The issues addressed in this research must be understood in the context of a Yupiaq
culture world view, because basic philosophical questions are raised in the course of observing
and questioning local people with respect to science as inquiry, science as explanation,
science versus technology, science and religion, especially with respect to the Yupiaq
lifeways. Accordingly, the world view outlined here will attempt to answer the following
questions which were deftly written by Barry Lopez (1986:202). They are in reference to
"metaphysics, epistemology, ethics, aesthetics and logic - which pose, in order, the
following questions. What is real? What can we understand? How should we behave?
What is beautiful? What are the patterns we can rely upon?" Added to the above list will
be "ontology" - Why are we? Is there something greater than the human? Lopez goes on
to point out, "The risk we take is of finding our final authority in the metaphors rather
than in the land. To inquire into the intricacies of a distant landscape, then, provoke
thoughts about one's own interior landscape, and the familiar landscapes of memory. The
land urges us to come around to an understanding of ourselves" (1986:247).

I shall begin the description of the Yupiaq world view by reviewing a word that
epitomizes the philosophy of the Yupiat. The Yupiaq word is "ella." This base word can
be modified to change its meaning by adding a suffix or suffixes. Examples are: Qaill'
ella auqa? - How's the weather?; Qaill' ellan auqa? - How are you feeling?; Ellam nunii -
The world's land; Ellagpiim yua - Spirit of the Universe; Ellapak - Universe; Ella
amigligtuq - The sky is cloudy. One can quickly conclude that it can be made to mean
weather, awareness, world, Creative Force or God, universe and sky. This also illustrates
that the Yupiat developed a body of values and traditions that would enable them to
maintain and sustain this ecological world view. The key word is "awareness" or
consciousness. "Every source of knowledge is dependent on consciousness - be it
perception, or inference, or scripture" (Ravindra, 1991:67) For "scripture" I would insert
Yupiaq mythology. Ravindra goes on to say that "The mind or intellect cannot give us knowledge of anything without the functioning of the Self. ... the Self is consciousness, and in the absence of consciousness, no knowledge is possible" (1991:67). This is the highest attainment of the human being, and we must keep in mind that this is not attributable to any one race. It also points out that the human being must possess this to be able to make sense out of these values and traditions as juxtaposed with the "objects" of the universe.

To help illustrate the interrelationship between human nature, nature and supernature (or spirituality) in the Yupiaq world view, I will utilize a tetrahedral metaphor (see diagram below). The structure of the tetrahedron allows for several important dynamic forces to be examined in relation to one another. If we use the three corners of the base to represent the human being, nature and spirituality respectively, we can see the apex as representing the world view that over-arches and unites the base components of our existence. The lines connecting these “poles” can be seen as the life forces which flow all ways between and among the human, spiritual and natural worlds and the human being’s world view. The two poles representing the spiritual and natural realms are essential supports to the Yupiaq world view.

This tetrahedral model allows for triangulation whereby human beings can locate themselves in relation to the other domains of their existence and check to make sure that the values and traditions are in balance. It shows that the Yupiaq world view is established on an alliance and alignment of all elements, and that there must be constant communications between the three realms to maintain this delicate balance. When
everything is in alignment, it is an exceptionally strong structure. It does not require a
very earth shaking change, however, to upset the balance. Chief Sealth?(date) has stated
that "This we know: the earth does not belong to man, man belongs to earth. All things
are connected like the blood that unites us all. Man did not weave the web of life, he is
merely a strand in it. Whatever he does to the web, he does to himself" (italics are mine).

The tetrahedral universe requires constant communication between the three base realms.
This reciprocity of conversations and interrogations is an essential element to the world
view. It allows for constant monitoring to make sure the balance is there. The most
important fact shown by this construct is that the human being is a key figure. The human
being is a participant-observer in this universe. We, the human beings, having
consciousness and reasoning ability, are the ones who pose questions and methodologies
for doing research. We, therefore, are the keys to understanding life and living things and
trying to solve the conundrums of Nature and our inner worlds. The structure works with
the least amount of thought and manipulation, requires the least amount of effort and
resources, and its purpose becomes evident with observaton and thought. A priori, natural
laws are placed in the universe to guide the human beings' thoughts and actions.

