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Smithsonian at the Poles

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International Polar Year Science

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and Scott E. Miller
Editors*

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Yup'ik Eskimo Contributions to Arctic Research at the Smithsonian

Ann Fienup-Riordan

ABSTRACT. The following pages review four research trips to Smithsonian collections made by Yup'ik community members between 1997 and 2003. In each case, Yup'ik elders had the opportunity to examine ethnographic material gathered from southwest Alaska in the late-nineteenth and early-twentieth centuries. Most had seen similar objects in use locally when they were young and provided rich commentary not only on the significance of particular tools and pieces of clothing, but on the traditional way of life and worldview that flourished in southwest Alaska in the 1920s and 1930s. Although much has changed since these elders came of age—the introduction of organized religion, formal education, and a wage economy—a rich and vibrant oral tradition remains. Through sharing knowledge in collections as well as working with museum professionals to bring objects home to Alaska for exhibition, elders seek not only to remind their younger generations of their rich heritage, but to declare the ingenuity and compassion of their ancestors to all the world.

INTRODUCTION

Yup'ik Eskimo men and women first gained awareness of Smithsonian collections in 1982, with the opening of Bill Fitzhugh and Susan Kaplan's groundbreaking exhibition, *Inua: Spirit World of the Bering Sea Eskimo* (Fitzhugh and Kaplan, 1982) in Anchorage. Prior to the opening of the Yup'ik mask exhibit, *Agayuliyararput/Our Way of Making Prayer* in 1996, elders worked with photographs of objects, but few entered museums to see the real thing. Since then, Yup'ik elders have had unprecedented opportunities to visit and view Smithsonian collections, including one- and two-week research trips to the National Museum of the American Indian in 1997 and 2002, and the National Museum of Natural History in 2002 and 2003.

Inua and *Agayuliyararput* opened doors, and those who entered found an unimagined array of artifacts, which most had viewed only briefly when they

were young. All were deeply moved by what they saw. Elders also recognized the potential power of museum collections to communicate renewed pride and self-respect to a generation of young people woefully ignorant of the skills their ancestors used to survive.

Finally, in 2003 the Calista Elders Council began to actively search for ways to bring museum objects home. Repatriation was not the issue, as ownership of objects was not the goal. Rather the Council sought “visual repatriation”—the opportunity to show and explain traditional technology to contemporary young people. The results of their work in Smithsonian collections has not only enriched our understanding of nineteenth-century Yup’ik technology in unprecedented ways but also laid the foundation for the exhibition *Yuungnaqpiallerput (The Way We Genuinely Live): Masterworks of Yup’ik Science and Survival*, bringing Yup’ik materials home to Alaska in this Fourth International Polar Year.

SOUTHWEST ALASKA

The Yukon-Kuskokwim region, a lowland delta the size of Kansas, is the traditional homeland of the Yupiit, or Yup’ik Eskimos. The region’s current population of more than 23,000 (the largest native population in Alaska) lives scattered in 56 villages, ranging between 200 and 1,000 persons each, and the regional center of Bethel with a population of nearly 7,000 (Figure 1). Today this huge region is crosscut by historical and administrative boundaries, including two dialect groups, three major Christian denominations, five school districts, two census areas, and three Alaska Native Claims Settlement Act (ANCSA) regional corporations. Villages each have an elementary and a secondary school, city government or traditional council, health clinic, church or churches, airstrip, electricity, and, in some cases, running water. With 14,000 speakers of the Central Yup’ik language, the Yupiit remain among the most traditional Native Americans.

The subarctic tundra environment of the Bering Sea coast supports rich flora and fauna. An impressive variety of plants and animals appears and disappears as part of an annual cycle of availability on which Yup’ik people focus both thought and deed. Millions of birds nest and breed in the region’s ample wetlands, including geese, ducks, and swans. Annual migrations of salmon and herring are major resources for both riverine and coastal hunters. Halibut, flounder, tomcod, whitefish, capelin, pike, needlefish, smelt, and blackfish seasonally appear in coastal waters and tundra lakes and sloughs, and seals, walrus, and beluga whales

return each spring. Land animals abound, including moose, caribou, bear, fox, otter, Arctic hare, muskrat, and beaver, and edible greens and berries are plentiful during summer months. Prehistorically this abundance supported the development and spread of Inuit culture, and some scholars have called the coast the “cradle of Eskimo civilization.”

