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ABSTRACT

This thesis explores the foundational issues for creating an alternative or complementary science curriculum for Mi'kmaw children in the elementary school grades of Nova Scotia. The extensive and rich body of knowledge inherent in traditional Mi'kmaw culture, along with traditional forms of transmitting this knowledge, are relevant, culturally unique, and potentially helpful to contemporary scientific and technological concerns. The unique world view of the Mi'kmaq is embedded in their language and cultural expressions. Their history is continuous and should not be left on the first few pages of Maritime history. Developing a science curriculum that draws on this body of knowledge and world view without compromising their integrity would broaden and enrich the predominantly Euro-centric way of teaching the sciences. This effort, however, should be led by or undertaken in cooperation with the Mi'kmaq.

For centuries, Mi'kmaw children have been educated in English-speaking classrooms where principles based on a European model of education have been applied. Many Mi'kmaw children do not find a place or vision within this system and simply drop out, or are not encouraged to higher levels of education. Non-native educators have had little understanding of their world view, ways of knowing and traditional forms of transmitting knowledge. The Mi'kmaw language itself expresses a world of dynamic and fluid relationships. It is a highly descriptive and flexible language able to compress multiple layers of meaning in one word or phrase. This is in contrast to, but not to the exclusion of, abstract scientific concepts promoted in the classroom that are based on a logical method of objective reasoning. The scientific method does not readily address experience which is difficult to objectify.

Mi'kmaq, along with other Native people throughout the world, are now demanding that their educational needs be considered, and that their culture and traditions be respected. Current studies by both Native and non-Native educators are revealing a unique way of learning about and conceiving of the world, which is embedded in Native language and traditions. Drawing upon these traditions and applying them to the study of the sciences is the challenge for educators. Creating a cross-cultural scientific dialogue in the early grades of schooling could serve to broaden children's understanding of the world, and benefit education as a whole.

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PREFACE

PREFACE

In retrospect, this thesis has been evolving since I was a teenager, thirty years ago, when I began working in schools tutoring Spanish/American children, and traipsing about the Papago desert of Arizona with a Yaqui friend of mine. Since then, my life has been dedicated to education and the development of cultural programs that attempt to bring out the fundamental wisdom inherent in different cultures. This wisdom is universal in essence, yet culturally specific in its expression.

My first contact with Mi'kmaq in Nova Scotia began with my interest in dance. For the completion of a degree in Anthropology and Atlantic Canada Studies in 1990, I began to research Mi'kmaw dance as a way to trace history, and fulfil my interest in dance as an expression of culture. Instead of using words to write history, I decided to trace movement.

Early on in my research, it became evident that history, particularly about dance, was not in the history books, but in the memories of the elders, and embodied in the Mi'kmaq, both on and off Reserves. I sat around kitchen tables, bingo halls, and pow-wow grounds just listening, sometimes dancing, and drinking interminable cups of tea. People I met on Reserves soon began to visit me, and the dialogue became more of a two-way street as they saw the finer details of my life. I decided learning about another culture, or any individual, was like learning a dance. Much can not be articulated. It is just a different rhythm.

Soon after beginning this research, I was invited to attend a conference at Carleton University to be part of a panel to discuss dance and Native spirituality. The panel consisted of Cathy Martin, Alonise Abomsawin, and Rita Joe. Cathy came to my house to “check me out” to see where I was coming from. She said it was alright for me to go. I didn’t say much on the panel, since it was obvious the others had much more to say that would be meaningful and personal. I felt like a fly on the wall. It was at this conference that a movie, what would come to be called “The Song of Eskasoni,” came about during a casual conversation with Rita Joe. It was also at this conference that I decided to never attend another conference to speak about Mi’kmaw culture, without a Mi’kmaw co-presenting. This has happened a number of times since. The difference I felt between those speaking about their own culture and the academic presentations on these cultures was striking.

The following summer, the Canadian Parks Service (now Heritage Canada) asked me to undertake their first research into how Mi’kmaw and Maliseet history could be better represented in the federal parks of the Atlantic Provinces. To find out, I had to travel throughout Nova Scotia and New Brunswick speaking with Mi’kmaw representatives. It was at this time I met Bernie Francis and began my “bits and pieces” learning about the Mi’kmaw language.

This project soon opened my eyes to a whole different view of history than most people assume. Not only did I find that Mi’kmaw history was minimally represented in

some parks, and not at all in others, but that their whole perspective on land was different. Oral histories attesting to Mi'kmaw presence were everywhere, as were place names reflecting land use, legends, and historical events. However, I had been asked to find what "in situ" evidence existed within the parks. This was difficult especially since most Mi'kmaq I spoke with did not think in terms of boundaries, nor care much for their existence. In contemporary Mi'kmaw culture, these boundaries affect the inherent rights of Mi'kmaq to hunt and fish.

As I bounced back and forth between Parks' employees and Mi'kmaw spokespeople, I kept wondering whose land was it anyway? Whose sets of rules were to be followed? How is history written and who chooses what will be said? Now Parks is making strong efforts to conduct oral history projects and map land use practices in cooperation with the Mi'kmaw community. These are excellent projects but some Mi'kmaq are asking who is it for and who will benefit? Who will be doing the research? Will Mi'kmaq finally be able to speak for themselves and write their own history? Will they get the jobs?

Another project came my way which brought me in contact with the population of off-reserve Aboriginal people in Nova Scotia. This was a project undertaken for the Native Council of Nova Scotia. Research was conducted to develop a proposal requesting funding from Health Canada for a family resource program (C.H.L.P) for off-reserve Aboriginal families with children under six. Travelling throughout Nova Scotia

with Cecile Phillips from the Millbrook Reserve, I heard what the problems facing Aboriginal people were concerning non-Native run social service programs, schools, family programs and so forth. Similarly, it educated me about the problems faced by non-status Mi'kmaq, some of whom are fluent speakers of the language and have parents living on reserves with full status—more kitchen tables and more tea. Again, I heard the other side as well. The social workers, or family resource program directors related their difficulty in reaching Native people. They said Native people might come to their centres, but then suddenly disappear with no word of explanation. A vacuum seemed to exist between the two communities.

Research on Mi'kmaw baseball history was also thrown my way by Dr. Colin Howell at Saint Mary's University. Although baseball is not my particular interest, it gave me an opportunity to hear oral accounts of Mi'kmaq in the early and mid-part of this century. These conversations revealed both the richness and continuity of Mi'kmaw history to the present day, and the incredible resourcefulness, strength and humour of Mi'kmaq through the hardest of times. I remember Rita Joe talking about how people from surrounding areas would come to the Reserve during the Depression to get food. Mi'kmaq would always share what little they had, she said. Once the Depression was over, these people disappeared.

Most of the people I interviewed were skilled in a number of areas—as teachers, artists, fishermen and fisherwomen, basketmakers, woodworkers, loggers, guides,

farmers, hunters, baseball players, runners, sailors, hockey players, musicians and a host of other skills, businesses and professions. Most of the men had fought in one of the major wars—the Korean War and/or World War II—events that altered the history of baseball. I also heard a great deal about centralization and its affect on Mi'kmaw settlements, and about the residential schools. I was often surprised the elders could still laugh.

Most relevant to this thesis was the work commissioned by the Department of Energy Mines and Resources, (Natural Resources, Canada) to create a one-shot, Native earth science program to take into Reserve schools throughout the Maritimes. This was done with the consent of the then Mi'kmaq Education Authority (now Mi'kmaw Kina'masuti). The research for this program involved numerous interviews with Mi'kmaw educators, parents, chiefs, and other representatives, as well as the Mi'kmaw linguist Bernie Francis. Vital to the program was the integration of place names and resource terminology in the Mi'kmaw language. My questions dealt with their views on geology, and whether such a science program would be of interest to them. Coupled with this, I interviewed archaeologists, anthropologists and ethnologists, geologists, and rifled through the drawers of rocks and minerals at the Nova Scotia museum accompanied by Ruth Whitehead. This lead to visits to areas speculated to have been quarried by the Mi'kmaq. This, in turn lead to the legends associated with the locales. The information contained in the legends about the land and its many resources was astounding.

The piloting of this program was done with Vivian Basque as the Mi'kmaw presenter, as one unit in a Aboriginal Science weekend organized by the MEA at the Agricultural College in Truro. The program began with the honour song and a dance. It then moved into a short slide presentation, followed by what was supposed to be hands-on, interactive session teaching about the rocks and minerals traditionally used by the Mi'kmaq. The Native Council Map of Nova Scotia, replete with Mi'kmaw place names, was taped to the wall for children to locate sites associated with the resources. The final activity was the painting of leather with red and yellow ochres prepared by the children, and finally a gift giving ceremony in which they exchanged their works of arts with one another.

The Atlantic Regional office of EMR soon after lost the majority of funding for its programs, including this science program, but the interest it awakened in me about how science could be taught from a different cultural perspective remained. I was struck by the breadth of knowledge evident throughout Mi'kmaw history. It seemed obvious that the same knowledge that children now learn in science lessons, was known to the Mi'kmaq in their daily lives, but viewed and communicated in different ways. Evident as well, was that the land of the Atlantic Provinces (and part of Quebec) is the silent history book of the Mi'kmaq.

There have been a number of other projects, and conferences which I have attended with Mi'kmaq. Throughout, I continued to visit and stay on Reserves and continually

ask questions, particularly about the Mi'kmaw language. The language, I have come to see, is the heart of the culture. Because of this, I have tested the patience of Bernie Francis, John Hewson, Margaret Johnson and Wilfred Prosper to the hilt asking questions about the meanings and spellings of words, and the nature and structure of the language.

I have been asked to include my methods of research. My method of research could be summed up in three words: kitchen tables, tea and chocolate chip cookies. I brought the cookies. Probably of greater academic interest, and for the benefit of finishing my degree, I have used the following methods for conducting the research specific to this thesis:

- Ongoing discussions via E-mail, by phone, and in person have been held with both the Mi'kmaw linguist, Bernie Francis and the linguist, John Hewson, from Memorial University of Newfoundland currently working with Francis to re-translate and transliterate Silas Rand's, *Dictionary of the Micmac Language*. Approximately ten hours of taped discussions were done with the elders, Dr. Margaret Johnson and/or Wilfred Prosper of Eskasoni, to review botanical, faunal and technological terms. The majority of terms were taken from Rand's dictionary, and the word lists compiled by Wilson Wallis' in his book, *The Micmac Indians of Eastern Canada*. One session was spent with Dr. Johnson reviewing basketry terms. Vaughen and Shirley Doucette of Eskasoni also assisted in providing definitions of Mi'kmaw terms,

both in personal discussions and over the phone. A videotape session with Bernie Francis, and the linguist Doug Smith, along with invited guests, was organized in cooperation with Native Council of Nova Scotia. This session was in the form of a question and answer session regarding the Mi'kmaw language.

- Over the past six years, I have conducted interviews with Mi'kmaq throughout Nova Scotia, New Brunswick and P.E.I., many of them taped. Most of these interviews have been intentionally unstructured, except those done in a professional capacity under contract. The unstructured interviews were often done around kitchen tables, with children or family members coming and going. Often the television was on in the background. During these discussions, I may have had some general questions regarding a subject matter, but then just listened as the conversation took its own course, occasionally interjecting another question. This style evolved partially because everything elders say in response to a question is relevant, and because many of these "interviews" were also friendly visits, and not just to get information. The majority of these interviews, especially one's done for professional projects, were tape recorded. Others arose spontaneously during various events I've attended with Mi'kmaq. In general, these tapes have all been duplicated and copies sent to those I interviewed. Some are still outstanding simply due to time constraints, but will be completed as soon as possible.

- Videotapes have been done of a number of events, particularly pow-wows, but also cultural events, and other special events such as the 80th birthday party of Margaret Johnson which she requested 1 videotape. Other videotapes have been given or loaned to me by Mi'kmaw friends or other acquaintances.
- Interviews have been conducted in person, by phone, and via E-mail with anthropologists, archaeologists, geologists, scientists, artists and educators to obtain a wide range of information specific to this thesis. Other relevant information regarding the history of the Mi'kmaq and their traditional resource use has been provided by Harold McGee, Professor of Anthropology at Saint Mary's University in Halifax, and Ruth Whitehead, assistant curator at the Nova Scotia Museum of Natural History.
- Discussions have been held with Marjorie Gould, Executive Director of the Mi'kmaw Kina'masuti, formerly the Mi'kmaq Education Authority, and other members of the staff, regarding the formation and purpose of the organization. Marjorie Gould also kindly accepted my invitation to sit on my thesis committee for final review of this thesis.
- Information specific to science education for Mi'kmaw children and the Reserve schools, has been mostly derived from the research done for the Department of Energy Mines and Resources (Natural Resources, Canada), from 1993-1994. These interviews were conducted with Mi'kmaw educators and representatives throughout

the Maritimes. Other information regarding Mi'kmaw schools has been told to me informally in conversations with Mi'kmaq while visiting Reserves, or through phone calls.

