

## Yup'ik Ways of Knowing

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When the earth's crust was thin, there came into consciousness two sparks of life, a girl and a boy. As they surveyed and explored the remnants of a very large village, they often were puzzled: What had happened to cause the people to vanish? Why were she and her male friend alive? How did they survive? A conundrum only to be possibly answered by the supernature!

The old village was located on a river which emptied into the ocean not too far distant. The village faced south, the river flowed west. The flood plain on which it sat was bordered by mountains to the north. The village had been very large, judging by the number of houses in various stages of decay. Their house was in good repair, the cache full of much food and furs.

Each of these young people had to learn their roles by patiently studying, observing, experimenting and discussing how their clothing was made, the use of tools and hunting implements. Visions or dreams would come to them as to what to do and how to do it. In pondering the makeup of the mukluk or the parka for many days, she would tire of it and leave it alone, and then one day the idea would come to her—use the bone needle and make thread for it out of sinew. He learned to launch the kayak and use the paddles for propulsion. Their minds were young and receptive to ideas for working with the things at hand and in their world. Watching the grass bend in the breeze, he pulled on a tree limb and watched it spring back. Curiously, he put a stick on it, repeated the motion, and watched it being propelled, and, suddenly, what about that curved stick with sinew attached, and the sticks with feathers in one end and a pointed rock on the other end. Thus, came into being the bow and arrow, followed closely by the bow and drill for starting fires. So they grew and expanded their world always as participants.

They eventually became a couple and had a child. They were rich in food and clothing, and independence. The man in his hunting always searched for others like themselves, or for any signs whenever he went out. One day he returned from the ocean carrying a piece of wood that had not been cut by an animal but with a tool. Then they knew that there must be others somewhere. One day the husband prepared to go on an extended trip to explore further than he had ever done. He said that he would go out to the ocean, follow the coastline around the bend which must be a peninsula. He took enough food to last several days.

Several days pass—no husband. A moon passes into fall. Winter is upon them. No husband. Food is still plentiful. Summer comes and passes twice. During the spring of the trice arriving summer, food is short. She must now soak skins to remove hairs, and then boil it for food. One spring day, she climbs again to the top of the house facing the ocean. The sun is warming, but she is now skinny and must wear her hood. She cries for her lost husband, her son, and herself. She wipes the tears away and looks around. There is nothing to be seen. She again cries. She distinctly hears a voice saying:

“Pitegcurli has married two ladies on the other side of the mountain, *curlik*.”

Clearing her eyes, she look around. The only thing in sight is a little dark bird with a red breast.

“Aye! Aye! Who is talking?”

Silence.

Then the little bird opens its mouth, and repeats its song.

“Alright, if this is true, show me the direction of his place.”

Without another word, the bird takes to the air. It follows what might have been a trail through the woods, streaks for a pass and disappears over it.

“So my husband is not dead! It will take me days with my child just to get to the mountains. My child will get tired. I must find some other means to get me there.”

She ponders the problem. The solution slowly emerges in her mind—use an animal! She goes up to the cache and examines the animal skins. As she picks up each she thinks of the attributes and weaknesses of each. The caribou is fleet of foot and has food in abundance for it; however, it tires easily, would not have sure footing on rocks, and has enemies like the wolf, so she decides against it. She examines many and finally comes upon a bear skin. Now this is the animal. It has no enemies, no shortage of food, has great strength, and won't tire easily. It has no problems climbing nor descending a mountain. This is my choice.

She takes it down, fills a wooden bowl with water and soaks the skin. While it is soaking she prepares what little food she has for the child. She tells him that she will be gone for some time and for him to wait for her. She goes out and finds that the skin is softening. She removes it and hangs it until the water has dripped off. She gets down on her hands and knees and throws the skin over herself. It is too large! The stomach reaches to the ground. She thinks, runs into the house, comes out with her large cutting board, places it on her back and throws the skin over her once more. This time it seems that it will fit. She removes all, goes into the house, and reassures her son that she will only be gone for a while. She then places a walrus skin over the door and weights it down. She is now ready for a transformation.

She goes to the bearskin and quietly begins to talk to it, “I am in need of your help. My husband has been gone for a long time. I am told that he is alive and living on the other side of that mountain. As I have taken good care of you when you gave yourself to my husband, now I am asking for your help.”