The Creative Force, as manifested in Nature, is more profound and powerful than
anything the human being can do, because in it is the very essence of things. Yet, within
this profoundness and powerfulness is efficiency, economy and purpose, the expression
of which is dependent on the human being. Within the Yupiaq world view is the notion
that "a spiritual landscape exists within the physical landscape," in the words of Elaine
Jahner, Lakota (Lopez, 1986:273). In addition, "Careful observaton was made of animal
behavior and the inner qualities and the genius of a particular animal species with a view
of deriving spiritual and moral lessons from that animal species. There is a metaphysical
basis for the belief that animals have much to teach man concerning the divine wisdom
and about his own inner nature (Bakar, 1991:95)." The human being is an essential piece
of the structural puzzle.

What are the conditions in which this world view works with efficiency, economy and
purpose? The traditional Yupiaq people as young children were given specially ground
lenses through which to view their world. The resulting cultural map was contained in
their language, myths, legends and stories, science and technology, and role models of
community members. This verbal orientation and learning by observation worked to their
advantage. To hear stories being told in the qasegig (community house) allowed the
children and other hearers to savor the words, visualize the events, and for the duration of
the story, they became a part of the imagery. The modern written word is useful for many
things, but it removes the reader from the human interaction element. In the qasegig, the hearer becomes a part of the story, a participant-observer in the events. This is truly living history. All participants in the storytelling are expected to behave, not only by the elders, but by all community members. So, the child is not only listening quietly but is learning self-discipline and respect for the rights of others. The children learn and the grown-ups are reminded of who and what they are, where they came from, how they are to interact with others, with natural things and with spirits.

Our creation myths say that Raven is the Creator. Some say that the Creative Force took the form of the Raven to make the world so that the Yupiat will never think that they are above the creatures of the earth. How can they be when their Creator is a creature of Earth? Modern biology has come to a similar conclusion that "There exists no objective basis on which to elevate one species over another" (Trivers, date?).

The type of governance structure created for this ecological mindset is of utmost importance. Yupiaq thought holds that all creatures, including humans, are born equal. This does not imply that all functions or jobs of the creatures are equal, but holds that each does its job equally well. All human beings are equal as they have been endowed with consciousness, thus having the ability to culturally, intellectually and morally develop, each in their own way. Each individual human being in this type of government is afforded the greatest freedom in pursuing life, liberty and the quest for happiness.

"Being autonomous is being the origin of one's own actions" (Milbrath, 1989:78). Endosomatic sense makers of humanity are "both your freedom of expression and walls of your prison" (Roads, 1987:43). So it is with the Yupiaq person in seeking knowledge. This quest for knowledge which will open the road to making a living is rigorously sought through the use of the five physical senses well sprinkled with intuition. From the juggling of values and traditions in the life of the Yupiaq will come the wisdom to make a life. The Yupiaq person's methodologies include observation (like modern science), experience, social interaction, and listening to the conversations and interrogations of the natural and spiritual worlds with the mind. The person is always a participant-observer. Roads (1987:132) captures the Yupiaq way succinctly: "To inquire suggests that we seek always to explore rather than exploit - to seek, rather than find - to live life as an open-ended agreement with God, rather than search for a nonexistent conclusion." He goes on to write that "Separation and connection, fragmentation and wholeness - all are strands in a single universal thread. While all threads are woven into the human experience as one energy, it is we moderns (my italics) who separate the strands" (148).
There are a number of values that are important to this world view. Milbrath has written that some idea or some practice becomes a value when a feeling has been attached to it (1989:??). An example of this might be the Yupiaq value of sharing. No one knows when it became a value, but it is likely that it took a very long time to come to mean what it does today. Over the years, Yupiaq people may have found that owning many things was hazardous to their well-being and their nomadic way of life. The pros and cons of owning versus sharing was probably considered, discussed, and practices from other societies observed. On the other hand, maybe because of their spirituality they didn't have to go through this process. However it happened, eventually through observation and experimentation, very much as a modern scientist might do, they found that sharing was the best policy for them. Not only were they to share with one another but also with the rest of their world. This was done to recognize and acknowledge the interconnectedness of the universe. The value of sharing was realized when they found that to have little or nothing is to treasure everything, and it fit very nicely into their ecological mindset. They found that to restrict wants was to always have enough, and they created ways to enjoy to the utmost that which they had.