- For background information on science and education, I have read a number of books and papers regarding educational theory, scientific theory, and research that has been conducted into the learning styles of Native children. Specifically, the constructivist theory of teaching science has been reviewed because of its promotion in the provincial schools of Nova Scotia. Additionally, I have investigated the educational methods promoted by the Leonard Bernstein Center for Education Through the Arts and the Enki approach. I have also drawn from my own background in education, and contemplative arts. Research by Native educators regarding both science and education has been core to the writing of this thesis.
- The resource and curriculum materials relevant to teaching science to children in the elementary grades of the provincial schools of Nova Scotia have been reviewed. Other curricula material, such as social studies and material relevant to Mi'kmaw history and culture, has also been reviewed. The majority of this research was done in the library at the Department of Education in Halifax. Two sourcebooks were borrowed from the John W. MacLeod School in Halifax. Due to the large amount of material, particularly supplementary material, it was not feasible to be comprehensive. Material was photocopied for closer scrutiny at home.

- Conversations have been held with teachers, members of school boards, and the science curriculum coordinator from the Department of Education and Culture. Opinions were solicited regarding the concept of developing an alternative or complementary science curriculum, and the approach to teaching science within the provincial elementary schools. At this stage in my research, however, this has not been a major focus.
- The legends of the Mi'kmaq have been read time and again in an attempt to understand the information embedded in them. Other legends have been recorded in interviews with elders. These spoken stories are the most valuable and meaningful because of the way they are told and the variations in each telling. The majority of the legends that have been written down are not written in the Mi'kmaw language. I have relied primarily on the English translation of Silas Rand's *Legends of the Micmac*. This choice was made because Rand resided among the Mi'kmaq for forty years in the mid-1800s and knew the language. Although he desired to convert the Mi'kmaq to the Baptist religion, and mistranslated many words, I felt he had the most extensive first-hand knowledge of the legends. Other legends were taken from Elsie Clews Parsons, Stansbury Hagar, Wilson Wallis and the Mi'kmaq, Jerry Lonecloud (Jeremiah Lucxey), as written down in the journals of the travel writer, Clarissa Archibald Dennis in the 1920s.

- The information on songs, dances and chants has been accumulated over time. Some audiotapes and videotapes of songs and dances have been given to me by Mi'kmaw friends and acquaintances, others have been recorded in personal visits with elders, at powwows or at cultural events. Personal conversations with chanters, dancers and drummers throughout the last six years have added to my understanding. Material has also been sent to me from other researchers and scholars. This material has included information on the Penobscot, Passamaquoddy and Maliseet songs, dances and music. Other information has been derived from the work of ethnomusicologists and anthropologists such as Frank Speck, W.H. Mechling, Wilson Wallis and Charles Leland all of whom collected material on Algonquian songs and dances.
- Throughout the thesis, certain words have been put in quotation marks to indicate the inaccuracy or inadequacy of the English language to properly express the meanings or concepts of Mi'kmaw words. These words include: "spirit," "spirituality," "nature," "natural," and sometimes "living" and "life". In as many cases as possible, I have tried to avoid the use of the term spirituality because of its various connotations and my own inability to clearly define it.
- The use of the words "Mi'kmaw" and "Mi'kmaq" have been used in accordance with the orthography provided by Francis. "Mi'kmaw" is adjectival, and used to refer to a single person. "Mi'kmaq" is used to refer to more than one Mi'kmaq person.

Francis said that Mi'kmaw or Mi'kmaq could be used to refer to Mi'kmaq as one Nation. "Mi'kmaw" could be used to refer to the whole Mi'kmaw Nation as a block, similar to the use of man to designate mankind in general. "Mi'kmaq" could be used in reference to all the people in the Mi'kmaw Nation. In general, I have used "Mi'kmaq" to designate the cultural group. A number of references to Mi'kmaq made by other people, and quoted or cited in this thesis, may reflect a mistaken spelling.

This thesis is not based on classroom observation, except for the piloting of the EMR program. It is intended as the preliminary step to making changes in the science curriculum. The research presented here is an attempt to illustrate the richness of knowledge in the Mi'kmaw culture regarding the "natural" world, and the issues that should be considered in curriculum development.

The question of teacher education is also not addressed in this thesis, but is an obvious issue that should be assessed in light of this research. Time, and the length of the thesis, prevented its inclusion in the overall discussion. To address this topic would involve comparative work between Mi'kmaw teachers and non-Native teachers regarding their styles and approaches to teaching.

Throughout the research and writing of this thesis, I have felt as though I have been trying to tilt a mirror to catch different reflections of the humanity we all share. In this case, I have been attempting to understand Mi'kmaw world view and traditional

ways of knowing in the hopes of reevaluating and reshaping how science is taught in the elementary school system. In the process I have talked to, or spent time with, hundreds of Mi'kmaq just trying to learn how to listen without overlaying what I heard and saw with my version of reality. This thesis is about glimpses of what I think I've seen, versus what I know.

One thing that has been said to me time and again by Mi'kmaq is that they just want to be seen as people. As Bernie Francis said, "People tend to make Native people larger than life, more spiritual. We are not. We may look at things differently, but we are just people." On the other hand, continuous attempts have been made throughout history to assimilate Mi'kmaq into mainstream western society, particularly through education. As one Mi'kmaw quipped, "We know a lot more about white culture, than they know about us." Ironically, the Mi'kmaq term for themselves was originally *I.'nu'k*, meaning people.

In writing this thesis, I have found that every aspect of Mi'kmaw culture is a mirror of everything else, a microcosm of the macrocosm. Every subject I have contemplated has taken me into the depths of the most fundamental questions of existence, and how different cultures express and answer those questions. Culture, I have come to believe, is simply the reflection of how a group reacts, and expresses those reactions, when they look into the universal mirror of existence. This process has shown me how differently cultures have come to experience, view and express the world in which they

exist. It is often subtle differences, but nevertheless ones that can cause misunderstanding and racism. This research is simply an attempt to begin a dialogue and raise questions for educators and scientists to contemplate.

INTRODUCTION

INTRODUCTION

The purpose of this thesis is to provide the foundation for the development of an alternative or complementary science curriculum for elementary school grades that reflects Mi'kmaw knowledge, language and world view. Mi'kmaw educators throughout the Maritimes have expressed a requirement for a stronger science curriculum within Reserve schools. Simultaneously, they voiced the need for a greater degree of awareness of Mi'kmaw culture within the provincial educational systems. Non-Native teachers also expressed their desire for these changes. In my research it became evident that a profound knowledge of the natural world was, and is, part of Mi'kmaw daily life. Their history and culture is embedded in the land throughout the Atlantic Canada and part of Québec. The knowledge and relationship the Mi'kmaq had, and have, of the world is culturally unique, but applicable, adaptable and potentially helpful to the contemporary world. (Sable, EMR report, 1993)

The education of Mi'kmaq has been a topic of discussion among “foreign”¹ governing officials since the arrival of the first missionaries to Nova Scotia. As can be seen in historical accounts, Europeans had an agenda for “civilizing” the Mi'kmaq. Civilizing was usually synonymous with assimilation, or a moulding of Mi'kmaq to values held by European cultures. Little consideration was given to the type of

¹ Foreign refers to other-than-Mi'kmaq governments, including the current provincial government of Nova Scotia and the federal government of Canada.

knowledge and education that had allowed the Mi'kmaq to survive and develop beautiful forms of expression for thousands of years prior to European arrival. This situation, although gradually changing, still prevails in the provincial educational systems of Nova Scotia where little recognition is given to the distinct cultural perspective and history of the Mi'kmaq. In fact, education for many Mi'kmaq has been synonymous with the suppression of their culture. Now, after hundreds of years of social disruption and education in a non-Native system, the education of Mi'kmaw children is being reevaluated. As the Mi'kmaq demand autonomy over their education, educational aims are being redefined to better meet the needs of their children. This study is written in support of that effort.

These last few years have been historic year in terms of Mi'kmaw education. In 1992, the Mi'kmaq Education Authority (renamed Mi'kmaw Kina'masuti) was created to begin the process of assuming jurisdiction over Mi'kmaw education in Nova Scotia. This authority was historically in the hands of the Department of Indian Affairs and Northern Development. In November, 1994, a political accord was signed between the thirteen Nova Scotian chiefs and the Federal government for the Mi'kmaq to begin assuming jurisdiction of Mi'kmaw education. On January 24, 1996, an Agreement in Principle was reached for the transfer of jurisdiction to the thirteen Mi'kmaw bands of Nova Scotia. Although the Mi'kmaw Kina'masuti is still in the formative stages of hammering out agreements, developing work plans and guidelines,

and holding community consultations, its goal is to ultimately work with the individual bands to research and develop educational policies and programs. (Gould, 1996:2)

Coupled with the formation of Mi'kmaw Kina'masuti, is *The Education Act* for 1995-1996, which affirms the creation of a Council on Mi'kmaq Education. It states:

The Council shall promote the rights and interests of the Mi'kmaq by providing recommendations to the Minister on programs and services in public schools and on adult education; (Education Act, 1995:135/Section 137.3a)

School boards shall: a) provide and implement programs and policies promoting Mi'kmaq education; b) include in learning materials information respecting the history, language, culture, traditions and the contributions to society of the Mi'kmaq. (Education Act, 1995:36/Section 138: a&b)

Out of thirteen bands in Nova Scotia, six have their own schools (Eskasoni, Waycobah, Wagmatcook, Chapel Island, Pictou Landing and Bear River), each with their own band- controlled school board. Only one of these schools, Wagmatcook, continues to Grade Twelve, although Eskasoni is in the process of developing a high school, and the Waycobah school continues to Grade Eleven. Two other reserves are currently investigating starting their own schools. Other families who live on reserves where there is no school, send their children to the provincial schools. All Mi'kmaw children at some point in their lives are faced with entering the provincial school system, where they often experience racism and a general lack of encouragement to pursue higher or specialized levels of education. On an average, Mi'kmaw children are at least two grade levels below the other students by Grade twelve. The dropout rate among Mi'kmaw children is

extremely high (90% by one estimate), although the exact figures are unknown and may vary from region to region. Although the reasons for this are numerous, the fundamental issue is that the children suffer from low self-esteem or pure lack of interest. This may be changing as a record number of Mi'kmaq are entering university and completing programs of studies in a variety of fields. (Sable, EMR report, 1993; Personal communication, 1994)

Some Mi'kmaq prefer to send their children off-reserve to schools because they feel their child will be better off integrated into the "white" system. Once in these schools, however, many children have found that they are not encouraged to pursue higher educational goals, and are generally shuffled toward less specialized fields. In other words, they are not perceived by their guidance counsellors, or their non-Native teachers, as having the capability or ambition to attain higher levels of education. As one Mi'kmaw parent explained to me, the provincial schools are ill-equipped to deal with Mi'kmaw children. (Sable, EMR report, 1993; personal communication, 1996)

Although efforts are being made to change the provincial school curriculum, there is currently little in the provincial school system that offers these children a sense of their identity or a personal vision. Mi'kmaw history is not presented until the sixth grade, where it is part of the social studies unit on Maritime history.

The Mi'kmaw education program conducted in the Eskasoni school system has seemed to have a visible effect on increasing self esteem. From the "Fourth Report of the Standing Committee on Aboriginal Affairs" in which questions about aboriginal literacy

and self esteem were addressed, Clarence Smith, Director of Education for the Reserve stated:

We find we are having success with our Mi'kmaq program. We do not teach just the language. We follow the whole-language approach and we integrate whatever history and culture we can and at the same time teach the language. So as a result, the kids are learning more about themselves, more about their history from a different point of view. They seem to be more interested in school... (Smith, in Standing Committee..., 1990:32)

Also in the report were the following comments:

Many witnesses felt that the education system should assist in the personal development of students by providing materials and instruction necessary to develop a knowledge of their history and culture, and to demonstrate that indigenous people can participate in all aspects of human endeavour (such as mathematics and science). Some witnesses remarked on the reluctance of native youth to identify themselves as Indians. (Smith, in Standing Committee..., 1990:32)

Further on in the report Kathy Knockwood, the former director of the Mi'kmaq Education Authority is quoted as saying:

I am not particularly a proponent of native studies programs. What I think should happen is that in every subject area, where it is appropriate, there should be mention of Mi'kmaq history. There are books about Mi'kmaq, written about or by Mi'kmaq people. I think Mi'kmaq people should be included in all subject areas, rather than "a native studies course," because what usually happens is that it becomes an optional course and none of the non-Native take it and a lot of the natives do not take it." (Knockwood, in Standing Committee..., 1990:30)

For the provincial schools there is more to creating a science curriculum than simply incorporating more Mi'kmaw content. Undoubtedly that is a first step, but much more needs to be understood in terms of how and why Mi'kmaw children learn. For instance,

to create such a curriculum requires more research into traditional methods and concepts of education within the Mi'kmaw culture, as well as an understanding of the Mi'kmaw language. Additionally, it requires compiling information regarding Mi'kmaw knowledge of the resources found in the earth, sky and water of Nova Scotia. This research should ultimately be conducted by or in cooperation with Mi'kmaq to assure that appropriate knowledge and educational techniques are employed.