With that she kneels, places the cutting board upon her back and the skin over her. Lo and behold, the skin closes in on her, attaching itself to her and they become one. She runs toward the mountain. Before long, she is at the pass looking down at another valley. A river meanders down it. Close to the mouth is a house with smoke coming out the skylight. As she watches a young lady comes out, wanders to the riverbank and intently looks seaward. Soon she returns to the house. Soon another lady in a different parka repeats the actions of the other. This must be the place.

She goes down, removes the skin and board and places them on the ground, telling the skin to be ready when she needs it. She walks to the house stepping lively to be heard by those within. She enters the house. There are two surprised ladies sitting beside the firepit both with cooking pots over the fire. She quickly scans the room and sees her husband’s clothes that she had made for him on the bench.

“*Wagaa!* Where did you come from?” said one of the women.

“I’ve been looking for others like myself for quite some time. I just happened to see your house, and was very glad and curious to see who it was.”

“Do you live far?”

“Yes, I do.”

“You wouldn’t happen to be our husband’s wife, would you? He has told us that he has a wife,” asked the other suspiciously.

“No, I have always lived by myself.”

“You are so good looking! How did you get those marks on your chin?” asked the first.

“Well, you know at one time I was homely. But one day I was cooking, just as you are doing now. I had a thought, so I quickly dipped my ladle into the boiling broth and drank it quickly. The pain was so much that I became unconscious. When I came to, I went over to the pail and looked in. I had become lovely with these beautiful makings on my chin. Would you like to try?”

“Yes,” they both answered.

“Now when I say go, both of you dip into the broth and drink as fast as you can no matter how much it hurts. Are you ready? Go.”

They soon were stretched out dead. Before this act, they had told her that their husband had a strange request—that when he returned from hunting in the ocean, they were to dance for him. She dragged the bodies down by the river, erected two posts, and hung them on it, the parkas being over the posts with the top end in the hood.

She waited. Soon there was a rhythmical glistening in the distance. Getting closer, it was a kayak. Soon she recognized her husband. He began to sing, the women never moved.

“Why is it you don’t dance?” he screamed.

He grounded his kayak, jumped out, ran to one and grabbed it by the arm. It just swung around. He worriedly walked to the other.

“They are dead!” Disbelief, turns to rage. “Who could have done this? I will kill whatever killed them.”

The wife slowly stands up from the tall grass. “I killed them because they kept you away and let us suffer all these years.”

“You meddle in my life! I will kill you!” He runs to his kayak and takes out his bow and arrow. He starts toward her. She slowly kneels down and says to the skin, “NOW.” He is running toward her hiding place. She rears up. He stops, assesses his situation, and pleads with her not to harm him. She bounds toward him. He runs toward the cache and begins to climb. She just barely reaches his leg, pulls him down, pummels, tears, and rips him apart. She goes to the other bodies and does the same. Then she enters the house and rips it apart. Finally, the anger dissipates and disappears and rational self returns.

“Oh, my anger, now I am alone. My son! I must return.”

She quickly returns to her house. Her son is crying inside. She must hurry, she must remove the skin. Try as she will, she cannot. In her frustration she bellows,

runs around the house and as she nears the entrance, rears on her hind legs and with another bellow hits the side of the house with all her strength. The house collapses. A little bird flies out and hovers around its mother, the bear.

To this day, the Yup'iks say that a bear is unpredictable because of the woman, and that there is a certain little bird that is very close to it because of their past kinship.

I began this paper with a myth told to me originally in Yup'ik by my grandmother. Myths are the Alaska Native's tool for teaching. The human values that make me uniquely Yup'ik in cadence with the circadian and life rhythms of the universe are all slowly unfolded as my grandmother, and other elders teach me through myths and legends. Just exactly how did my Yup'ik people get to know so much about the world and reality? As I contemplate this question and reflect back to the stories, I begin slowly to see that the tools for teaching a culture, a science, a way of knowing, have always been with us. I know my Yup'ik people are intelligent and ingenious as reflected in their metaphysics and handicrafts, including the snowgoggles, the qayaq, snowshoes, and specialized use of furs for clothing. How then did this come about?