Cooperation is another valued condition. The Yupiaq world view and nature are premised on cooperation, therefore it fits into the circadian rhythm of the universe. They may have experienced or envisioned circumstances in which irresponsible individualism lead to ambition and avarice. The negative effects of ambition for power and avarice for owning things became apparent to them in some way. In the tetrahedral model of a world view, cooperation seems to be an a priori condition of the universe.

In order for the Yupiaq world view to work, it required a respect for the wisdom of the elders. There were always a few elders in each community who reached a very old age. Some were so old that when they sat on the floor of the qasegig with their knees bent and elevated, their heads would extend below the knee level. There were others whose teeth had been worn to the gum level. Those who had lost their teeth required food to be chewed by family members for consumption. These people were well cared for, honored and respected for their knowledge and wisdom. This was extended to the aged who completed the life circle by entering the "second childhood." The attainment of knowledge was based on their reasoning ability and experience.

The social structure of the Yupiat was maintained primarily at the extended family level. Perhaps, by observing and recounting stories, they came to the conclusion that chaos would result when a certain population balance was exceeded. This inherently controlled population level allowed the Yupiaq people to live a satisfactory life as they were in
balance with the carrying capacity of the land and waters, and, above all, balanced in number to live an orderly life. Modern communities with their technological infrastructure seem to have attempted to ignore the confusion and social chaos that can occur when too many people congregate in a city or village. The profusion of laws and regulations needed to regulate the conduct of people merely obfuscates who, what and how they are to act.

For matters of survival, the Yupiat found that it was necessary to learn much about their immediate landscape. Of course, a few of their people had made exploratory forays into other parts of the world, and sometimes the "explorer" did not have a choice because it might have been a situation where a storm took the person off course or he got caught by ice and had to go wherever it went. The Yupiat have many stories of this type. It seemed best to know intimately the land on which they dwelled. "One is better off with a precise and local knowledge, and a wariness of borders" (Lopez, 1986:259). Lopez goes on to say that the land makes the myths real and, subsequently, the people real also (1986:296).

One other value that I will mention briefly is the value of the extended family, not only for survival but to be very aware and appreciative of the blood line. It was so important that special terms and an elaborate system of relationships was devised. This established the identity of the person - who they were, where they were from, and what they represented. A person had to have a dynamic sense of self-esteem, self-confidence and pride without arrogance to live in a very harsh environment.

As the tetrahedron suggests, the Yupiaq infrastructure had to include a dynamic sense of sacredness, and as Richard Nelson has written, wherever the Native person is, that place becomes a cathedral to that person (date?). This deep sense of sacredness caused the Yupiaq to develop a nature-mediated technology in which the hunting implements and tools were made of natural materials so as not to offend the hunted animal. To ensure that balance was always maintained or regained, the Yupiaq created rituals and ceremonies with songs, dances and all the needed accouterments. The paraphernalia included masks which were often an attempt at reification of a vision, dream or unusual experience. They always includes a story and attendant value(s). Very often the mask was an experience that a shaman had and upon return would render it into a mask using wood, stone, bone, feathers, and natural paints. If the shaman was not given to carving then he/she would have a carver carve the mask under his/her careful guidance.
Technological Adaptations In The Village Of Akiak

Were my great-great-grandmother alive today, she would be astounded by the changes that have been wrought to her homeland by science and technology. She would be inquisitive about the research I am attempting to do with the concomitant Western knowledge and methodologies that I have garnered over the years. She would quietly query me about this new knowledge and its applications in the Yupiaq world. She probably would not come out directly with the observation that much of what I know is useless knowledge, but likely would remain skeptical and hold that my vaunted scientific knowledge is second-rate knowledge not useful for solving village problems.

Be that as it may, science and technology have had an impact in the villages. “Impact” infers passive acceptance of new things, which often has been the case with the Yupiaq. There were a few who resisted education and acceptance of modern tools and implements, but the majority did not. My Grandmother's parents would not allow her to go to school, saying that she would get dumb. By "dumb" I think they meant that she would lose her values and traditions and begin to live another way of life. Much of the traditional knowledge and experiences of the Yupiaq were adapted to the environment and learned through the tasks of daily life in that environment. These were known to work down through the millennia, along with slight changes that resulted from climactic permutations with resultant changes in flora and fauna. Complete and sudden change would mean destruction of the Yupiaq world view. However, after some initial resistance during early contact, and especially after the loss of leaders and shamans during the Great Death at the turn of the century, the Yupiaq became more receptive to innovation. Science and technology continue to be the conveyors of change in the Yupiaq region.