In this thesis, I am presenting reasons for why such a curriculum should be developed. I will explore Mi'kmaw world view as expressed to me by Mi'kmaq, as seen in legends, and as reported in historical documents. This will be compared to western scientific and educational philosophies and techniques being promoted in the schools. As a focal point, the Mi'kmaw language will be discussed in terms of how it mirrors and expresses world view. This includes the cultural values developed in relationship to the world, and semantic categories and terminology ascribed to the environment and its many resources.

The purpose for creating such a curriculum is to:

- bring the history and knowledge of the Mi'kmaq into the educational process, including the use of language as a key to world view;
- illustrate the ways Mi'kmaq traditionally transmitted this knowledge, the validity of these methods, and the values inherent in teaching;
- illustrate the extensive body of knowledge the Mi'kmaq had and have regarding the "natural" or physical world;
- make science more culturally sensitive.

The thesis will begin with a comparison of western scientific philosophy and Native traditional knowledge. This will be followed by a similar discussion on the constructivist theory of teaching science, along with current research being conducted among Native children in various school systems throughout Canada and the U.S. The discussion will then delve into the Mi'kmaw language as a means to illustrate a different perception of the world. The appreciation of how language can shape or mirror world view is important to understand in terms of fashioning educational programs and pedagogy. It embodies the Mi'kmaq relationship to the world around them, and their sense of place within it.

Following the discussion on language will be an investigation into traditional principles and forms of education within Mi'kmaw culture, focussing on story, song and dance. The knowledge that was transmitted through these forms, and its applicability to the study of sciences, will also be illustrated.

This thesis is attempting to look at a number of levels that need to be assessed if such a curriculum were developed. One layer has to do with the basic principles of western science and how they converge or diverge with Native world view. Another layer has to do with pedagogy, and how children are taught sciences. The explosion that seems to be occurring in Native research into education has shed significant light on the different learning styles of Native children. It is for this reason that I have given a strong focus to traditional forms of transmitting knowledge in the Mi'kmaw culture. Many of the

principles found in these traditional forms are ones “modern” educators are finding important to use in teaching. They expand beyond one culture into principles applicable to teaching in general.

Another issue to consider is the specific content that could be integrated into the science curriculum, i.e. how Mi’kmaq use(d) and viewed the many different resources, their knowledge of the stars, the weather, the seasons and so forth. This material in and of itself would provide children with a broader understanding about cultural uses of resources.

The questions could go on interminably as one contemplates values, gender issues, teacher training, cultural contexts and many other important issues. These issues can only be answered or addressed by the Mi’kmaq when and if they want to. Much of what will be discussed, however, is relevant to other cultural groups, and raises questions that should be addressed regarding education in general.

Among the Maori of New Zealand, for example, the Maori regard bi-cultural or anti-racist science education a problem for the non-Maori to sort out. The priority for the Maori is to maintain their own language and increase the self-esteem and achievement of their children through the use of their language in their own educational institutions. Similar to the Mi’kmaq, they have begun to take their education into their own hands after years in English-speaking systems. Part of this process is to research their own scientific vocabulary. As will be discussed with the Mi’kmaq language, the Maori are

delineating their semantic categories into a different or alternative set of scientific principles, alongside the western scientific ones. (Mckinley et al., 1992:588)

This research is an effort to address how to integrate the strength and knowledge of Mi'kmaw traditions (up to and including the present) with the requirements of entering a scientific field of study in contemporary society. An important factor in any curriculum will be to make Mi'kmaw history continuous, and not leave it on the first few pages of Maritime history. In so doing, it is hoped that Mi'kmaw children can find their place in the history of knowledge, and non-Native children will broaden their knowledge and understanding of Mi'kmaw culture. This thesis, in short, is an attempt to make the study of science cross-culturally relevant.

Creating a broader scientific perspective seems particularly important in this day and age. Science, and its inevitable association with technology, are given major emphasis in our contemporary world. There is concern among educators about scientific literacy, or lack of it. There is anxiety that science education is not effective, and children will be unable to deal with the many issues prevalent today. The following statements are among the Program Principles for teaching science in the provincial schools as articulated in the newest series of science texts entitled, *Explorations in Science*:

Scientific literacy enables students to make informed, responsible decisions about their lives....One of our main goals as educators is to ensure that our students grow to be scientifically literate adults.. Science is both a way of understanding today's technological world and of meeting the challenges of tomorrow's...Our technological world is changing at a rapid pace, and the amount of scientific

information is growing and being refined at an unprecedented rate. Technology—how we use science—permeates and affects every aspect of our society....We know our students will be facing challenges which are yet to be determined. To prepare our students for tomorrow, educators must present science activities in ways that develop students skills at defining problems, seeking answers, making plans, models, and inventions, and evaluating their thinking as well as the thinking of others. (Harcourt & Wortzman, 1992:7,8)

Missing from this statement is a sense of respect for the past, and the traditions from which people develop a sense of continuity and purpose. Scientific knowledge can become more reflective of cultures and can incorporate other systems of knowledge. In this way, we can move forward and change, while at the same time have a sense of rootedness in our individual traditions of knowledge. Although this thesis is focussed on Mi'kmaq, its implications reach all cultures.

SECTION ONE

Western Science and Traditional Native Knowledge Systems: An Overview

Constructivism and Research into Native Education

WESTERN SCIENCE AND TRADITIONAL NATIVE KNOWLEDGE SYSTEMS: AN OVERVIEW

In this chapter, the fundamental principles underlying western scientific beliefs will be investigated. Against this background, a general discussion of how Native traditional belief systems resemble or depart from this will ensue. In subsequent chapters, Mi'kmaw traditional belief systems and ways of knowing will be discussed specifically. The ultimate purpose throughout the thesis will be to show both the compatibility and differences between Mi'kmaw world view and the Western scientific method currently taught in the provincial schools. The challenge throughout will be to let go of our own preconceptions and appreciate a different experience of the world that is not simply socio-economically or politically based.

There are many discoveries in western science that echo the wisdom of traditional Native beliefs. The ultimate insubstantiality of matter, the subtle interdependence of all elements in an ecosystem, and even the interpretation of dreams are topics we associate with twentieth century physics, ecology, and psychology respectively. In fact, anthropologists, historians and sociologists have moved toward recasting science "as a cultural rather than a purely rational enterprise" over the last few decades. (Sinclair, on CBS *Ideas*, 1996) However, such insights into how the world works and how we fit into it are not new if one looks at traditional Native cultures.

The question is more of the orientation or world view each culture brings to its knowledge of the world, and whether one, and only one, orientation sets the agenda for how knowledge is taught in the schools. Orientation, as defined by Gloria Snively, is “a tendency for an individual to understand and experience the world through an interpretive framework, embodying a coherent set of beliefs and values.” (Snively, 1990:44) Can scientific concepts be taught in such a way as to preserve the integrity of different world views or orientations? What priorities are being set and for what reason is particular material taught? What are scientific concepts, as opposed to other concepts? And, very importantly, what assumptions and values are embedded in the language we use to teach our children?

Dr. Jeremy Hayward and Dr. Francisco J. Varela edited a book entitled, *Gentle Bridges: Conversations with the Dalai Lama on the Sciences of the Mind*. The book documents the meetings of several prominent western scientists with His Holiness the Dalai Lama, the exiled Buddhist leader of Tibet, to explore ways Buddhist thought can contribute to modern scientific research into the nature of the mind. Hayward, a nuclear physicist with a Ph.D. from Cambridge University in England, and a practicing Buddhist for 25 years, opened the meeting with an overview of the rise of scientific thinking, and the basic premises of Western scientific beliefs. The following is a synopsis of Hayward's opening talk at the conference. It is included to provide a framework with

which to assess how we teach science, and to weigh the premises on which science is taught.

Following the discoveries of Galileo, and Newton's subsequent laws of physics, the investigation of the natural world was viewed as a mechanical device that followed certain fundamental laws of motion. God, who had been ascribed with an omnipotent role in the creation and running of the universe, was no longer a necessary force for explaining how things worked. Man could discover the truth on his own. It was all elemental and predictable, if one applied the fundamental Newtonian principles of motion.

Furthermore, phenomenon could be explained by the motion of small particles which followed the "same laws that applied to planets and stones." Similarly, in chemistry, the discovery of atomic activity seemed to provide the basic building blocks for explaining chemical interactions. Subsequent discoveries of cells in biology, and Darwin's evolutionary theory in the nineteenth century all seemed to validate the notion of a mechanical process driven by fundamental laws. "According to Newton's followers, all natural processes are simply mechanical. They all occur without intelligence or consciousness guiding them or driving them." Science, as it entered the twentieth century, had gained a "sense of certainty" and was the "dominant belief system in Western countries." God's presence in creation had been relegated to an uncertain and sideline role.

(Hayward & Varela, 1992:11)

Concomitant with the sense of certainty that man could come to know the world through knowledge of fundamental laws, was the belief in objective reality, or a reality that existed independently from man. This reality had its own structure. Because an independent reality was thought to exist with its own laws, man could test this reality through experimentation and come to know this objective world. Furthermore, knowing these fundamental, testable laws, allowed predictability. Thus determinism came to be associated with the scientific belief system. Hayward writes, "Because everything we experience, including our own lives, comes down to the movement of particles, and these particles obey fixed, unchanging laws, then if we could know the state of all the particles in the universe right now, we would know the state of the universe at any time in the future. Similarly, if all phenomena could be accounted for on the same basis, then all phenomena would be predetermined. Human thought and aspiration has no more place in these laws than does the action of a creator." (Hayward & Varela, 1992:13)

By the 1920s, this mechanical, predictable concept of an objective universe began to be challenged as the theories of relativity were introduced and quantum mechanics developed. In brief, "in contrast to Newtonian determinism, quantum physics calls for us to abandon the presumption that the universe is a giant, predetermined machine. Instead, all physical phenomena are seen to be as indeterministic as clouds, and hence as unpredictable. This indeterministic unpredictability, along with concepts such as

disorder, complexity, instability, diversity, disequilibrium, and nonlinearity represent 'chaos'....Some of the impetus behind chaos theory came out of quantum mechanics, which is concerned with the study of nonlinear dynamic phenomena." Chaos theory itself deals with the paradoxical partnership between order and disorder. (You in ETR&D, 1(3):18) Similarly, Einstein's theory of relativity, from which his famous formula $E=mc^2$ emerged, essentially states that "energy and mass are equivalent; they are the same thing in different forms. Mass is frozen energy." (McNierney, 1995:112-113)

These new theories undermined the possibility of an objective perception and "doubt arose that the scientific method could in fact produce certainty about an objective world." However, Hayward points out, when you question objectivity, then you are thrown back on perception being subjective, and perception becomes an invention of the mind. He brings up an important question, relevant to the teaching of science. "Why are we stuck with only these two alternative extremes of subjectivity and objectivity? Because deeply rooted in Western thinking is a belief in the duality of mind and matter, subject and object." (Hayward & Varela, 1992:14)

In the 1930s, science had to reestablish a firm foundation, having undermined belief in an objectifiable reality. The new foundation of scientific belief became known as logical empiricism. The scientific method was developed as the way to discover the nature of the objective world. It is worth recounting the explanation offered by Hayward

in defining the scientific method and logical empiricism to give a basis of comparison for how we teach science. In Hayward's view, the scientific method is where every science textbook begins. Hayward lays out the four steps of the scientific method:

First, we look and see -- we gather data, information. Second, we form a theory that explains the data. The theory puts the data into some simple, singular formula or description. Third, with the theory, we predict further observations that we should be able to make. Number four, we look for those predicted observations...This method incorporates the basic ideas of logical empiricism." (Hayward & Varela, 1992:14)

[These basic principles are found in the *Explorations in Science* series used as part of the Nova Scotia science curriculum. The "Glossary of Science Process Skills" lists the components of the Scientific Method: observing, comparing, classifying, seriating, communicating, measuring, inferring, hypothesizing, predicting, experimenting, controlling variables, interpreting, and making models. (Harcourt & Wortzman, 1992:41) A similar list is found in the Nova Scotia Department of Education's *Public School Programs, 1993-1995*. (Department of Education, 1993:71)

The definition of logical empiricism is twofold.