I will try to address the ways of Yup'ik knowing through:

1. interbeing mobility and animal messengers
2. intuition
3. visions and dreams
4. observation
5. spiritual interaction (most importantly)

The story my grandmother told me has all the feelings that a human being has: peace and harmony, sadness, hunger, jealousy, anger, remorse, etc. The Yup'ik have many stories, this one included, where a human being changes readily from human to animal form. The animals are known to wear a special parka characterizing each as the animal it represents. All they need to do is remove the hood by taking hold of it at the chin and pulling upward and backward. Lo and behold, a human head is revealed. In this story, the robin is the communicator of the message to the woman. As she considers which animal parka to use, she already has intimate knowledge of the animals behavior and needs. This is because "when the earth's crust was thin" the humans and animals were accepting of one another and saw no problem with changing into another form of which they were a member already. After all, they believe in an "Ellam Yua", the Spirit of the Universe. However, they were created by the Raven, so how could they be better than or superior to all other

animals, plants and the earth. Some shamans or lost hunters spent up to a year with animal people. During that time they learned their behaviors, their likes and dislikes, and how they were to be treated when they gave of themselves to the hunter. There was ready communications between man and animals, displaying a feeling of oneness, a unity of being.

There has been much said of intuition, that way of knowing most likely from the unconscious mind. The shaman introduced many to this new frontier of knowing oneself. This seems to have happened, and continues to happen, when thinking upon a problem long and hard. Finally, with no answer, one forgets about the problem only to have a clear message or thought emerge at the most unexpected time. When in tune with Nature, one is in tune with the Great Being, from whence the answer come. It is interesting to note that physicists and mathematicians are now working on a “Theory of Everything,” or “Unified Theory.” They have to go beyond the quantum theory and the theory of relativity to begin to realize an interconnectedness between all things in this universe. The Yup'iks have always understood this, and chose to live as a part of and participant in the “big picture.” Intuition and knowledge made the woman in this story choose the bear. It was only her extreme and uncontrollable anger which made the parka permanently attach to her body. Therefore, we have the admonition to meekness and moderation, even-temperedness and slowness to anger.

Shamans and certain individuals, with not particular credentials, were given to visions and dreams. Shamans were trained to have visions via a pot of water, through an animal's eyes, through a star, and other means. These were referred to as “TANGRUAK” or “pretend to see” and their visions were often brought to fruition. Dreams often told of the future, especially with respect to an individual's impending death. The shaman could tell by the “picture” or aura of a sick individual whether he would be ill for a long time, get well, or die. He could tell why animals were scarce for a particular time. He was an expert in human nature and the spirit world, and could project himself out of his body to other places known or unknown. The shaman was a messenger between nature, human beings, and supernature, and he commuted easily and readily between them.

The elders and others would talk about conditions of their environment when there was plenty of food—conditions which portended a scarce season. After several seasons, as they reviewed orally their observations, they would serendipitously discover the sense makers of nature telling them what to expect. They would note these and discuss amongst themselves—the years of plenty and those of scarcity. Out of this would come naturally, control of births, elders saying to all, “Now is not the time to bear children.” They also

needed to know how cold and how long the winter would be. Again, nature would give them indicators, as long as they were willing to observe, learn and apply knowledge to ensure continuation of the people. There were times of sickness also, but it is said that there would always be a number unaffected whose task was to care and provide for others unable to do so.

The Yup'ik people made many serendipitous discoveries, such as: wolverine fur resists frosting; polar bear fur is especially good for absorbing radiant energy; pants and parka of caribou with the fur inside is good or better than a wet suit; walrus and seal intestines make excellent rainwear, etc. Yup'iks' devised a system of architecture and engineering to construct the qayaq for strength, seaworthiness, flexibility, stability, carrying capacity, resiliency, transportability, and streamlining, so as to assure the user that he can trust its performance unequivocally.

His knowledge was based on a blending of the pragmatic, inductive, and spiritual realms. The shamans and artists brought into a Yup'iks life the by-laws of life, inscribed indelibly into tools, both intellectual and material. Both had the flexibility of thought necessary to use the conscious levels of thinking and to have easy access to the subconscious mind. The shaman had the added dimension of the spiritual world to solve the conundrums, or puzzles, presented by Nature. His function then was to explore and interpret what he saw creatively and positively, with his insight to be taught to his people. We have a word, “ella,” which according to the context used in a sentence may mean:

outside      weather      sky      earth      universe      consciousness

You cannot be aware of others or things around you without consciousness, so it is embedded inextricably into this short but all inclusive base word. I think it epitomizes our world view of interconnectedness, which cannot exclude the consciousness of the human observer. Our mystical knowledge cannot have been gained merely by observation, which is the main basis for rational knowledge. To obtain mystical knowledge, observation must be coupled with the participation of our whole being—mind, body, and soul—with the universe. I have heard it said that “literature makes life meaningful, gives strength, inspiration and courage.” So, too, does our oral mythology. Culture has much to do with our state of mind, and the stories are a necessary tool for the transmission of the attitudes and values of mind. Culture also gives hope to its members that the attitudes, and thus, the things that make them uniquely themselves, will never be lost, but continue on, regardless of internal or external forced change.