The abundance of plants and animals in southwest Alaska allowed for a more settled life than in other parts of the Arctic. Hundreds of seasonal camps and dozens of winter settlements lined riverine highways that link communities to this day. Like the northern Inuit, the coastal Yupiit were nomadic, yet their rich environment allowed them to remain within a relatively fixed range. Each of at least a dozen regional groups demarcated a largely self-sufficient area, within which people moved freely throughout the year in their quest for food. Far from seeing their environment as the insentient provider of resources available for the taking, many Yupiit continue to view it as responsive to their own careful action and attention.

ELDERS IN MUSEUMS: FIELDWORK TURNED ON ITS HEAD

This year, 2007, marks the beginning of the Fourth International Polar Year. September 2007 also saw the opening of the exhibition, *Yuungnaqpiallerput/The Way We Genuinely Live: Masterworks of Yup’ik Science and Survival*, in Bethel, Alaska. *Yuungnaqpiallerput* was developed by the Calista Elders Council in collaboration with the Anchorage Museum with funding from the National Science Foundation. It is based on over a decade of work in museums by Yup’ik men and women, including four seminal research trips to Smithsonian collections. The following pages share highlights of how and why elders came to the Smithsonian, what they learned, and what they hope to do with this knowledge.

Yuungnaqpiallerput (Fienup-Riordan, 2007) stands squarely on the shoulders of the successful partnership that gave rise to the Yup’ik mask exhibit *Agayuliyararput/Our Way of Making Prayer* in 1996 (Fienup-Riordan, 1996). That exhibit was the culmination of efforts to understand the meaning and power of nineteenth-century masks, including masks collected by Edward Nelson and Lucien Turner, from the Yup’ik point of view. The cornerstone of that exhibition, as with *Yuungnaqpiallerput*, was information eloquently shared by Yup’ik elders during both private and public conversations, remembering the masked dances they had seen when they were young. Some had seen photographs of masks, but few had entered muse-