The logic of propositions deals with the way in which several true statements can be combined to produce another true statement. It is a system that consists of axioms and rules. Axioms are statements one knows from somewhere else, outside the logic, to be valid. In addition, there are the mechanical rules, the laws of logical operations, which show how one can produce new statements by combining different axioms....The axioms are drawn from observations, from experiments. So, in our scientific method, the axioms come from the first step: we look, we derive

facts, data. This is the empirical aspect of logical empiricism. Next we have to rewrite our initial observations in a language that the logic machine (mathematics) can work on. We really have two layers of initial statements, or axioms: there are observation-statements speaking directly about our observations; and these are turned into theory-statements that combine the conceptually formulated observational elements of our theory with the laws of the theory...next we have to process these theory-statements according to mechanical rules of logic, in combinations (the equations of the theory) suggested by our theory, to produce new theory-statements. This produces the third step of the scientific method: a new theory-statement that can be turned into a prediction about new observations. These predictions can then be tested, and this is step four of the scientific method....This is the core of science, with the observations being the input. You put in an observation statement and turn the logic crank in the direction suggested by your theory. Out comes a new statement and you make a new observation to check this statement. If it checks, then this theory is correct." (Hayward & Varela, 1992:14-16)

Logical empiricism as a theory of scientific method has been refuted by a number of scientific philosophers, yet it still remains the core of mainstream thinking in the western world among both scientists and educators. In essence, logical empiricism is thought to be the way objective reality can be proven to exist. In fact, as Hayward illustrates, the notion of confirming our prediction by observation, which in turn confirms our theory, cannot not be done in an absolute fashion. As an example, we may have the theory that all swans are white. We may observe a million swans that are all white, and then conclude our theory is confirmed. However, if the 1,000,001st swan is

green, then the theory breaks down. Therefore, because theories can not encompass all phenomena, they must be regarded in terms of probability versus certainty. (Hayward & Varela, 1992:18)

Similarly, the concept of pure or objective observation has been challenged by cognitive psychologists whose experiments have shown that all observations carry the baggage of previous theories. Observation is coloured by previous theoretical frameworks. Second, the terms in which we describe our observations are also subjective. Third, our observation is skewed by what we allow to count as a fact. What is selected or not selected to be part of our factual base for theory? This type of ambiguity in perception can be seen in the Rorschach tests, in which different images are seen of the same drawing depending on the perceiver. Furthermore, many new observations are discarded because they do not conform to current theory, e.g. people discounted Galileo's theory by attributing his discoveries to imperfections in the telescope. Facts are either screened out if they do not fit prevailing theories, or included to corroborate the theory. In this way, science becomes theory driven or "theory dependent."

(Hayward & Varela, 1992:19&20)

[Writing this thesis requires a similar process from my sponsoring academic institution. Theses require proving an hypothesis. Everything I include in the thesis is geared toward moulding other ideas, and supplying supporting material, to uphold my theory and to support my point. In fact, my desire is simply to discuss a number of

points and see which are applicable or usable given the current situation. I do not feel I have something to prove, but simply something to suggest based on a certain observations and experiences.]

Furthermore, Hayward points out, every time new kinds of observations are made, new terms are needed to encompass the new meaning. Ultimately, no solid basis can be formed for logical empiricism to work. The nature of scientific exploration itself is uncertain, and susceptible to subjective and selective criterion. This is a difficult concept for scientists to accept because science is supposed to be an open and objective survey of reality. In short, science itself is affected by belief systems. (Hayward & Varela, 1992:21)

One last subtlety that Hayward articulates, and one that I have contemplated throughout my own research, is the notion of progress. The idea of humanity progressing toward a higher level of existence, is perhaps the most dominant metaphor of the twentieth century. Hayward cites the work of Thomas S. Kuhn, the scientist and historian who wrote *The Structure of Scientific Revolutions*. In his work, Kuhn questions the notion of science as a progression toward the truth. In Kuhn's opinion, science is not a progression, but a series of shifts in world views, or paradigms. A particular paradigm might exist for hundreds of years, negating or refusing data that might alter this paradigm. Finally, the new data creates such tension in its challenge to the old paradigm, that a shift takes place from which a new paradigm emerges. (Kuhn, 1970:97-98)

The notion of progress runs rampant throughout our society and our education system. Harvey Cox, the Harvard theologian, attributes this to Christianity's inability to meet the onslaught of industrialization, secularisation and modern scientific thinking. In Cox's opinion, Christianity has responded to this onslaught by emphasizing man as a sober, rational and progressive human being. This, in turn has ensnared humanity in historical time, leaving it bereft of experiencing the cosmic or timelessness of eternity. The once-heralded Christian mystics, the experiencers of ecstatic revelations, have been shunted out of the picture and relegated to lunacy. In short, Cox says, we no longer know how to truly celebrate life because humanity can no longer free itself from the bonds of time. (Cox, 1969:43)

Progress was and is a measuring stick for determining who is civilized and who is not, or in more politically correct terminology, what is modern and what is not. It is the motivating concept for almost everything in Western society. However, even this paradigm may be shifting. The argument today is one of sustainability versus progress and the effects of so-called progress are becoming evident. Environmental issues have become a growing concern as the effects of pollution, over-fishing, over-cutting, over-using our resources in general, have prompted a cry of alarm. Progress, the world is now seeing, is a mixed bag. It is at this juncture, that we may look toward other paradigms, other world views, to question whether progress is the right metaphor for a better world.

An in-depth study was undertaken with the Dene of Northern Ontario and the Canadian Parks Service. The study was entitled "Traditional Ecological Knowledge." and its purpose was to see where the meeting of the two approaches (Western scientific and Native) to resource use could complement one another. From the study it was determined that:

Traditional ecological knowledge is the body of knowledge or natural history built up by a group of people through generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local ecology, and a system of self-management that governs hunting, trapping and fishing. Ecological knowledge and the rules for sustainable resource management are accumulated over generations and passed on by word of mouth (often through stories) and by direct hands-on experience. The legitimacy and authority for traditional resource management are determined at the local level. Any deviation from these rules and understandings is met by social pressure as necessary. [Osherenko1988] (Dene Cultural Institute, unpublished manuscript, 1991:7)

The paper continues:

Aboriginal hunters...have a reservoir of ecological knowledge that has been accumulated over generations. For instance, the arctic ecosystem is characterized by annual variations in the abundance and distribution of wildlife—a single or two seasons' observations can be misleading. The observations of hunters can thus be a valuable guide to some of the longer term changes in wildlife distribution and behaviour. Similarly, the extensive travel of hunters during winter months leads to observations of behaviour unparalleled by biologists whose winter observations of arctic wildlife are often lacking.

[Anne] Gunn *et al.* (1988:25) suggest that the difference between the two knowledge systems lies not so much in the type of observation

(quantitative versus qualitative), but in the organization of the observations and the physical recording of them which for the scientist usually has to be sufficiently detailed to be repeatable and comparable.

Inuit hunters rarely question observations related by others and do not always ascribe more importance to multiple than single observations: both those characteristics are vital in small social groups and in preparing a hunter for often rare contingencies. The same characteristics are, however, the antithesis of science...(Dene Cultural Institute, unpublished manuscript, 1991:9)

Similarly, biologist Robert Stephenson notes from his studies of wolves in northern Alaska that the Nunmiut are willing to attribute more importance to individual variation and to volition than are biologists.

The Nunamuit...believe that some decisions wolves make are likely to be foolish, 'inefficient,' or ambiguous of interpretation. In contrast, it appears that biologists and even more so, the wildlife-oriented public, look for 'adaptive value in most details of animal behaviour. The wolves I observed did many things that Western science normally refers to as anecdotal behaviour, but which the Nunamiut believed contained rather significant behaviour. (Canadian Environmental Research Council, unpublished manuscript, 1991:9)

Individual idiosyncrasies, the report continues, are difficult to quantify. In Stephenson's work, he noted that generalized knowledge can interfere with direct observation, and that anomalous behaviour can be as important as general behaviour patterns. (Canadian Environmental Research Council, unpublished manuscript, 1991:9) In contrast, quantification is an important component of Western science. It permits measurement, which in turn substantiates theory and allows control.

Comparing this research to Hayward's description of scientific method, one sees that observation is also fundamental to accruing information for the Native hunters, the first step in the scientific method of western science. A difference, however, lies in a lack of a prevailing theory which can restrict or screen information gathering, as seen in Stephenson's work. The hunters are concerned with understanding as much as possible about the habits of the animals, and these habits are understood to be potentially idiosyncratic. On a purely practical level, these idiosyncrasies could alter a person's ability to survive. Thus, there is no ultimate confirmation, as Hayward also disputed, but there is knowledge of possibilities. Furthermore, no observations are discounted, whether multiple or single, enhancing the hunter's awareness of possibilities versus probabilities. As will be illustrated in the discussion of the Mi'kmaw language, the flexibility seen in the language allows for these shifts, and recognizes potentialities in the world. In other words, there is no progress toward ultimate truth, but rather a continuous reevaluation of a shifting pattern of truths.

Thomas Kuhn, in discussing three "types of phenomena about which a new theory might be developed," writes:

The first consists of phenomena already well explained by existing paradigms, and these seldom provide either motive or point of departure for theory construction...A second class of phenomena consists of those whose nature is indicated by existing paradigms but whose details can be understood only through further theory articulation. These are the phenomena to which scientists direct their research much of the time, but

that research aims at the articulation of existing paradigms rather than the invention of new ones. Only when these attempts at articulation fail do scientists encounter the third type of phenomena, the recognized anomalies whose characteristic feature is their stubborn refusal to be assimilated to existing paradigms. This type alone gives rise to new theories. Paradigms provide all phenomena except anomalies with a theory-determined place in the scientist's field of vision... In the process of being assimilated, the second must replace the first. (Kuhn, 1970:97)

At the foundation of traditional ecological knowledge is openness to new information, which means that the Native paradigm accommodates change versus resisting new input until tension forces a shift. Hand in hand with this openness Native information gathering is based on trust in individual experience and observation, which is then pooled together into a group knowledge that benefits everyone concerned. This knowledge was/is accumulated over generations, and becomes embodied in legends, songs, and dances.

A second obvious difference is the belief in and respect for the volition of animals, and other aspects of the phenomenal world. The belief in the phenomenal world as being devoid of a consciousness, and operating by a pattern of laws, does not meet with the traditional Native view of reality. Even if Western scientists understood the inherent flaws of Newtonian mechanics and logical empiricism, the potential for the phenomenal world to have consciousness would be difficult to reconcile with the scientific method. The dualistic split between mind and matter, subjective and objective, is forever at the

foundation of the Western knowledge system. The challenge is how we choose to explore questions of existence.

The role of what we might call the “intuitive” being simultaneously at play with the intellect, is apparent in Irving Dana's description of learning from his father how to gather medicine. Dana, a Passamaquoddy from Point Pleasant, Maine, described his experience in the following way:

You have to be aware of what you're picking. If you're not aware of what you're picking....It's like dealing with medicine, you have to know what you're doing. Like they have these books on medicine. The person goes and tries to find that plant. My father taught me there is a left handed one and a right-handed one, and you have to stick to the right-handed one. Because there was one time that I went out and I picked the left handed one, and I asked my father, "Is this right?" He looked at it and said..."Are you going to get someone really sick?" And I go, "Oh, I picked the wrong one." So that he explained to me what it looked like and stuff. So I asked him can you show me. So, he says, "No." He says, " You'll know when you get there. You'll know it just by looking at it. You'll know when you get there." Sure enough, I went down to that place where he told me to go and sure enough it was right there and I knew it; I could smell it. It was a brighter one, and the one I had picked, it looked like the same thing but it (the one he had first picked) was duller looking. (Dana, personal communication, 1995)

Similarly, Dana related that "there was a story to how everything was made. There is a meaning for everything they did.