Visualization implies a delicate awareness of things perceived visually, “through the mind’s eye,” including visions of the supernatural. Art may be thought of as a process, an idea, or a symbol to bring to visual or intelligible level an idea shared by a group of people. The making of masks is an expression of what one has experienced through one of the many levels of thinking. It is bringing into a tangible level the experience one has seen or had in the world beyond. Art is the essence of this. Just take for a moment a story of a man’s seal hunting trip as expressed in a Yup’ik dance. It will tell of his preparation, his expending of energy to get there, the behavior of his prey, his pride and joy in being successfully given a catch, and the reciprocation of he and his wife by making the seal welcome and using all of it for clothing and sustenance for the family and community members. The rhythmical drumming, chanting, and singing will help him to reenact his feelings, help him to become the prey, by behaving and being like it. The traditional chanters and dancers would put to shame any theatrical group, because of their ability to enter into the spirit of the hunter and prey. Visualization and, possibly, the trancelike state of the person, then seems to say that man, animal, and spirit become one. It seems to me that as we imagine, we cannot separate ourselves from whatever we are picturing. This is a beautiful attribute to have and one which should be capitalized upon in the process of formal education.

Shamans, men or women, who have had a profound experience hunting, or an everyday activity seen in a different or comical way, will turn it into song and dance. The Eskimo, Orpingalik (Halifax), stated that, “Songs are thoughts, sung out with the breath when people are moved by great forces and ordinary speech no longer suffices . . . , it will happen that the words we use will come of themselves. When the words we want to use shoot up themselves—we get a new song.” The “enlightened wisdom” of a spiritual being seems to express itself without the conscious effort of the recipient, or the person through whom it is speaking. All it requires is that the person be willing to be the vehicle for expression.

I have briefly tried to explore the Yup’ik way of knowing to form the foundation for a synergistic approach to teaching. As we look briefly at both the Native and western ways of knowing, we see that there is a scientific approach to both, although one goes heavily into a mystical/pragmatic/inductive way of sense making, while the other has chosen the mundane/experiential/deductive way. Yup’ik science gets its profound discoveries from interacting with the mystical, transcending man’s ability to analyze and understand the world through mathematics, sciences, and colonization. It can then be said in one aspect that the former have chosen herbal medicines and holistic healing to the latter’s choice of pharmaceutical drugs and surgery for healing. This expresses the dichotomy between the



two views. They may have started from the same mystical viewpoint, but each chose their own way quite removed from the other.

I propose that it is possible to teach Native youth mathematics and, more particularly, the natural and physical sciences by capitalizing on the Native knowledge and skills that already exist in their culture. The natural sciences are nothing more than observation and mystical understanding of the interplay between Nature and man. The Native has perspicacious knowledge of Nature. The teachers must realize that these Native students entering school are not empty computer disks or sponges to be filled with facts and knowledge by the teacher. They enter school with language skills already in their minds, and the beginnings of an understanding of how they interact and are part of a family. They have the basic qualifications for success required of any student in the world who wishes to become a successful hunter, banker, scientist, teacher, world leader, or a renowned thinker. Their culture provides a basis to progress in acquiring new knowledge, new skills, and introducing new ideas on how to increase the quality of life without having to dominate earth and destroy her at the same time, and without relinquishing those group values that are deemed necessary to give life and distinctiveness to the group.

I propose teaching mathematics and the sciences through oral literature, mystical philosophy, and conservation (reflecting the sacredness of the Native relationship to the land), and utilizing the Natives special ability in spatial relationships. This can be done with an elder, who is a Native speaker and knows the little secrets and idiosyncrasies of the language, and can explain a concept in Native terms. Then take the same idea or tool and introduce students to it from the Western perspective, helping them understand the differences. The Western thinker has chosen mathematics and scientific terms and nomenclature to explain the same phenomenon. These questions of semantics take on an exceptional importance, because the Western perspective can lead to further alienation from the natural world, and the learning can become based on words rather than on participation and interaction with nature.