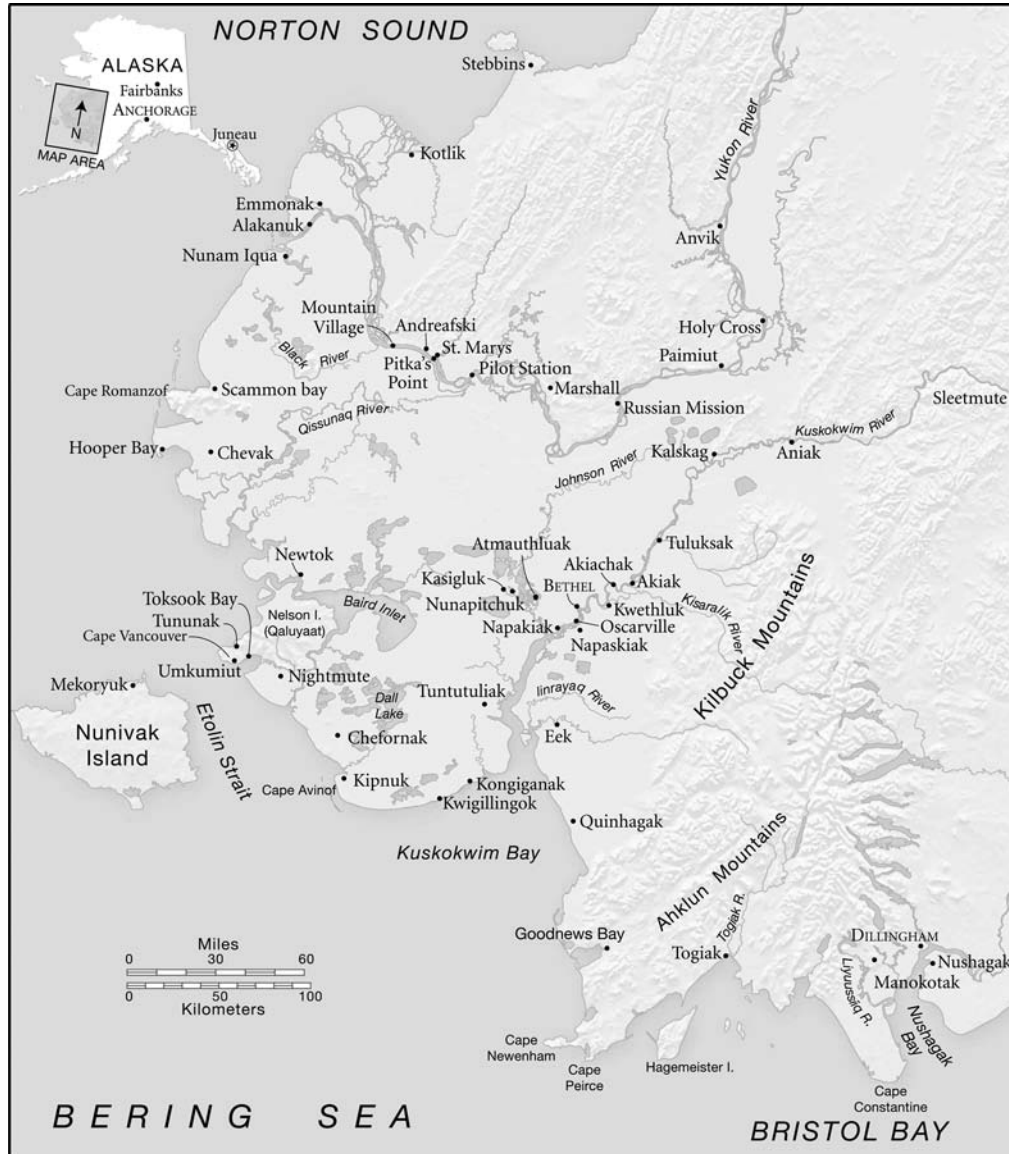


FIGURE 1. Map of Southwest Alaska, 2008. (Patrick Jankanish and Matt O'Leary)

ums to see the real thing until after the exhibit opened in Toksook Bay in January 1996.

Following *Agayuliyararput*, Yup'ik men and women have had unprecedented opportunities to visit museums and view collections. The first "Yup'ik delegation" to do serious work with Smithsonian collections was a group of six elders who, along with myself and Marie Meade, traveled to the Bronx storage facility of the National Museum of the American Indian (NMAI) for two weeks in April 1997. NMAI had invited the elders to New York as thanks for what they had shared during the Yup'ik mask exhibit, which was then on display in New York. Our visit

marked the first time Smithsonian staff extended such an invitation to Alaska Native elders. Organized in large part by Mary Jane Lenz, NMAI housed us, fed us, and shared with elders as many objects as they could during the time we had together.

Agayuliyararput opened museum doors, and those who entered found an unimagined array of artifacts, including hunting equipment, clothing, and the tools of daily life. Ironically, the objects elders found least interesting were the masks, which most had viewed only briefly when they were young. Grass socks, stone tools, and fish-skin clothing, however, excited enormous interest. All were deeply

moved by what they saw and spoke repeatedly about the skill required to make and use each item. Viewing collections for the first time, the late Willie Kamkoff (April 1997) of Kotlik remarked: “Seeing these things after we arrived, our ancestors were so ingenious in making hunting tools. They didn’t have iron tools, only *ciimat* [rocks]. Their tools weren’t sharp, but they were amazing.”

Elders also recognized the potential power of museum collections to communicate renewed pride and self-respect to a generation of younger Yup’ik men and women woefully ignorant of the skills their ancestors used to survive. Reflecting on his visit to NMAI, Paul John (September 1998) of Toksook Bay said:

We saw many objects when we visited the museum in New York, but I couldn’t leave the adze and an ax for a long time. I kept going back to look at them in awe, realizing that they had been used by someone long before metal and nails were introduced. The ax had an ivory blade with a wooden handle shiny from constant sweat and oil from the hands that held it. . . .

The objects in museums are not insignificant. If we live using them as our strength, we will get closer to our ancestors’ ways. And when we are gone, our grandchildren will continue to live according to the knowledge they have gained.

Elders were deeply engaged by the full range of Yup’ik technology. This point was brought home during the second major Yup’ik foray into Smithsonian collections, a visit to NMAI’s Cultural Resources Center in August 2000. Three elders had been invited to choose objects for inclusion in the new museum’s planned exhibit, *Our Universes*. During the first four days of their visit, they sat in a conference room and carefully described their way of life to curator Emil Her Many Horses and staff. On the last day they were invited into storage areas where all 1,000 Yup’ik objects in the museum’s collections were spread before them. The elders were asked to walk through the room and choose the things that they felt best reflected the traditional Yup’ik view of the world. The Yup’ik group was the last of eight groups to make such selections. Some, like the Pueblo, had chosen 40 pieces, including many sacred ones. Others made smaller selections. The Yup’ik group circled the room, pointed enthusiastically at everything recognizably Yup’ik, and chose more than 300 objects. Masks were of interest, but the technology that had allowed their ancestors to survive was of primary importance.