The tree is a spirit, it's alive, plus it keeps us alive. They're still doing the things they were made to do. But we as human beings just got confused along the way and we're not fulfilling our duties about what we're supposed to do. (Dana, personal interview, 1995)

In the same vein, a Mi'kmaq from Shubenacadie once said to me, "When you look at the forest you see trees. When I look, I see medicine." (personal communication, 1991)

An article in *Time* magazine entitled, *Science, God and Man*, presented the quality of uncertainty and paradox underlying scientific exploration. It also brought up the question of who or what is God anyway. The article highlighted the paradox illustrating how science, on the one hand, has demystified reality by explaining phenomena, such as time, space, love, and other emotions, in terms of neurotransmitters, genes, photons, and a host of other scientific terms. On the other hand, science, when looked at in overview, reveals, "an overarching pattern that encompasses the many feats of twentieth century science and transcends them; a pattern suggesting, to some scientists, at least, that there is more to this universe than meets the eye, something authentically divine about how it all fits together." (Wright, in *Time*, 1992:36)

The intent of this thesis is not to delve into whether a God exists, or to define a God at all, but more to look at how this conflict between physical and spiritual has entered the subtlest levels of scientific debate. Discoveries of "slight but persistent fluctuations in the universe's 'cosmic background radiation'" led its discoverer, the astrophysicist, George Smoot, to say, "If you're religious, this is like looking at God." (Wright, in *Time*, 1992:35)

The dualism that Hayward alluded to is present. Even positing the possibility of a God

in an “overarching pattern” does not resolve the duality assumed in science. This dualism pervades the way we interpret, teach and articulate the phenomenal world.

Related to this dualism is a style of scientific debate founded on polemics, or “staking” a ground one then defends. This issue was addressed during a recent *Ideas* program on CBC, during which a symposium hosted by the Ontario Institute for Studies in Education in 1993 was aired. Present at the symposium were the psychologist David Cayley and Jeffrey Lloyd, Master of Darwin College, Cambridge. Lloyd’s work into the development of scientific thought has led him to comparative studies of ancient Greek and Chinese civilizations. Lloyd’s fundamental theory holds that social and political contexts shape styles of thought, including scientific thinking. Lloyd’s work is important for two reasons: it deals with the contexts out of which styles of thinking arise, and it illustrates two distinct and different approaches to science, each viable in their own right. The following discussion is from the taped symposium:

David Cayley: Ancient Greek science was concerned with foundations and with specifying the elements of which nature is composed. Ancient Chinese science, by way of contrast, produced very notable discoveries and inventions—gunpowder, printing with movable types, navigational use of the compass—but it shared none of the Greek concern with the ultimate constituents of nature.

Jeffrey Lloyd: The Chinese have attributed to them an element theory, and it just isn’t an element theory. The expression in China is *wu xing* which means the five phases, and those are process; they’re not elements. There is a fundamental difference between the Greek way of talking about the fundamental constituents of material objects: they are stable; they have

to have certain characteristics; they may interact with one another. But earth is earth. You can define earth as having certain properties and you know what you're talking about, and that is stable, that is a substance. [According to the Chinese]...earth isn't one of the five phases. But take wood, *mù*, that's not just the object that we make furniture out of. *Mù* relates to the growing qualities of things. Each of the five items is in process of transformation, according to different cycles. So this is a process oriented notion. There is nothing foundational about it. It isn't as if this provides stable structures from which everything else can be derived. Greek element theory is then deployed with if you have your elements, if you got your elements clear, then you have a theory of compounds, you have a theory of change and you have something that looks very much like chemistry, although it isn't chemistry. That's a foundational matter, the elements are the foundations of physics. And when challenged—of course there was not just one element theory in Greece, there were hundreds of them—the people who proposed them tried to justify them, tried to give an account, a justificatory account of why it must be the case that it's earth air fire and water, or that it must be the case that it's atoms and the void.. With argument, you see, going back to some foundational principle that won't necessarily be accepted but that you stake out as the proper principle from which the subject can be derived.

David Cayley: The requirement that one stake out principles explains to Jeffrey Lloyd why many of the distinctions on which Greek science was founded, have a polemical dimension. Herodotus opposes myth to history in order to show that his stories are true while earlier accounts are fanciful. The word magic was applied to opponents with the same rhetorical intention as was the term myth, often by hippocratic physicians whose methods were more dangerous than those of the traditional healers they were trying to discredit. (Cayley & Lloyd, on *CBC Ideas*, 1996)

Fundamental to this discussion is how people of different cultures posit and define their relationship to and within the universe. An example of this revealed itself through work I conducted for the Canadian Parks service. The interpretation of parks, I learned,

has undergone a number of revisions, all based on debate over where human beings fit into nature. First humans were in nature, manipulating and shaping it. Then, humans were removed from nature, and nature was to be interpreted on its own, in its purity. Then, it became evident that nature, by virtue of being used and interpreted by humans, had to be included in the cultural history along with the “natural” history. Human and nature were inseparable. But the additional question is still being weighed: which human culture should be interpreted, and to what extent? This is where it stands in the present.

Vine Deloria, a Standing Rock Sioux and a professor of political science at the University of Colorado states that:

The development of western science was based upon the idea that human beings could abstract themselves from the observational and experimental situation. They could devise objective principles that would be applicable at any time or any place in reasonably similar situations....This view supposes that primitive peoples felt the same sense of alienation in natural surroundings as do people of the western industrial society....We do not find a cringing fear of the environment in tribal peoples. Instead they are keenly aware of rhythms and activities which scientific people cannot begin to fathom. (Deloria, 1992:14)

Deloria is questioning our basic assumptions and presumptions about how we view the world. He challenges the notion of progress that views humans as evolving toward an ever more sophisticated mastery of his world. This mastery is developed into new technologies, which in turn, reduce what came before as superstitious beliefs about reality. Inherent in western thinking is the notion of power and control over one's world.

Deloria argues that tribal wisdom is still being validated on western scientific terms, instead of being taken in its own right. "Why do we think that western science is the criterion of truth and accuracy? Why is tribal knowledge described as striving on an ad-hoc basis to rival the information obtained by western sciences.?" Deloria asks.

(Deloria, 1992:115)

Deloria offers a comparison of western and Native epistemologies.

In an epistemological sense, there is no question that the tribal method of gathering information is more sophisticated and certainly more comprehensive than western science. In most tribal traditions, no data is discarded as unimportant or irrelevant. Indians consider their own individual experiences, the accumulated wisdom of the community that has been gathered by previous generations, their dreams, visions and prophecies, and any information received from birds, animals, and plants as data which must be arranged, evaluated and understood as a unified body of knowledge. This mixture of data from sources which the western scientific world regards as highly unreliable and suspect produces a consistent perspective on the natural world. It is seen by tribal peoples as having wide application. Knowledge about plants and birds can form the basis of ethics, government and economics as well as provide a means of mapping a large area of land. In fact, tribal knowledge systematically mixes facts and experiences which western science would separate by artificial categories. In tribal systems there is never a sense of disorientation within the tribal understanding of the world. (Deloria, 1992: 15)

Additionally, Native people derive information from a number of sources, including dreams, visions, and intra-species communication. When a sufficient number of similar experiences have accumulated a pattern emerges which then reveals the "pattern of

meaning that is occurring." Over time, a person develops a body of knowledge about events or activities that are species, location and time specific.

Instead of matching generalizations with new phenomenon (as in western science) Indians match a more specific body of information with the immediate event or experience. Exceptions to the rule become a new set of specific behaviours that open new classifications for future generations. (Deloria, 1992:16)

Deloria argues that, in Western science, dreams and spiritual experiences are thought to be illusory or delusive, and cannot be incorporated into the scientific method of gathering data.

At the deepest level of thought in western science, the greatest thinkers rely heavily on intuition, dreams and visions. That this phenomenon is regarded as evidence of the individual genius of the scientist and not as data derived from external sources or drawn from a reservoir of subjective information available to all individuals." (Deloria, 1992:16)

Perhaps one exception to this is Carl Jung, whose work on the universal unconscious relegated "individual genius" to a common pool of universally-held archetypes.

Deloria proposes that although the two systems do not appear to be at variance, their applications are. Western science, for instance, discards a great deal of information. To include certain information that Native people view as relevant, western science would have to develop a new model that incorporated subjective knowledge and nonrational conclusions that did not necessarily follow the laws of mathematical

reasoning. Furthermore, because of the specificity of a great deal of Native knowledge to a wide range of situations, it can not be reduced arbitrarily. (Deloria, 1992:16)

Deloria continues to give an example contrasting how western science and Native people would gather information, in this case, on locating a buffalo herd on a large tract of land. The western scientists, he feels, would use maps, determine watering locations, and try to predict the movement of the herd based on records of behavioral patterns. The Native people would not necessarily discount that information, and might even approach the problem in a similar vein, but would also look at other indicators. For instance, where sunflower patches were located would be used as an indicator because of the buffalo's love of the plant. Similarly, the location of blackbird flocks that follow the herds to feed off insects disrupted by the movement of the herd, would also be taken into account. Similarly, dung beetles, found on the top of buttes, invariably point their antenna toward the herd. "All we need to do is pack a picnic lunch and move from one beetle to another until we locate the herd." (Deloria, 1992:18)

This type of data is both specific to the land and species, and takes time and experience to gather. Numerous indicators based on years of shared observation, would tell specifically where the herd could be located. Additionally, information for such an undertaking would have come from a number of avenues, including dreams. "This information is not extraneous to the knowledge of the buffalo and it is not simply an ad

hoc observation. It is included in the teachings of the tribe regarding these animals."

(Deloria, 1992: 18)

The result of this general discussion is that the Native methods and views of gathering and regarding knowledge is at variance with Western scientific practices, but not necessarily at odds. The goal, in the previous example, was the same—to find the herd of buffalo. But the relationship of the buffalo to the land, the flora and fauna, and to the culture, is specific. The knowledge necessary to locate the herd is drawn from a pool of information accumulated over time within the community, and through many channels. It is not generalized and theoretical and predictable. It is continuous and changeable to reflect pertinent and sometimes idiosyncratic situations.

For this reason, it is worth questioning the foundations of how science is presented to children. In the ensuing chapters, the creation of a science program drawing on Mi'kmaw traditional knowledge will be explored, but this *process* could be applied to any culture.

CONSTRUCTIVISM AND RESEARCH INTO NATIVE EDUCATION

The current fashion in the teaching of science to children is a psychological theory called "constructivism." The science resource materials currently being promoted in the schools are based on this view of learning. Both the 1992 Addison Wesley series, *Explorations in Science*, and Holt, Reinhart, and Winston of Canada's [1991], *Innovations in Science* series are based on a constructivist approach to learning. Because the constructivist theory is considered the "hope" of the future of teaching science, a synopsis, outlining its basic principles, has been included in this chapter. It should be kept in mind that there are a number of countervailing theories that are being debated by educators.

The introduction of the constructivist model, however, does not mean that teachers in the provincial schools are following this approach, or have been trained in it. One fourth/sixth grade teacher, when asked if he had heard of the term "constructivism," answered in the negative. When the basic principles were explained to him, he replied that is what he does in his classroom already. Being a mother, and in contact with many friends who have children in the provincial schools, I know that teaching styles vary among teachers, no matter what the prevalent theory in education is.

Two other teachers with whom I spoke expressed their dismay that new ideas are often presented in the context of In-Service days. These In-Service days, they said, are

too short really to be of consequence, and teachers are so overloaded with work that they do not absorb the new material. Many teachers use these days as “days off” from their intense teaching loads. (At a parent-teacher conference I attended, the time with one of the teachers was spent talking about her high blood pressure, a condition she attributed to her overloaded teaching schedule.)

Similarly, the introduction of new materials does not mean older materials have been replaced, as evidenced by the list of resources in the Department of Education Library. Perusing the available resources, one can see an obvious change that has taken place over the last two decades, in both teaching methods and material. Much more focus has been given to an integrated approach to learning and a greater cultural sensitivity is expressed in the materials, but many antiquated materials still haunt the bookshelves of the schools.

In this chapter, I will not address the actual application of the method, but rather explore the philosophy of constructivism and its implications for teaching Mi'kmaq children the sciences in provincial schools. This will be discussed in terms of the research that has been conducted by both Native and non-Native educators on the learning styles of Native children.

The birth of the theory of constructivism dates back to the late 1970s with the work of such people as Rosalind Driver, Edith Guesne and Andrée Tiberghien, all of whom were conducting research into children's conceptions of science. Since that time, an explosion of research has occurred worldwide to determine how children conceptualize

the world, and how teaching affects or changes these conceptual frameworks, if at all. This research grew out of a concern that the "majority of secondary students neither understand nor see much point in conceptually based science that they are taught at school." (Driver, Guesne & Tiberghien, 1985:vii; Driver & Bell, 1986:443)

Driver, along with Beverly Bell, coauthored an article entitled, "Students' Thinking and Learning of Science: A Constructivist View." In it, they proposed that educators must delve deeper and explore their views of science and the learning process.

