force into the center of a circle, it distributes the force equally to all points on the exterior and vice versa (and these centrifugal and centripetal forces may intersect). A sound or pulse from a drum, rattle, or voice originating at the center of the circle may distribute the force equally to all points on the exterior of the circle, or be manipulated by the movements of the shaman's dance. From an ethnographic perspective, it suggests that the ritual use of the yurt grew from, or coevolved with, its use as shelter. It also points to the yurt as an elemental form modeled on universal principles.

THE DUKHA TIPI-STYLE GER

The reindeer-herders of northern Mongolia are Tuvan by ancestry, which makes them a minority among ethnic Mongolians. They are also reindeer-herders who forage their animals in the higher reaches of the mountains. Known to outsiders as *Tsaatan*, the Russian word for "reindeer-herder," they call themselves *Dukha* or *Tuvan* to indicate their connection with their relatives across the Mongolian-Russian border on the north slope of the Altai Sayin Mountains. And they are still shamanists and minimally influenced by Buddhism. Despite years of attempts by the Soviets to weaken their identity, break up their communities, sever their connection to place, and disempower their shamans (and while most of the Dukha now live a more settled life in the town center of Tsagaan Nuur), some households continue to live year-round with their reindeer on the taiga.

Their tipi-style homes, called, interestingly, *orts*, are easily put up and taken down as the reindeer and their herders move

camp seasonally. Today they use canvas instead of hides as the covering. Most families power a radio and overhead light bulb with solar panels purchased from China, and for a special occasion, a borrowed satellite dish and television will allow everyone to get together to watch, say, the soccer finals on Italian television. But, generally, the organization of social relations within and among the *orts* follows tradition when they are "on the taiga."

Ger camp, student's drawing, Darhad Valley Mongolia;
Credit: BioRegions International, Arts and Artisans program



Dukha nomadism, their language, medicine, camps, living arrangements, and the layout of their homes—their entire way of life—has developed over millennia and in a particular landscape, the taiga. *Taiga* is used in Russian and now in English to mean the boreal forest that extends in a wide band across the Northern Hemisphere. The Dukha, however, use it to mean the mountain-tundra plateau found above the alpine treeline of the Altai Sayin. This is because they distinguish among the forest, the mountains, and the mountain-tundra or taiga, actually a term indigenous to several Siberian languages, including Tuvan. The taiga is rich in *shulum*, or "reindeer moss," which is a lichen and the reindeer's favored food. As the weather warms, the reindeer-herders move higher and higher up the mountain—the reindeer need colder temperatures to remain healthy.

Their perception of "ecology" is different from outsiders in other ways. Not human-centric, it recognizes the interdependence on the material and metaphysical levels between humans and nature. It implies a balance or harmony among the plants, animals, the land—all of which have a life force, a sentience. "Ecology" is

about the seen or physical world, as is implied in the English term, but for shamanists, it also encompasses the unseen world of spirits. This world includes the spirits of their ancestors, with whom connections must be maintained to keep the worlds in balance. All Dukha have individual helping spirits which must be treated with respect and which in return take care of them and the land on which they depend. Some have very strong helping spirits and the shaman's gift of accessing the assistance and guidance of the spirit world on behalf of their community.

This cosmology determines the layout of the *orts* and how social relations are structured. I am served reindeer milk yogurt, which I accept in my right hand in the customary way. As a guest, I am seated on the left side of the tent while the family sits on the right or east side—the entrance of their homes always faces south so that as you leave, you can give thanks to the sun as the primordial life source. In Central Asian style, the stove is placed in the center. The hearth, again, is a sacred place at the center of the circle. I was told never to be disrespectful by tossing garbage—bits of paper or candy wrappers—into the fire.

At the back of the *orts*, in the sacred place opposite the entrance, hang the spirit bags. These are made by a shaman for each person in the household as protection from sickness and other “bad things,” and to bring happiness. For the real shamanic people, I was told, you are not even allowed to walk past or sit on the north side of a shaman's home in front of a spirit bag. During the lunar New Year, offerings of food and tea are made to the spirit bag. On migrations, the spirit bag will be packed carefully on the designated spirit reindeer at the front of the line to keep them all—humans and reindeer—safe and well.

CONTEMPORARY CIRCUMPOLAR ARCHITECTURE

While there is considerable literature on Arctic structures, the principles of indigenous design and their ecologies have not been easily integrated into the “white man's” approach. Still today, there is reluctance, perhaps based on misunderstanding or hegemony or just on unfamiliarity with the limitations of the Northern environment, to take these principles seriously. We have not shown an understanding of the impact of a newly sedentary lifestyle on social and cosmological relations when people were moved from structures that are concentric in their orientation to angular, square, or rectangular frame houses designed by outsiders.

The potential remains for architects, engineers, administrators, and planners to learn from the shelter strategies, aes-

thetics, and spirituality of Indigenous Peoples of the circumpolar regions. These have been shown to be successfully adaptive throughout prehistory and before and after contact. They could now be incorporated into urban planning. In Igloodik, for example, I met a woman who kept a snowhouse outside her government-issued frame home because the temperature was not “too warm.” Here, she found it easier to work the hides that she made for clothing to use “on the land.” And she enjoyed the feeling of being in a snowhouse—the muffled sounds of the outside world and its luminosity. In Ulaanbaatar, the capital of Mongolia, yurt camps have sprung up all over the city; the construction of affordable apartments and houses has not been able to keep pace with the expanding migrant population. Anyway, many people prefer the *ger* lifestyle, even in town. The Mongolian children's drawings especially confirm that although accommodations need to be made for water, sewage, power, and other services, the principles of contemporary indigenous architecture are valid, sustainable, and economical in the modern context.

The built environment of the circumpolar world is consistent across its extent in that it addresses severe environmental conditions. Its strategies have also been localized to make use of the resources, technology, and innovations at hand. Even today, there are times when local materials are more practical or available than southern imports. Indigenous lifeways are still innovative, dynamic, and adaptive. These same skills and abilities are relevant to issues faced by circumpolar peoples today in their shelter forms as living traditions. We need to focus on the mediations being made by circumpolar people as they navigate back and forth between the traditional and the modern and involve them in shaping their built environment. The skills and ingenuity that inspired traditional circumpolar architecture have not yet been lost. They can continue to inform and inspire if circumpolar peoples are included among the experts that design their homes and communities.

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