This trip, planned with the help of the Calista Elders Council (CEC) and fully funded by NMAI, was preceded by a two-day gathering in Bethel, where five elders answered questions and discussed their view of the world with

Emil Her Many Horses and Mary Jane Lenz. This meeting was foundational, not only for NMAI staff but for CEC, the region’s primary heritage organization representing the 1,300 Yup’ik elders sixty-five and older. CEC had just begun actively documenting traditional knowledge in 1999, both during their annual Elder and Youth Conventions and interviews with individual elder experts. The format NMAI chose—a small group of elders focusing discussion on a specific topic—was an inspiration. Supported by NSF, the CEC has since held more than two dozen two- and three-day gatherings on topics chosen by CEC’s board of elders, including ones on relational terms, discipline techniques, migratory waterfowl, and fall survival skills. In my 30 years work in the region, the last five years have been both the most satisfying and the most productive, seeking to answer questions Yup’ik people themselves are posing.

Aron Crowell, Director of the Arctic Studies Center’s Anchorage office, organized the third Yup’ik visit to Smithsonian collections in 2002. There, three elders spent one week examining and commenting on a rich range of objects Aron selected for inclusion in the Arctic Studies Center’s Anchorage exhibition, scheduled to open in 2010. Photographs and elders’ observations from this important trip are available on the Arctic Studies Center’s website, *Sharing Knowledge*. Again, it was deeply moving to see how much exploring collections meant to individual elders. Eighty-year-old John Phillip Sr. from Kongiganak wanted to come so badly that when stormy coastal weather closed in, he drove his snow machine more than 100 miles to Bethel to make his flight.

February 2003 was the last Yup’ik trip to work in the Smithsonian Institution’s Museum Support Center (MSC). Frank Andrew, the single most knowledgeable elder I have every known, had been unable to come to Washington, D.C., in 2002 due to his wife’s death. Members of the CEC staff had worked with Frank at museums in Bethel and Anchorage, but he wanted to see objects specifically from the Canineq (lower coastal) area of the Bering Sea. So, we organized this one-week trip just for him. Frank was accompanied by his son, Noah, as well as two knowledgeable elders he felt comfortable with. The Smithsonian Community Scholars program funded our travel, with additional support from the Calista Elders Council.

Prior to our week at MSC, I searched records and pre-selected close to 300 objects from Canineq (Nelson, 1899). The MSC staff was generous in supplying records and print outs to make this long-distance selection possible. During our stay, we recorded close to 30 hours of discussion, all in Yup’ik, producing more than 1,000 pages of transcripts. We had an additional adventure when the blizzard of

2002 hit D.C. the night before we were to fly home. Frank had noted that the Yup'ik name for the small snowflakes he saw falling was *taqailnguut*, ones that don't stop—and they didn't. Washington shut down and planes didn't fly for another three days. The elders were unconcerned, as waiting out storms was a routine part of life. Food was a potential problem, but Noah and I went “hunting” every afternoon for whatever Pennsylvania Avenue could provide—tins of smoked oysters, roast chickens, canned soup. During the days, we gathered in our largest room and told stories. I kept the recorder running, producing what Marie affectionately referred to as the Blizzard Tapes.

Not only have elders traveled to Smithsonian collections but Smithsonian collections have come home also. During our last trip to MSC, NMAI photo archivist Donna Rose gave us a fat binder of copies of the wonderful photographs made by Dr. Leuman M. Waugh, recently saved from oblivion by Igor Krupnik and Stephen Loring, among others (Krupnik and Loring, 2002; Fienup-Riordan, 2005). An especially moving account was recorded while looking at Waugh's photo of men hunting in kayaks near Frank Andrew's hometown (Figure 2). I naively asked Frank if he felt pride the first time he used a kayak. Here is what he said.

There were two men [Qilkilek and Puyulkuk] who picked on me. One was my grandfather, and the other was my cross-cousin. Getting a kayak didn't make me feel important. One of them picked on me very hard. He said that I would only eat catches that I got from other people and not my own and that I would only wear clothing that was handed down. The other one asked me why I got a kayak, one that would rot before the blood of my catch soaked it. These things that I heard were not things that make you feel good.

That was how I felt when I got a kayak, and I stopped sleeping. I didn't want to be [the way they said I would be]. I learned everything about paddling before I got a kayak by using one that wasn't mine, and I was taught how to hunt as well. I was filled with eagerness and the will to succeed.

I got a kayak during summer. They put it up on stilts. I would even go and check on it at night when it was windy, being afraid it might blow away because that old man bothered me so much. . . .

Then during [the following] spring they began to go down to the ocean. I stopped sleeping, wondering when he would let me go. They eventually began to catch sea mammals. After that, my late older sister told me that they were going to take me. I was so ecstatic because I loved to be by the ocean when I went to fetch their catches. And we would be reluctant to go back up to land sometimes. It was always calm.