In the educational press recently a scientist, reflecting on the task of science in schools, remarked, "science is about the real world and what could be easier than that?" But is science about the real world? In a sense it is, but it is about a great deal more than that. It is about the ideas, concepts and theories used to interpret that world. (Driver & Bell, 1986:443)

Driver and Bell then give the example of the dichotomy between the "real" world and the conceptual and theoretical world of science. They use the example of rubbing a plastic comb with a cloth, and the consequent electromagnetic field that is created. The creation of an electro-magnetic field through the action of rubbing, enabled the comb to pick up bits of paper.

In this case the events in the 'real world', the world of sense impressions, (i.e. the world of objects and events we can point at, touch and see) included the rubbing of the comb and the pieces of paper being picked up. Yet consider for a moment the kind of explanation we might present for this in a science lesson; an explanation which might involve ideas about charge transfer from the comb to the cloth, net charge on the comb producing an electric field, the field causing distortion of electron clouds in the paper and hence a net force on the paper. The entities we are talking about here, electrons, electric fields, etc. are not part of the world of our sense perceptions, they are not even abstracted from this world.

They are imaginative constructions, themselves related in very precise ways, which are brought to bear on this world.

This view of the scientific enterprise is reflected in the following statement by Einstein and Infeld: "Science is not just a collection of laws, a catalogue of facts, it is a creation of the human mind with its freely invented ideas and concepts. Physical theories try to form a picture of reality and to establish its connections with the wide world of sense impressions." (Driver & Bell, 1986:443&444)

Driver and Bell continue to note the delineation made between the world of sense perceptions and concepts or theories, citing Karl Popper's distinction between "the world of sense perceptions, the individual's constructions and the public world of the scientists' shared constructions...." (Driver & Bell, 1986:444)

What we are seeing in this discussion, is the acknowledgement of science as a creation or construction of the human imagination and inventiveness. The creation of a scientific language was and is an effort to marry "reality" to sense perceptions in a comprehensible manner, and to better define and make that reality knowable. In essence, science is the creation of a language to describe what are considered abstract, non-sensory principles about reality. Electrons, for instance, are simply names attributed to a force beyond the perceivable sensorial world. They are a term used to explain this force.

All cultures create ways through a variety of media—story, song, dance, art, language—to make experiences of the many forces at play in the world knowable or communicable. Most cultures recognize various forces at play whether they are termed energy or spirit. The crux of the matter in western science is not that it fails to recognize

these forces in the universe, but how the knowledge or experience of these forces are interpreted and contextualized in a knowable, meaningful and teachable form. Science as a discipline has separated itself from meaningful reality for the general populace. Furthermore, the language and methods of science tend to exclude other ways of knowing, such as Native belief systems, or use them, as Vine Deloria says, to enhance its own knowledge on its own terms. (Deloria, 1992:12)

The next question the constructivists pose, is how is this new language, a mental construct of reality, taught to children? Why, the constructivists have asked, are so many children not able to do a scientific experiment in the classroom, e.g. experiments with electromagnetism, and walk away with a new knowledge that they apply to their world. In the end, students fail to retain much of what they were taught because the teaching did not make a connection with the children's own experience and beliefs about the world. (Driver & Bell, 1986:444)

In essence, the constructivists have discovered, that educators have not yet found a way to bridge scientific concepts with children's individual concepts of the world in a way that becomes meaningful and personal to children. Efforts have been made over time to address the problem by introducing "hands on" experiments, but this too, as seen in the example of the comb, does not ensure the children will absorb and apply the scientific knowledge in other situations. Constructivist educators have found, through a series of research experiments, that each child comes to the classroom with their own conceptual constructs about the meaning of reality. These constructs are based upon their personal

experience and perceptions of the world. Children do not simply leave their conceptual frameworks outside the classroom and readily adopt new ones the teacher introduces. Instead, these conceptual structures, based on their personal experience, shape and affect how and what each child will learn. As Driver and Bell state one of the fundamental "aspects" to recognize in children's learning is that "learning outcomes depend not only on the learning environment but on what the learner already knows. Students' conceptions, purposes and motivations influence the way they interact with learning materials in various ways." (Driver & Bell, 1986:444)

Numerous examples of children's individual learning processes have been documented from a host of experiments. For example, how children understand light can bring a variety of interpretations from children regarding its source, its flow, and its effect. In such experiments, outcomes are never predictable because each child is deriving conclusions based on his or her own expectations, motivations and preconceptions. (Driver & Bell, 1986:448-449) (To this day, I cannot understand why an airplane, with its massive weight, lifts up in the sky. Despite numerous explanations, which make logical sense, my intuitive sense is that a massive weight drops down to the earth, not lifts up to the air.) In other words, the intended objective of a lesson may never be met because the teaching process, and the knowledge itself, is at variance with the child's (or adult's as in my case) own process and belief systems.

The second aspect of learning Driver and Bell articulate is that it "involves constructing meanings...People construct meanings of what they hear or see by generating links between their existing knowledge and new phenomena attended to." The example was given of a thirteen-year old's meaning for the word "living."

[A] thirteen-year old student had a meaning for the word "living" that included inanimate objects (from the western scientific view) such as cars and clouds. His constructed meaning for the sentence "A car is not an animal as it is not living and it does not eat plants or animals" was "...a car is not an animal. I reckon it's living because it eats, like petrol, needs stuff to keep it going." (Driver & Bell, 1985:447)

Here the child, by his own process of deduction, distinguished his own categories for "animal" and "living' based on his own definitions. A car is not an animal, but it is living because it consumes fuel.

Research conducted by constructivist educators, William J. Kyle Jr. and James A. Shymansky support these findings. Kyle and Shymansky compared a number of different concepts between the western scientific perspective and children's perspectives. Again, children's conceptions of living versus nonliving phenomena emerged.

Living things are distinguished from nonliving things [from a western scientific perspective] in their ability to carry on the following life processes: movement; metabolism; growth; responsiveness to environmental stimuli; and reproduction. Children's' views are, "Objects are living if they move and/or grow. For example, the sun, wind, and clouds are living because they move. Fires are living because they consume wood, move, require air, reproduce (sparks cause other fires) and give off waste (smoke)." (Kyle & Shymansky 1988:2)

These distinctions have direct implications for Native students. A story related to me by a Mi'kmaw teenage girl highlighted this problem. This teenager was enrolled in a science course at a Halifax high school. Having been sick the week before a test, she missed the lessons regarding definitions of animate and inanimate objects in the "natural" world. Upon returning to school, she took the test only to find that her answers regarding animate and inanimate objects were marked wrong. Rocks, she contended, were living. This was not just a matter of a subconscious conception of the world; it was her conscious belief, one she has chosen as a way of life based on her learning experience in her home and community. The question is, are these two views of reality mutually exclusive? (Phillipa Pictou, personal communication, 1995)

Children, in constructing meaning out of situations, bring their own experience to the exploration process. If it fits within what they have as their own set of truths, then it is meaningful. Knowledge is not a collection of isolated facts, but is "highly organized and interrelated in multiple ways." (Driver & Bell, 1985:447) In some cases, children do adapt their ideas to accommodate new input, but often children are unable to create a new interpretation for unfamiliar material. Or, they might grasp something intellectually, but not incorporate it into their own fundamental belief system, as seen in the previous example. This is the way many students pass exams, and then subsequently forget what they learned in the process. Thus the constructivist credo, "Meanings, once constructed are evaluated and can be accepted or rejected." (Driver & Bell, 1985:454)

Another principle in constructivist pedagogy is that "Learners have the final responsibility for their learning." This is based on the recognition of the individuality of assumptions and ways of structuring one's perceptions of the world. Driver and Bell then state, "Learning science involves changing these conceptions. The next step, then, is that pedagogical strategies can be developed to reflect, construct meanings, and to encourage conceptual change." (Driver & Bell, 1985:454) These strategies include encouraging children to articulate their own ideas; presenting situations that challenge each child's ideas; encouraging children to hypothesize and develop alternative models of interpretation; creating situations in which the students can explore material in informal ways, especially through small group discussion; and presenting opportunities for children to apply their new interpretations to a variety of situations so they can "appreciate their utility." (Driver & Bell, 1985:454)

In short, this pedagogy suggests that the teaching of science be done in a more developmental way, working from and with the basis of the children's belief systems. The constructivist method recognizes each child's processes, and encourages them, through skilful questioning, exploration and discussion, to test and gradually adapt new and meaningful interpretations. In this way, "their thinking may change progressively towards a more sophisticated formal and coherent knowledge structure, and that

sometimes they may have to 'unlearn' in order to continue to learn." (Driver & Bell, 1985:454) In other words, scientific education is like a moulting process, whereby the children gradually shed old beliefs and take on new ones.

The constructivist model has many qualities that, if instituted, would be welcome changes to science education. However, it cannot escape the same fundamental questions that have been raised all along. The final statement, "their thinking may change...towards a more sophisticated formal and coherent knowledge," was echoed by Kyle and Shymansky, who refer to the tenaciousness of preconceived ideas, and propose the Generative Learning Model to "enable the learner to construct meaning." The foundation of this model is first understanding the child's view then "identifying and addressing the alternative framework...." From that foundation, the educator then provides a context for motivating the child to apply a new concept. Providing a context is done to "facilitate the exchange of views and challenge students to compare ideas, and encourage the students to use the new ideas in familiar settings." (Kyle & Shymansky, 1988:7)

Research has been conducted in many cultures, which has produced some generalized, cross-cultural patterns to children's thinking. Although a great deal of fascinating insights have been generated by these studies, it still presumes that (a) children hold misconceptions or "alternative frameworks" about the world according to scientific thinking, and (b) that all children should be nurtured progressively into the new scientific conceptual framework. There does not appear to be any questioning of whether the

western scientific model is the only one, or what will be lost in the process of conversion. This is not to suggest that children should not learn western science. They have no choice in today's world. If nothing else, as pointed out in a publication entitled, *Getting Started in Science: A Blueprint for Elementary School Science Education*, they need it so they can understand how to clean up the environmental messes of technological progress. (*The Network*, 1990:1)

A study undertaken by Gloria Snively in British Columbia with Grade Six students would seem to dispute the contention that constructivism would replace one way of thinking with another. Snively purports that a constructivist model of teaching could accommodate different world views in the teaching of science. Her research was undertaken with a group of six children, one of whom was a Native boy named Luke. Prior to an instructional unit discussing seashore ecology, Snively conducted interviews with each child, using both metaphor and literal interviews as a basis of analysis. These interviews were structured to provide Snively with a means to determine the predominant "orientation" each child had in relation to the seashore. To reiterate, orientation is defined as "a tendency for an individual to understand and experience the world through an interpretive framework." (Snively, 1990:44)

Interviews with Luke revealed that he had an orientation to the seashore that was "spiritual" in essence and solidly grounded in Native beliefs. Although his orientation was "spiritual," it also encompassed practical knowledge of the seashore, and an awareness of the life there. The boy perceived himself to be a listener to a story of what

happened “a long, long, time ago, about the Killer Whale, the Thunderbird, the Raven. My uncle would be the storyteller...the seashore is a legend....” Some of Luke’s knowledge correlated with western scientific knowledge, but other concepts were radically different. His metaphor reflected one of the traditional legends of his people, “Turning the Tide,” in which wolf is the caretaker of the tides. Ideas about creation, predator-prey relationships, different species, the relationships between animals and humans, etc., were steeped in the strong cultural background of his Native tradition.

(Snively, 1990:45, 50-51)

Care was also taken by the teacher to familiarize the other students with traditional Native beliefs, reading them legends and organizing sessions with elders of the village. The teacher also attempted to bring Luke’s beliefs into the discussion, and never dispute or negate them.

In the “metaphor interviews” conducted following the lessons on seashore ecology, as well as over a longer term, Snively found a greater connection made between Luke’s spiritual orientation and the scientific instruction regarding tidal zones. She discovered that in Luke’s metaphors, there was a “greater proportion of beliefs which were consistent with science ideas, and a decreased proportion of beliefs which were quite different.” Luke’s orientation remained predominantly rooted in traditional Native spirituality, yet he was able to absorb new knowledge and apply it when needed.