Since the time that Arlicaq moved from the east side of the Kuskokwim river to the present site of Akiak and built his sodhouse, there has been tremendous change. No longer are the villagers living in semi-subterranean sodhouses of Yupiaq design. These traditional houses were heat efficient, with cold air traps at the entrance and openings above the door to allow for natural air conditioning. The materials were of nature - driftwood or local trees, sod, grass, and wooden planks. These houses belonged to Nature.

There are several old lumber houses still standing and in use that probably date back to the time that Akiak had a sawmill, but the majority of homes today are frame houses built by funds from the Federal Housing and Urban Development (HUD) or Alaska State Housing Authority. All building materials are imported from the "South 48." The new...
homes are built upon pilings and suspended above the ground because of flooding and permafrost problems. Older homes have a kitchen stove which serves as a cooking source as well as heat for the building. The newer ones have an elaborate furnace and heat delivery system. This is an enclosed system in which a heated glycol mixture is pumped through piping to various parts of the building. The furnace is an oil fired system controlled by a thermostat. All new houses have a divided interior configuration with bedrooms and a combination living/dining section and storage space. There are often complaints by villagers of the houses falling apart in a matter of two to four years. The maintenance costs of these homes, including heating and electricity is exhorbitant. The occupants pay whatever they can afford to the Association of Village Council Presidents, Inc. (AVCP) Housing, a tribal regional organization whose responsibility is to construct, maintain, and oversee payments.

Many of the newest homes built during the oil money glut have an individual septic tank and well. These homes have running water and flush toilets. Older homes have "honey buckets" for human waste which are usually emptied into the backyard. Garbage disposal poses another problem imported from the outside world, with its penchant for non-biodegradable packaging. Sewage and garbage are endemic problems in the villages. Most village sites are barely above sea level, which causes additional storage problems and health hazards.

Many homes have modern appliances including refrigerators, toasters, microwave ovens, electric or oil fired stoves, freezers of varying sizes, and many other things that are now considered essential by the family. The television set and VCR are often among the most prominent items in the home. They become the center of the home. Sometimes the TV is left on all day whether anyone is watching or not. This outside element alone causes the cultural lens to become astigmatic in young developing minds in which a very channelized version of cultural values and traditions are seen, most often blurred or distorted. This causes confusion among the young, and eventual disillusionment and disenfranchisement with the Yupiaq way of life. The young live in pseudorealities based on TV series and movies showing abstractions of the life and ways of the "young and restless" of the South 48.

Most homes are very well furnished with a modern flare. Clothing is predominately Western, with only the very traditional sometimes wearing at least a pair of Yup'ik boots, commonly called "mukluks." Food consumption, to a large extent depends on the income of the household, with store bought food interspersed or mixed with Native foods. On the average, it has been estimated by Nunam Kliutsiti ("monitors of the land"), consumption
of food consists of about 50% Native foods and the other half outside foods. This indicates that the Yupiaq people have been involved in a cash economy for quite some time.

Most homes have telephones and/or citizens band radio. The latter is left on most of the time. Individual messages are relayed or collective village messages delivered through it. It is used to announce the arrival of a dignitary or meeting that will take place. The radios are often carried in boats, snow machines, and vehicles for emergency purposes or just to stay in touch. Many homes have Nintendo games which people of every age enjoy playing.

The post office employs one person and is a very important source of shipping and receiving packages. As with other communities, there is a blight of unwanted and unsolicited mail.

Upon change from the federal Bureau of Indian Affairs (BIA) school to the state funded Lower Kuskokwim School District, the old BIA school had to be brought up to state codes. The old school was a very substantially built school, and after refurbishing is a most functional building. In addition, a new school was built to accommodate local high school students. It is a replica of most village high schools that were built as the result of a lawsuit against the state in the mid-seventies. This case required the state to build high schools in villages where there were at least eight students of elementary age and one or more high school age students. So, in the '70s and '80s the state went on a building frenzy with the dollars available from oil revenues. The design was similar for each with the exception of a half, 3/4, or full size gymnasium, depending on the size of the school. Much of the school budget now goes toward maintenance, electricity and fuel. The equipment is so complicated that experts have to be flown in sometimes from the district central office or from Anchorage to make repairs. The biggest share of the budget goes for teacher and administrative salaries. Of the nine teachers, two are Alaska Native and the principal is part Indian. There are a number of local Native people employed as teacher aides, cook and cook's helper, maintenance, secretary, and bilingual aides. The school is the biggest employer of the village.