FIGURE 2. An uncatalogued hand-tinted lantern slide: “Men hunting in kayaks, probably near Kwigillingok,” in 1935/1936, Alaska, by Leuman M. Waugh, DDS, based on comments from Frank Andrew, 2002. Photo L02230 courtesy of National Museum of the American Indian, Smithsonian Institution.

We were getting ready to go down. . . . We walked, pulling our kayak sleds at night, and we got to the ocean just at daybreak. I saw the person who ridiculed me. His name was Qilkilek, and he was in a kayak. I never forgot what he said to me. When he saw me he said, “What are you here for? Go back up and be a urine-bucket dumper. You won't catch anything.” I didn't answer.

Frank then left to hunt with his two cousins. Soon he spotted a bearded seal pup sleeping on floating ice and signaled to his cousin, who killed it. Frank then saw its mother swimming nearby. His cousin told him not to hunt it but Frank didn't want to give up. When the animal surfaced directly in front of him, Frank took aim and fired.

I shot it immediately and hit it. I quickly harpooned it. It was very large. My poor heart was going tung-tung, and I could hear my heartbeat with my ears. I was afraid I would capsize, but I really wanted to catch it. After checking the ice, I got off on a thick spot, holding [the seal] with the harpoon. It was floating because it was very fat. I told my cousin Mancuaq to come, and he helped me.

Qallaq didn't make a sound again. We pulled it on top of the ice together and butchered it. Because it was so large, I told him to put it inside his kayak. I carried only the meat. When we got back, they came right over. Qilkilek didn't say anything. . . . They butchered it, cutting it in strips, and distributed them. That's what they do with first catches.

He asked me what I came for and told me to go back up and be the dumper of their urine buckets. They said they do that to those who they were encouraging because they want their minds to be stronger, those who they goaded toward success.

Frank's narrative is an unprecedented account, not only of what took place, but of the mixture of excitement, humility, and determination he felt when ridiculed by men whose intent was not to shame him but to encourage him and prevent him from feeling overly proud and self-confident. Personal accounts are hard to elicit in gatherings and interviews. Objects and photographs have opened doors that all of my questions never could.

VISUAL REPATRIATION: "EVERYTHING THAT IS MADE CAUSES US TO REMEMBER"

To the extent that elders were personally moved by what they saw in collections, they regretted that young people in Alaska could not share their experience. Elders agreed that people cannot understand what they do not see. Frank Andrew (August 2003) spoke from personal experience: "Among the things I saw in the museum, I didn't know about things that I had not used. That's how our young people are. They don't know what they haven't seen." Neva Rivers (March 2004) of Hooper Bay agreed:

Even though they hear about them with their ears, they cannot replicate these things if they don't see them. But if our young people see what they did long ago, they will understand. They cannot come [to museums] because they are too far away, but if they bring things to Alaska, they can replicate some that they want to continue to be seen.

Again and again elders said how valuable it would be for young people to see what they were seeing. During our 2003 trip to MSC, Frank Andrew (February 2003) remarked:

Only education can keep things alive, only if a person who listens closely hears the information. These handmade items were constantly constructed when I was young by those who knew how to make them and who had the knowledge.

Men taught young men how to catch animals. These [traditional ways] were visible and did not change. Today [these ways] are no longer displayed, because we are not teaching what we were taught, even though we have the knowledge. It will not live on if it is like that.

Paul John (January 2004) agreed, "We are losing our way of life, and we need to help young people and others to better understand what they've lost. If the things that our ancestors used are shown, they will think, 'So this is what our ancestors did, and I can do what my ancestors did, too.'"

Statistics bear out elders' view that contemporary young people lack knowledge of and appreciation for the values and technical skills that made life both possible and meaningful on the Bering Sea coast in the not-so-distant past. Southwest Alaska has one of the highest suicide rates in the nation, primarily young men and women in their twenties. Rates of poverty, alcohol abuse, and domestic violence are also disproportionately high. The rapid changes before and after Alaska statehood in 1959 shook the moral foundation of Yup'ik community life to its core. These problems run deep, and knowledge and pride in their past is one among many elements needed for a solution. Joan Hamilton (November 2003) of Bethel said simply, "Many people here are displaced by alcohol, but if we learn about ourselves from our elders, our minds will improve."

The truth of Frank Andrew's and Paul John's words was brought home to me personally in April 2003 when I listened to Jeffery Curtis, a Toksook Bay high-school student, speak publicly about his recent visit to Anchorage. He said how glad he was to have the opportunity to visit the University of Alaska that he hoped someday to attend. He said that he planned to study science because his ancestors had no science, and he wanted to learn what white people could teach. Jeff comes from a proud and talented family, and his grandfather, Phillip Moses, is a master kayak builder with expert knowledge on many aspects of Yup'ik technology. Jeff knows this, but nowhere has he learned to respect his grandfather's knowledge as "science."