(Snively, 1990:53)

Snively's work is important for illustrating that different world views may be accommodated and respected in teaching western science, but with extraordinary care. In this case, care was taken to relate with Luke's community, to learn the stories associated with the tides, and listen to Luke. But accommodating another world view does not necessarily mean Luke's view of reality was understood. In fact, it might be that Luke's orientation was such that it could accommodate western scientific thinking to a degree, versus the other way around. In her post-instructional interviews, Snively found that Luke, more than any other student, repeated the concept of zonation in all his interviews. (Snively, 1990:52) What would be the result if the situation were reversed and a non-Native, English speaking child of European descent were tested in the same way by Native educators using Native criteria? But instruction with Luke was carried on in English, by an English-speaking researcher, in a western-oriented classroom. In my own work, I have often found that different sets of assumptions are at work between the Mi'kmaw community and the non-Native community, but the non-Native community assumes that the perspectives are the same. These differences are often subtle and difficult to articulate. But, to reiterate what one Mi'kmaw said, "We know a lot more about white culture than they know about us."

More complex levels of thinking and perceiving still need to be understood which have to do with the language and the whole cultural context in which Native children are nurtured. For instance, the legends themselves are steeped in a world view. These are

not just stories about something, but are metaphors for how things literally work that carry a multiplicity of meaning. From what I can surmise, everything in Mi'kmaw culture mirrored everything else. Nothing existed as a separate entity but rather as different aspects or reflections of a whole.

In the story cited by Snively, "Turning the Tide," the wolf is the caretaker of the tides, and had been long before the advent of humans. In Snively's experiment, the teacher read the story to the children and made correlations regarding the information in the story and scientific concepts about seashore ecology and zonation. Snively notes the information regarding different tidal zones, and shellfish that can be harvested within the zones are present in the story. She also states there were beliefs that differed from scientific concepts. As an example of a difference between the two views that were evident in her post-instruction interview with Luke, she writes, "Take, for example, the metaphor response: 'The wolves look after the tide long before anyone was born,' although Luke had at least a concept of tidal cycle, its origin, and its effects." (Snively, 1990:53) This statement is a bit ambiguous. Snively seems to be insinuating that even though Luke had some concept of the origin and effects of the tidal cycle, he still maintained his view that wolves were the caretakers of the tides.

In Snively's work there appears to be a separation of the "spiritual" from the practical or factual content. From reading Mi'kmaw legends, these two are inseparable. My guess is that wolfness and tidiness, or the process of being a wolf and the process

of tidal action, are inextricably linked along with every other aspect of the story, and is as practical as it is “spiritual.” The story might be about seasons, the weather, or the movement of stars. The plant and animal life along the shore, in turn, would be influenced by this, and the wolf, in physical form, may be an indicator of times for harvesting shellfish. If one delved into the story, as Snively attempted to a certain degree, a whole constellation of information would most likely emerge, perhaps far more detailed and intricate than what was explained in the scientific lesson on seashore ecology.

A second factor to consider in Snively’s work is that perhaps what Luke did not initially state in his “metaphor interviews” was omitted because it was not important to him. Eber Hampton, a Native educator of the Chickasaw Nation, and president of the Saskatchewan Indian Federated College in Regina, has conducted research into differences between Native and non-Native styles of thought and learning. One of the things he has found is that non-Natives tend to state what seems obvious to Native people. Not only do non-Native educators demand the obvious be stated, but that what seems obvious be analyzed and supported by other sources. Hampton quotes another Native educator doing graduate work at Harvard.

I look at papers...when I write papers, I want to say things that will create some thought in the person that’s reading them, and then I find out that that kind of style is not acceptable. You have to state everything obviously...and not trust in someone else’s intellectual ability to draw their own conclusions or make their own inferences. You have to lay all that out for them. It’s weird. (Hampton, in Battiste and Berman, 1995:27)

The work of Arlene Stairs among Northern Baffin Inuit recognizes this difference.

Stairs describes two concepts of education recognized by the Inuit.

The first is *isumaqsayuq*, which is the way of "passing along knowledge through the observation and imitation embedded in daily family and community activities." The focus is on values and identity, developed through the learner's relationship to other persons and to the environment. In contrast, *ilisayuq* is teaching which involves a high level of abstract verbal mediation in a setting removed from daily life, the skills for a future specialized occupation being the principal goal. (Stairs, in Battiste & Barman, 1995:140)

Stairs goes on to discuss how Native learners develop concepts and skills by repeating tasks in many different situations, such as hunting under varying conditions of weather and animal movement and with various types of equipment.

They do not traditionally make explicit verbal formulations of basic ideas or rules for success, but rather recount what they have experienced and listen to stories which present concepts and principles implicitly. Formulation of the big ideas is left to the minds of the individual participants or listeners according to their own experience levels and perspectives. Clues for appropriate uses of language in formal Native education might be found in this contextualized verbal aspect of *isumaqsayuq*. (Stairs, in Battiste and Barman, 1995:141)

Because teachers are unfamiliar with this type of contextualized learning, *isumaqsayuq*, they are uncertain whether Native students are grasping the concepts or information because the students do not necessarily verbalize their learning process. Teachers, assuming that verbalization of concepts is the necessary prerequisite to learning fail to recognize that the Inuit child may be watching and waiting to feel ready to

apply his/her knowledge, and for a time and place for applying the knowledge in a real-life context. (Stairs, in Battiste and Barman, 1995:141)

Learning by observation as a style for Native children has been noted by a number of researchers. Hampton cites the work of Vera-John Steiner, whose interviews with forty Pueblo children revealed learning was done primarily through observation. Among fifty white students interviewed, only one was found to learn by observation. (Hampton 1995:26) In Nancy Allen's work among the Kickapoo of Texas, she noted a tendency for the children to "stall" on questions. She attributed this to the tendency of Native Americans "to take in data holistically, from many sources, and respond slowly, in response not to one, but many stimuli." Instead of repeating the question, she would increase her "wait time", and found the students would eventually answer. (Allen, 1995:162)

In his research, Hampton discusses what he terms "reflective thinking." "Reflective thinking," he writes, "suggests a habit of mind that thoughtfully considers a speaker's words and seeks in them for what can be built on." He notes an experiment conducted by Carol Barnhardt, in which she studied videotapes of classrooms in which both Native and Non-Native teachers taught Native children. At first she found no great differences in teaching styles, but on closer scrutiny, and with the use of a metronome, discovered a phenomena she called "tuning in." The students and teachers, she found, had "a rhythm and tempo in both their body movements and in their talk. White teachers set the rhythms in their classrooms, while Indian teachers observed and then

matched student rhythms.” Hampton feels Barnhardt’s findings, and concepts of “wait time” require further research, and suggests the focus of research should be on culture and language. (Hampton, 1995:25) However, the concept of “reflective thinking” and “tuning in” are similar to the metaphor of a mirror I have come to use in my own research. This will be discussed in later chapters.

Dr. Jeffrey Bloom, professor of Education at Acadia University, and a social constructivist by his own admission, has debated whether constructivism ignores a wider field of factors in a child's learning process. First, he questions the notion of a structure, and proposes "that children's contexts of meaning are not static. They are dynamic systems of continuously changing information." Bloom speaks of “shifting allegiances” instead of conceptual constructs. (Bloom, 1992:182)

In order to understand more fully how children create meaning or make sense of their environment, we need to look at the complexity of their thinking. To date, most research in children's knowledge of science has focused on identifying specific concepts. However, a few researchers have explored children's concepts from the wider perspective of conceptual ecology (Hewson 1988, Posner and Strike 1989) based on Toulmin's (1972) notion of the interaction of individuals and their environment. The basic assumption of conceptual ecology is that people's knowledge is adapted to their cultural and intellectual environment. Beliefs and conceptual knowledge come together to help children interpret their personal environment...The framework of conceptual ecology suggests that each individual's knowledge is particularly meaningful to that person in his or her own environment. Other researchers, such as Gregory Bateson and Jerome Bruner, have suggested wider frameworks for looking at what is meaningful. Bateson (1979) refers to context as a ‘story’ or ‘pattern’ [of connectedness] through time...[and that] nothing has meaning except as seen ... in some context. (Bloom, 1990: 549-550)

Bloom feels that the constructivists have not given enough attention to “meaning as imbedded in social context.” This field of study has been undertaken primarily by anthropologists and sociologists. Native educators could be added to Bloom’s list.

From an anthropological view, Burtonwood (1986) discusses how the Kuhnian sense of paradigm can be applied to learning or socialization within specific cultural settings. Such a paradigmatic view of learning within social contexts provides an intriguing demonstration of how contradictory or anomalous conceptual commitments can lead to stresses on the social structure or to revolutions. From a constructivist perspective, Hewson's discussion of the difficulties encountered by native African children when their culturally embedded beliefs clash with Western science beliefs is an appropriate example of the stresses confronted on a cognitive level when two socially embedded meanings come into conflict. (Bloom, 1992:181)

Harkening back to Jeffrey Lloyd’s work cited in the previous chapter, the notion of contexts of communicative exchange were discussed. Lloyd’s work illustrates two different, but viable, systems of scientific knowledge developed as reflections of two distinct social and political contexts—the Chinese and the Greeks.

Studies conducted into the difference between orality and literacy also bear on learning styles. Mi’kmaq culture is an oral culture, although Mi’kmaq have been writing in various forms (hieroglyphs, pictographs, petroglyphs, and alphabetic writing introduced by missionaries) for hundreds of years. Oral history, and its validity as a mode of transmission, is an ongoing discussion among educators and scholars, but in general, literacy has been the battle cry of educators in this day and age.

Directly related to “scientific literacy” is the work of Jerome Bruner, world-renowned cognitive psychologist. Bruner articulates two types of thinking that have different purposes in their use: the “logico-scientific” or “paradigmatic” and the “narrative.”

The logico-scientific, he explains, involves:

...attempts to fulfil the ideal of a formal, mathematical system of description and explanation. It employs categorization or conceptualization and the operations by which categories are established, instantiated, idealized, and related one to the other to form a system....It’s language is regulated by requirements of consistency and non-contradiction. (Bruner, 1986:13)

[The narrative mode in contrast]...leads instead to good stories, gripping drama, believable (though not necessarily “true” historical accounts. It deals in human or human-like intention and action and the vicissitudes and consequences that mark their course. It strives to put timeless miracles into the particulars of experience, and to locate the experience in time and place. The paradigmatic mode, by contrast, seeks to transcend the particular by higher and higher reaching for abstraction, and in the end disclaims in principle any explanatory value at all where the particular is concerned. (Bruner, 1986:13)

Bruner asserts that the criteria by which one judges a good story versus a logical argument are completely different.

Perhaps Richard Rorty is right in characterizing the mainstream of Anglo-American philosophy...as preoccupied with the epistemological question of how to know truth—which he contrasts with the broader question of how we come to endow experience with meaning, which is the question that preoccupies the poet and storyteller. (Bruner, 1986:12)

Bruner's statements seem to contradict Snively's findings, or point to a dual set of criteria at play in Luke's ability to integrate scientific learning within his own "narrative" orientation.

Eric Havelock's work on orality and literacy supports Bruner's contention. David Cayley, commenting on Eric Havelock's statements during a forum on "Orality and Literacy" synopsised his view.

In oral society, according to Eric Havelock, morality is conventional, practical, actual and concrete. It consists of doing the "done thing." People act justly or unjustly, but there is no ideal justice to which their acts can be compared. Writing changes this. Because the pressure to memorize is gone, and because writing has an independent existence outside the writer, abstract ideas appear and morality becomes a formal system with a life of its own, and not just a code of practice. (Cayley, in *CBC Ideas* transcripts, 1988:3)

In Havelock's opinion, the introduction of writing, and its subsequent rise to prominence as a form of communication, led to the objectification of knowledge, something that existed outside of oneself. A mental world came into existence, as separate from the physical.

Marie Battiste, Mi'kmaw educator, has conducted research into forms of literacy among the Mi'kmaq.