About seven families own dog teams which are not necessarily used for hunting and trapping. Some may use them for this purpose which combines training with service to put meat on the table, but the predominante use is for dog sled racing. Most means of transportation are now aluminum boats with outboard motors, snow machines, three- and four-wheelers, along with some four-wheel drive cars and pick-ups. The cost of outboard
motors vary from $1000 to $6500, and the aluminum boats range from $900 to $11,000, depending on size. All terrain vehicles and snow machines range from $1500 to $7000. Adding to the accumulated pollution are cannibalized remains of all types of modern machinery. Many boats with motors still attached are left on the river shore during the winter. This is quite a change from the time that I grew up. In those days, it was felt that one should take good care of the boat and motor. This meant making sure the boat was placed on the river bank, overturned and the motor stored in the smoke house or under the boat. This recent "throw-away" mentality may have been derived from the expendable mentality of the South 48. It is merely a white man's technological appendage and easily replaceable.

There are two locally owned stores, a village Native corporation office, and a community center which houses the tribal and municipal employees, as well as the all important laundry. The village corporation has the oil and gas service, a small store that sells oil products, and a recreational and sport fishing operation on the Kiseralik River. State, federal and private funds are used to operate these ventures. One can see from this that employment is very limited in the village. A number of small air taxi services take passengers, mail and freight from Akiak to Bethel or vice versa.

There are perhaps eight miles of road in Akiak. It is a very expensive undertaking to make a road in the river delta. The gravel must be barged in from up-river gravel bars. First the tundra and brush are removed by a tractor, then a base of gravel poured and compacted. Then it is a matter of pouring more gravel on top of each compacted layer to build it up a foot or two above ground level. The airport is one of the most important facilities and is maintained with equipment and funds from the State Department of Transportation. Enough funds are allocated to provide for a small tractor, a garage for it, maintenance, and an operator. It is his responsibility to keep the airport serviceable by smoothing it of potholes in the summer and keeping it plowed of snow in the winter. Responding to winds and blizzards during the winter occupy a lot of his time.

The city has a non-running fire truck, and non-functional earth moving truck. Heavy equipment must be barged in to do construction work, such as building the electric generator house, during which heavy timbers had to moved and placed, and once the building's foundation was completed, the generator had to be lifted into place. All this required heavy machinery. Anything major, such as this project, requires that needed equipment be transported to the site along with heavy equipment operators. The manual labor is provided by the locals.
The people use nylon nets for catching fish. They use steel traps and metal snares for trapping in the winter. Rifles of all calibers and shotguns of all gauges are used for hunting. Fencing materials of all sizes and designs are used for making fish traps. The only traditional Yupiaq tool still extensively used by women is the "uluaq," a cutting instrument. The size of the uluaq determines whether it is used for cutting large animals or fish, or for delicate work.

The fish camps of the early times to the '80s consisted of a tent(s) for housing, a smokehouse, fish racks and racks for drying out nets. Now, there often is a shell of a house using a framework of 2" x 4"s covered with plywood. This provides the home for the duration of the fishing season. An addition may be a small smokehouse used specifically for salmon strips, and very often a plywood steam bath house. The women no longer cut fish on the ground covered with grass or bark, but instead they use tables with a carpet piece to keep the fish from slipping around. All-weather and shag carpet pieces are used. Very often the women have to cut fish in inclement weather, so raingear of all kinds are used. Large garbage bags are sometimes used in lieu of aprons or as rain gear. A hole is cut in the middle of the bottom of the bag and two holes cut in the side. It is said that they are very serviceable and do not collect moisture on the inside.

A few families carefully fold king salmon slabs and wrap them in plasticized freezer paper - this after the king salmon have been dried and smoked. They are then placed in the freezer, where they keep very fresh. Smoked king salmon strips are often vacuumed packed using a vacuum machine with special plastic bags made for that purpose. These are kept in the freezer also. In the '40s and '50s, it was the practice to place salmon slabs in wooden barrels to keep them from molding. At this time too, it was always a practice to salt fish. This is not done quite as often now, for it is easier to freeze the fish. Use of plastic, aluminum, and freezer wrapping materials abound. All one needs to do is walk out the door and invariably one will see wrapping of some sort immediately.