Phillip Moses had likewise given me food for thought six months before, during work in collections at the Anchorage Museum. I had undergone retinal surgery two weeks earlier and could still only half-see out of one eye. As we worked together, my partner Alice Rearden handed Phillip a pair of wooden snow goggles, painted black on the inside with long, thin slits to let in the light. Phillip smiled, passed them to me to examine, and then launched into an enthusiastic explanation of how these goggles were the original "Yup'ik prescription sunglasses." Half-listening, I held the goggles to my eyes, and for the first time since surgery, I could see! As I digested the sophisticated design—thin slits that focused the light like a pinhole camera, enhancing the user's vision—I could hear Phillip

relating in Yup'ik how the goggles worked both to reduce glare and to help a hunter see far. Phillip, like many elders, was well aware of the goggles' properties, yet I know of no reference in the literature on southwest Alaska regarding the capacity of snow goggles to improve distance vision. Like Phillip, many living elders can articulate the fundamentals of Yup'ik technology. How powerful it would be to bring their clear descriptions home to a younger generation, both Native and non-Native.

Finally, in 2003, the Calista Elders Council began to search for ways to respond to the desire of their board of elders to bring museum objects home. Repatriation was not the issue, as ownership of objects was not the goal. Rather, "visual repatriation" was what they sought—the opportunity to show and explain traditional technology to contemporary young people.

Just as the Yup'ik community had looked to the Anchorage Museum in 1993 when beginning work on the Yup'ik mask exhibit, it again turned to the museum, which energetically embraced their project. Planning meetings formally began in August 2003 with a combination of National Science Foundation and Anchorage Museum Association support. The first meeting took place in Bethel in August 2003. There, a team of twelve Yup'ik elders and educators—including Frank Andrew and Paul John—gathered to plan a comprehensive exhibit of nineteenth-century Yup'ik technology.

First, we discussed what kinds of objects the Yup'ik community would want to see. The answer was "everything." This was no surprise, given the elders' all-inclusive choices three years before at NMAI. What followed did surprise me, although in retrospect it should not have. I spoke briefly about the mask exhibit that many of us had worked on together ten years earlier, saying that since that exhibit had focused on Yup'ik spirituality, we could take this opportunity to focus on Yup'ik science. I said that this exhibit could be what *Agayuliyararput/Our Way of Making Prayer* was not. I was reminded politely but firmly that Yup'ik tools and technology were also "our way of making prayer." Yup'ik team members did not view their traditional technology and spirituality as separable, and a valuable contribution of our exhibit would be to show how their ancestors lived properly, without this separation. Elsie Mather explained, "Long ago our beliefs and our way of life weren't seen as separate. But nowadays, they look at those two as separate. In this exhibit, we should remember that and try to help people understand. If our exhibit becomes a reality, it will be taught that their ways of life and their beliefs were one."

Our second task was to name the exhibit. This was done with serious deliberation. After several suggestions, Frank Andrew spoke: "The way of our ancestors is called *yuungnaqsaraq* ['to endeavor to live']. When using all the tools together, only a person who is trying to survive will use them to live. That's the name, and our ancestors used it all the time, *ciuliamta yuungnaquciat* [our ancestors' way of life]." Paul John agreed: "Back when Yup'ik people were really surviving on their own, they took care of themselves, trying to follow their traditions."

Mark John then added a crucial observation, restating the Yup'ik phrase in the present tense:

We could make it more personal rather than distant. It could be *yuungnaqpiallerput* [the way we genuinely live], which includes us, too. We are part of all that is being displayed. In the villages, people still utilize those ways, even though they may be using different materials. We're not distancing ourselves from our ancestors.

Paul John concluded: "That *yuungnaqpiallerput* is perfect as a title. We really did try to live and survive the real way."

Discussion continued on which objects people thought most important to include. Paul John again mentioned the adze and the ax, as well as the fire-making tools he had admired in New York. Frank Andrew spoke of the kayak and of that most essential tool, the *negcik* (gaff), which he referred to as "life hook." Andy Paukan remembered the powerful sinew-backed bow, and Marie Meade recalled the finely sewn clothing and ceremonial regalia she had seen in collections. Paul John emphasized the importance of including the drum as a metaphor for the continued vitality of the Yup'ik way of life. Frank Andrew concluded: "The reverberation of the drum kept everyone together."