I advance this idea of “ethnoscience” as a way of improving the teaching of mathematics and sciences, especially to rural Native students, recognizing that youth of the dominant society experience the same difficulties in understanding abstractions and vernacular peculiar to the disciplines. To forget that a child has sight and therefore sees images, has a mind and therefore can imagine, and most often has the ability to draw or doodle, is a gross oversight of educators. To make the basic concepts understood in the elementary grades, one has to use all the perceptive/sensory tools, including visual thinking, and apply them to experiences with which the student can readily identify. The Native student

and adult use the same method and thinking processes as the non-Native to seek answers to the same questions. However, different value concepts, perspectives, and philosophy determine how they interpret the empirical data, and how they each relate to the natural world. Each culture, through the millennia, has established a way to make the natural world accessible to reasoned inquiry—exploring what is real, what is truth, and what is good and beautiful. This flows and is channeled through their science, art, and religion. The natural phenomena in the Yup'ik family are explained in terms of readily observable characteristics, or experiences involving a high degree of intuitive thought.

This short paper attempts to set the stage for a more systematic approach to teaching based on the Yup'ik cultural perspective and criteria drawn directly from cultural experience. My feeling is that we will increase the student's understanding and achievement if we provide experiences that build, consciously or unconsciously, on Yup'ik cultural thinking processes. Ethnoscience is nothing more than Yup'ikized or humanized science. There are no good reasons why we are bereft of scientists in our region when the educational system has been in place for over 100 years. It just manifests the failing of the educational system to recognize that “culture is science,” and that the teaching methodologies we use are too westernized in philosophy and thus are biased to that perspective only.

I, being a Yup'ik, have a unified world view, with a deep appreciation of educational catch phrases such as “collaborative teaching” and “holistic thinking,” but the thinking process stops there and confusion is rampant. Should it be bilingual? Which language should be dominant? Are we willing to say, “Yup'ik is going to be the working language in our region, with English as the second language.” Educators purport to endorse bilingualism and biculturalism, but their way the thinking does not accommodate either. Our children are on the losing end due to this confusion, not being able to master either language, with a resultant Yup'ik cultural gap. As one elder pointed out to me, “My high school children come home to our one room house. They are here, but a partition exists between us. They are losing our language and way of life, yet there really is no alternative lifestyle other than subsistence for many years to come. They now have needs and wants based on the white man's way.” What a dilemma for a parent to be in.

My personal approach to science teaching, which some will quickly say is idealistic, is that we should make use of the language because it is a tool of the spirit, and therefore the voice of the culture. I should pay particular attention to Yup'ik learning style and to the people's application of science principles. Our Yupiit have been in touch with Nature since the beginning of time. They have been in touch with the Ellam Yua, and, thus in

touch with science, for science is nothing more than curiosity and the observation of how and why things work and how life can be made better through understanding. Since science is basically observation, modern tools only refine our ability to observe, and the written language helps us to record data.

Elder participation is critical to Yup'ik science teaching. Their thinking, learning and desire to convey the age old products of wisdom, including individual and group fortitude, values of life, liberty and the pursuit of happiness, are based firmly on Yup'ik spirituality and world view. The premise then in teaching Yup'ik science is to begin with the environment, which insures cultural sensitivity and relevancy, because it is something elders are most intimately in tune with.

I'll use a simple example of an activity exploring science in the fish camp. The science of making "tepa" or "stink heads" leads to the concept of aging by bacterial action, chemical equations, toxicity, etc. It can be pointed out in this, and other activities, that the interest of the Yup'ik is the whole product, whereas the western scientist is interested in breaking down the whole into components to understand the end product and how it got to be that way (in this case without poisoning the consumer).

You can study the splitting of fish using a simple machine, the wedge. Why and how is it done? What are the energy transformations involved in cutting, drying, smoking, and storing the fish? Along with the fish, you can examine the Yup'ik identification of plants and animals, the life cycles, the food webs, climactic and weather conditions, the traditional way of telling time, animal behavior and habitats, the common sense measurements, plant and berry use, refrigeration techniques, inertia in a canoe and qayaq, and many other "science" principles.

The students will learn to expand their knowledge and skills, and should ultimately realize that not only we, but all men of the world are ecological dependents, and what we do with the environment affects our lives as a whole species. As they progress they should begin to think, "What can I do to contribute to the economic self-sufficiency of my region, and make it better environmentally?"

The students should also be expected to master the content areas and do quality work in not taking, writing, diagramming and labelling. Their study should include visual thinking sessions to whet their imaginations to see everyday pieces of their environment a little differently. Each exercise should involve thinking in the humanities, as well as math and science. In other words, this should be a MULTIDISCIPLINARY teaching and learning adventure. It can be fun to learn science tied to the world around us and through

our own, and then branching out to discover universal laws of Nature! This is the meaning of Yup'ik ethnoscience—a Yup'ik way of knowing.