Elders also enthusiastically supported the inclusion of newly made examples of traditional technology, including a kayak, fish trap, seal-gut parka, and bearskin boat. Living elders had the skills to make these tools, and, once again, many people thought that elders mentoring young people in these techniques had the potential not only to transfer specific skills but also to shape lives.

Another issue was how to organize the objects. A recurrent theme was the continued importance of the seasonal cycle of activities, both in the past and today. They suggested that this cycle be used as the foundation for the exhibit. This simple but elegant mandate is what we have followed. Our story begins with preparation in the village and moves through spring, summer, fall, and early-winter

harvesting activities. We then return to the winter village, where activities today, as in the past, focus on sharing the harvest and on renewal for the coming year.

To tell this story, our exhibit includes examples of the most important features of nineteenth- and early-twentieth-century Yup'ik technology. It draws from a number of major collections of Yup'ik material culture in the United States and Europe, as well as from many less known but equally important collections. Some of our best pieces, however, come from the Smithsonian, including pieces collected by Edward Nelson, William Healey Dall, and A. H. Twitchell. Without Smithsonian collections, we could not tell our story.

"WE HAVE NO WORD FOR SCIENCE"

In choosing a "science" focus for their exhibition, Yup'ik community members continue to advocate for respect for their knowledge systems. The perceived gap between Yup'ik indigenous knowledge and western science is enormous. Clearly, there are differences; but understanding the links can deepen our appreciation of both Yup'ik and western thought (Kawagley, 1995).

When describing Yup'ik masks and ceremonies, elders made it clear that in the past they had no separate category for "religion." Everyday acts were equally "our way of making prayer." Similarly, discussions of hunting and harvesting activities make no separation between a person's technical and moral education. Frank Andrew (February 2003) remarked that "Everything has a rule, no matter what it is. Because admonitions are a part of these snow goggles, we are talking about it through these." Elsie Mather (November 2003) observed, "Our language had no word for science, yet our tools were so well designed that they allowed us to live in a land no one else would inhabit."

Yup'ik ontology promoted constant watchfulness and attention to the signs the natural world provided. A child's first task each morning was to exit the house and observe the weather. When traveling, each person depended for survival on observational skills honed from an early age.

Knowledge in the past was situated, based on observation and experience. Frank Andrew (June 2003) stated, "I only speak intelligently about things that I know here in our village. I don't know things in other villages that I didn't see, and I cannot explain them very well." What Frank does know, however, would impress any professional biologist or natural scientist. Frank and his contemporaries are gifted naturalists, engaged in classification of all aspects of the world around them, often by appearance, usefulness,

and behavior. Frank (June 2003) provided one excellent example. Previously he had talked at length about the different species of sea mammals, all of which have a one-to-one correspondence with western species classifications, including *makliit* (bearded seals), *nayit* (hair seals), *issurit* (spotted seals), *qasrulget* (ribbon seals), *asveret* (walrus), *cetuat* (beluga whales), *arveret* (bowhead whales), *arlluut* (killer whales), and *arrnat* (sea otters). He also distinguished between different age groups within individual species. For example, the general category of bearded seal (*Erignathus barbatus*) includes *maklak* or *tungunquq* (adult bearded seal), *maklassuk* (subadult bearded seal), *maklacuk* (adult bearded seal with a small body but the flippers and intestines of an adult), *qalriq* (bearded seal in rut), *amirkaq* (young bearded seal), *maklassugaq* (two-year-old bearded seal), and *maklaaq* (bearded seal pup).

Speaking to Alice Rearden and his son, Noah, both of whom he assumed understood the names for seal species and age groups, Frank added another level of detail, naming eight distinct varieties of bearded seals based on appearance and behavior, three of which I quote below:

There are many bearded seals, and they all have different names. Some are rare, like those that have long beards that curl up when released. When they come out of the water close by, it seems as though they are biting on something large with their beards curled, looking like balls. They call those bearded seals *ungagciaret* [from *ungak*, "whisker"]. . . .

Then there are bearded seals that swim on their backs. When they get to the ice, they climb up face down, gallop across, go into the water, and then reappear on their backs. They say the ones that get sleepy do that. They said that if we saw one of those we should follow it carefully. They said that it would climb on top of the ice after awhile and stop and sleep. They say to hunt it when it does that. They called those *papangluat*.

Then they say that some bearded seals would sleep and wake. When they look at their surroundings, they would curl up sitting on their stomachs with their head and hind flippers touching, turning all the way around, looking behind them, searching their surroundings. After they look all around, they finally lie down and sleep. They call those *ipuuylit* [from *ipug-*, "to move with one's front high in the air"].

They suddenly awake and search their surroundings. They are more afraid of the area behind them. That's why they say not to approach them from behind, only by looking straight at them. We would approach them with them watching us.

Close observation and classification of the natural world are not the only things Yup'ik experts have in common with their western counterparts. At the same time elders reported

important instructions that guided life, they tested rules as a means of judging their veracity. Rather than showing blind obedience to a timeless canon, Yup'ik men and women frequently describe their questioning of the principles on which they based their actions and understandings. Nick Andrew (March 2004) of Marshall described testing the admonishment that broad whitefish would become scarce if those caught in lakes were fed to dogs:

I went with my male cousin when he was a boy to check our net with dogs. We got to the net and pulled it, and there were so many broad whitefish, and we set the net again. When we finished, I told him, "Don't tell on me, cousin." I took them and gave one to each of the dogs. When they were done eating, we returned home. I told him, "I wonder how our net will do tomorrow. Come with me again." Then the next day, we checked our net. We pulled it, and it was heavy. We saw that we caught more than before. [Whitefish] don't become scarce in lakes since they stay and don't have anywhere to go. But they warned us not to throw them around or discard them carelessly.

Yup'ik experimentation extended to technology. Men and women learned to construct and work with tools through constant trial and error. Kwigillingok elder Peter John (February 2003) noted:

We tried to learn to make things. We took them by ourselves and examined them. We Yupiit are like that. We listen to and watch those who are working.

Sometimes when we try to work, we don't do a good job and stop working on it. When we try the next time, it looks better. Then we repeatedly make other ones. We just don't do it once. That is the way to learn.

Working in museum collections, one cannot fail to be impressed by the varied tool types and clothing patterns Yup'ik men and women created. There was a tool for every purpose. When Western technology was introduced, Yup'ik craftsmen embraced many labor-saving devices. If a new tool broke, time-tested materials were often used to fix it, as when a commercially made boat propeller was replaced by one fashioned from bone. The late Jim VanStone went so far as to dub Inuit peoples "gadget ridden." They knew their materials well and displayed impressive inventiveness in using them to advantage. Trial and error played a central role in Yup'ik learning and discovery.

The perspectives shared by elders show important differences from and similarities with western science. Yup'ik knowledge was and is geared primarily to functions and outcomes. It is critical to know how to achieve some

specific end so that resources necessary for survival and well-being may be acquired effectively. Western science is primarily aimed at developing and testing hypotheses to understand what is happening within and between variables. However, the two are complementary in that Yup'ik science is the result of significant trial and error that has produced acceptable outcomes, while western science can explain how these outcomes were achieved.

Yup'ik technology can demonstrate scientific principles in new and exciting ways by matching such practical outcomes to the phenomena they were designed to address. Moreover, the fact that Yup'ik science produced such outcomes prior to their conceptual bases is critical in understanding how "science" as a process must be carefully evaluated both on hypothesis testing and on manifested outcomes. Such a collaboration is especially important for science education in Alaska, where it can make the subject more relevant and effective.

At our last exhibit-planning meeting, steering committee members articulated the purpose of the exhibit in their own words. Elsie Mather stated, "It will show the proven ways of tools and processes Yup'ik people used to survive and let people see the common ways we share the knowledge of our environment." Joan Hamilton said, "It will help people understand science and how it is part of everyday life, and it will communicate how much knowledge of the world Yup'ik people needed to survive." There is a great deal of misunderstanding regarding how science works as a process unto itself. The value of considering western scientific approaches side by side with those of Yup'ik traditional knowledge to close the gap between academic venues and the general public cannot be overstated. Yup'ik grade-school principal Agatha John (March 2004) of Toksook Bay articulated the dilemma of her generation: "When I was in school I hated science. I couldn't understand it. Not only was it in another language [English], but all the examples were foreign. If we begin to speak of 'Yup'ik science,' we will give our children something they can understand."

In closing, I would like to return to Yup'ik motivations for traveling to the Smithsonian, sharing information, and seeking to borrow objects to display in Alaska and beyond during this Fourth International Polar Year. They hope to create an exhibition that will teach about the Yup'ik way of life—the animals and plants they rely on, the tools they used to survive, and the values that animate their lives. Perhaps more important, their work at the Smithsonian teaches us about the generosity and compassion of men and women who shared their knowledge, not only to inform us but to enrich all our lives and allow us to live genuinely.

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NOTE ABOUT INTERVIEW DATES

Dates following Elders' names refer to the month and year discussions with them took place. Tapes are archived with the Calista Elders Council, Bethel, Alaska.

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