Studies found that individuals in oral society are controlled by their perceptual field. (Fugelsang, 1979), are context dependent and behaviour-focused, and have well-developed observation skills. Without written guidelines for accomplishing tasks, observation becomes vitally important. Without written records to store information, members of oral

cultures have highly developed memories; elders are greatly respected as storehouses of necessary cultural information." (Battiste, 1983:38)

Many early chroniclers of the Mi'kmaq speak of the Mi'kmaq's ability for long orations filled with metaphors. (Lescarbot, 1609; Le Clercq, 1691; Denys, 1672; Maillard, 1755) These orations occurred for numerous reasons—to honour, give thanks, establish peace and so forth. One of the qualities of a good sakimaw (headman/chief) was to be a potent orator, to have ability to speak eloquently and persuasively on a topic that expressed the hearts of his people. Mentioned as well, are the gestures that often accompany the orations, and the extraordinary memories needed to recite long orations, deliver messages, read wampum belts and tell stories. Equally important was the interaction between the storyteller or orator and the assembled group

Battiste's research, *Mi'kmaq Linguistic Integrity*, in which she delves into Mi'kmaq writing traditions (from pictographs to alphabetic scripts introduced by missionaries), argues research into literacy has neglected to investigate "literacy forms and functions in aboriginal society and on social change," overlooking the cultural contexts in which aboriginal writing systems were used. She cites Shirley Brice Heath as saying, "Writing, like other systems of communication is organized in each society in culture specific ways and according to certain norms of interpretation." Battiste proposes that "Mi'kmaq literacy is consistent with the thesis that oral cultures whose tradition retained the

knowledge and history of the people had many writings that serve(d) different functions for different groups of people at different times..." (Battiste, in Barman, Hebert & McCaskill, 1987:109)

This lack of understanding regarding culturally specific forms of literacy, can be seen in the sixth grade provincial curriculum, in which the children study the history of Atlantic Canada. Included in the curriculum is a unit on the Mi'kmaq. The text, *Nova Scotia: All about Us*, includes twenty pages on Mi'kmaw history (out of a total of 311 page), with a smattering of references to their culture in other sections. Pertinent to this discussion, however, is the section entitled "Arts", which discusses various artistic traditions throughout the Atlantic provinces. Under the subsection, "Painting and Drawing," it states, "Nova Scotia has been the subject of artist's paintings and drawings from the earliest times. The Micmacs have left petroglyphs, which are simple drawings on stone." The text then goes on to describe the work of Dominic Seres, "a royal artist," whose work has "inspired many artists." (Cassidy, 1983:293)

First, these "simple drawings on stone" are not drawings. They were executed by pecking or scratching into the rock with another rock or implement (a potential lesson in geology). More important is that these petroglyphs were a form of communication that have profound meanings to the Mi'kmaq today. Volumes of writings, and years of research have been done on these "simple drawings" (Ferguson, Creed, Molineaux, et al.) and they are considered sacred to many Mi'kmaq of the present day. They have inspired a number of artists (Shirley Bear, Alan Sylliboy, among others), and are a living legend

embedded in the land attesting, if nothing else, to the presence of Mi'kmaq history. They are written history, but in a cultural form appropriate to the Mi'kmaq.

This example leads to another aspect of education which has to do with whether the content promoted in the educational materials is consistent and reflects the new constructivist principles. I have found that there are double layers of meaning, or conscious and unconscious levels to the content. What becomes evident is that a seemingly liberal, and open minded theory, designed to encourage and build on children's personal experiences and concepts, can veil underlying, and generally unconscious prejudices. These prejudices can be found in both the wording of the content itself and the choice of content. Pictures of great scientists, for instance, used in the sourcebooks, are usually from post-contact, postindustrial, white inventors. Women have made the grade, but, again, the message is relayed that intelligence began in "modern," progressive times. Native people are generally left in the past, and when they are included in recent or current history, it is more like they are tacked-on rather than that they have been included all along. Perhaps the biggest message of all is that they are, for the most part, missing from the science textbooks. Most Native content is found in the social studies curriculum.

The recent work of Claude Steele, a black, social psychologist from Stanford University, demonstrates how subtle cues can affect student performance. Steele has spent years investigating why blacks seem to consistently score lower on tests than

whites. Steele's numerous experimentations with testing blacks and whites has indicated that the subtle cues inherent in the wording of the tests trigger the minority student to fulfil a negative stereotype of failure. In one of his first experiments, he administered a difficult verbal-skills test from the Graduate Record Exam to two groups of black and white students, all of whom were undergraduates at Stanford University. One group was told that the purpose of the test was to research "psychological factors involved in solving verbal problems." The second group was told the test was "a genuine test of verbal abilities and limitations." (Watters, 1995:45)

The results showed a startling difference among the blacks in the two groups, but not among the white participants. The blacks in the group who thought they were simply solving problems, performed as well as their white peers. The other group of black students who thought they were being measured for intelligence, performed substantially poorer.

Steele's idea of stereotype vulnerability is not that the student consciously or unconsciously accepts the stereotype (as other social scientists have speculated), but rather...that they have to *contend* with this whisper of inferiority at the moment when their mental abilities are most taxed. In trying not to give credence to this stereotype, Steele theorizes the students may redouble their efforts only to work too quickly or inefficiently. The cues that can spark the vulnerability can be subtle—like suggesting the test can measure ability or making students mark down their races before the test begins. While there might be no perceptible bias in a given test or in the test-taking situation, an exam might still be weighted against blacks because the possibility of performing badly has a more devastating meaning. (Watters, 1995:46)

Steele has extended his comparative experiments, along with Steve Spencer at Hope College, to other groups—women and men, as well as white men and Asians -- to test his hypothesis. The results have shown the same "stereotype vulnerability" as were present in the black-white groupings. The statement is clear. Gender and racial stereotypes, in the form of subtle cues, can insidiously trigger students psyche in such a way that diminishes and confuses their actual potential and undermines their intellectual performance. (Walters, 1995:46)

As an example, the one reference to Native people in the Grade Four *Explorations in Science* series is in a unit entitled, "Down in the Dumps." The lessons included in the unit are intended to teach children about waste and the ecological impact poor waste management can have on the environment. The only reference to Native people in the entire book is in this section under a chapter called "The Land of Frozen Trash." Three pages are included in this chapter and discuss an Inuit community in Greenland. A photograph that spans approximately half of the first two pages is of the community strewn with trash. On the third page of the text, another picture, again approximately half the page, shows a polar bear standing among the heaps of garbage. (Campbell et al., 1992:96-98) The text talks about how these people once lived off of the land, often close to starvation. Waste was minimal at that time since every part of the animal was used. The little bit of waste there may have been was thrown out the door and snatched up by half-starved dogs and foxes. However, with the introduction of European goods,

starvation ceased (a subtle reference to progress), and waste increased. Trash, no longer recyclable, was, and is, still just thrown outside. The centre of the village is a garbage heap.

If you walk through a typical village in eastern Greenland today, perhaps the most impressive sight you'll see is the garbage mound. That's where the Inuit toss old rubber boots and tires, pieces of wooden crates, and thousands of cans. All this garbage usually lies in a giant heap in the centre of the village, sometimes piled up higher than the rooftops. (Campbell et al., 1992:97)

Subtle and not so subtle cues are given. The picture is not subtle. The text is an effort to explain why there is garbage strewn in the village—nothing decomposes in that climate and the Inuit have no alternative. Less explicit is the notion that these people are trapped between primitive practices and the coming of "civilization," and a lack of understanding of how to cleanup their environment. The text attempts to soften the image by saying we are no different in our attitudes toward waste.

Like them, our thinking hasn't changed much. Most of us still throw out our trash without stopping to think who will take care of it or where it will end up. The only difference is that we don't usually see piles of thrown-out plastic, glass, paper, and metal outside our front door. (Campbell et al., 1992:98)

Here we have the Push-me-pull-you syndrome described in Dr. Doolittle, or the confusion of mixed messages. Over half the content of these pages is the photograph, a visual impression of a trash-ridden Inuit community. Then comes the apologetic, we're-no-different and it's-not really-their-fault message. I am not proposing that no

negative images such as this one be shown, but I am proposing that it must be done within a much larger discussion and in a more balanced fashion. This picture gives an image of apathy and disregard for the environment. Nowhere in the text is there a countering of this image. One is not left with a blame for the Europeans who introduced new material goods, but with a feeling that these people are still not educated or civilized. Who would ever want to visit this community after seeing this picture?

There are many other examples throughout the curriculum, but most obvious is the lack of Native presence in the scientific material. This example was chosen because it is in one of the newest textbooks, and the textbook is based on the constructivist model of science education.

One positive example can be found in the supplementary text, *Teaching About Trees: Booklet Three: The Young Decision Maker (Ages 11-13)*—not a constructivist text—in which Native people are included in the history of resource use. The activity assigned to this chapter is for children to research how different Native groups adapted to their environment. The teacher is encouraged to ask a Native representative to come to speak to the class. It is also suggested that the students study a Native legend to understand how Native peoples "value the importance of living in harmony with nature," and that the teacher dedicate a unit to the exploration of myths of Native peoples. (Bloch & Ingleton, 1994:7)

The study of Mi'kmaw culture and history does not enter the Nova Scotia curriculum until Grade Six, yet there are places for content and experiences to be included.

For instance, the family and community is a social studies theme for first and second grades. In these units, children are encouraged to bring in and discuss their heritage, their family, their community and exchange their ideas of what it means to them. This is a good way to broaden children's understanding of different cultural ideas of family and community, but if a Mi'kmaw child is not present (or members of other cultures) then any study of their culture is left to the Grade Six unit on Mi'kmaq.

For instance, a very respected fourth grade teacher, one with whom I have subsequently discussed alternative curriculum developments, recently invited a Mi'kmaw speaker to do a presentation to his class as part of Mi'kmaw heritage month. The class went very well from everyone's point of view. However, the questions raised by the children revealed the need for a greater interaction with and understanding of the Mi'kmaq as a people of today. The questions included whether Mi'kmaq lived in wigwams, wore feathers in their hair, and other commonly held stereotypes. They revealed a complete lack of knowledge about the Mi'kmaq today, or of their history as distinct from other tribes of Native Americans.

Aside from looking at styles, content and contexts of learning, the *language* in which science is taught adds another dimension. One of the cornerstones of this Master's thesis is to look at the Mi'kmaw language as an expression of a different world view, one that could be incorporated as part of a bi-lingual dialogue in science education. Concepts of space, of personal identity, of a person's fundamental relationship with the world, the

meaning attributed to various phenomena, and so forth are deeply embedded in the language and culture. These are very difficult for people who do not speak the language, i.e. Mi'kmaq, or are not from the culture, to understand fully. This is simply because we are operating from a different fundamental logic, which is expressed in the structure of our language. As Eber Hampton points out, "ways of thinking are language-based as well as culture-based." (Hampton, in Battiste and Barman, 1995:25)

For example, research conducted among the Navajo indicates a relationship between the Navajo language and the learning of mathematics. Linguistics studies undertaken by the linguist, Rik Pinxten, and some associates, revealed that a different set of spatial concepts were expressed in the Navajo language than those embedded in the English language.

In Navajo...it is relatively easier to speak of centres than boundaries. Dynamic shapes are more commonly dealt with than static shapes, and order and position seem more salient than number. From these and other examples, Pinxten argues that concepts such as triangle and square, and operations such as counting, which are elementary for English-speaking students (embedded as they are in the language and culture) are in fact difficult abstracts for Navajo-speaking students.

Pinxten further argues that the concepts of dynamic topology and fuzzy sets, difficult and abstract as they seem for speakers of English, are, in fact, elementary to Navajo speakers. He thus turns mathematics education on its head with the suggestion that Navajo and English-speaking students require radically different curricula. For Navajo students, dynamic topology and fuzzy sets belong in the primary grades rather than in graduate school. His work also has important implications for the construction of so-called "culture-fair" tests, suggesting that this effort is doomed to failure at best and is a sham at worst. (Hampton, in Battiste and Barman, 1995:26)

Another aspect of this that will be discussed further in the ensuing chapter is the semantic categories at work in the Mi'kmaw language. One of the fundamental steps in science education is the categorization of objects. Sorting, comparing, and isolating objects into sets and subsets to discern similarities and differences. This is a natural tendency in human kind, a method of ordering one's world, establishing similarities and differences. Mi'kmaw tabus, in a sense, do this in terms of recognizing various forms of energy that should not be mixed. Other distinctions include words for formal and informal dances, types of stories, grains of woods, racial discriminations etc.

These differentiations infer that different meanings are ascribed to different phenomena that are culturally specific and purposeful. These may or may not be culturally compatible with western scientific categories. For instance, we know that in the Mi'kmaw language there exist animate and inanimate syntactic categories. As will be discussed, *why* certain objects are put in the animate category is not always obvious, but we do know that it reflects a different grammatical categorization of the phenomenal world, and possibly a different semantic categorization as well.

An analysis of any number of scientific categories could be done, and in each case different values, different qualities, that are meaningful to the Mi'kmaq will emerge. Certain body parts, for example, are animate—elbow, eyelash, knee, and vagina—while others such as eye, arm, foot, back, and lip are not. Some parts of the body are also given

nicknames and have stories associated with them. Mi'kmaw humour, along with its associative or analogising characteristic is at play.

Here again, we come up against world view, ways of defining relationships, and a host of other culturally based criteria. With each lesson taught in the science curriculum, the question of cultural criteria and different concepts of physical phenomena should be considered. Among the Maori of New Zealand, these questions are being addressed in an effort to redefine and retranslate scientific categories to teach Maori children. Like the Mi'kmaq, they have established their own education programs, and are reasserting the use of their own language as vital to the preservation of their culture. In the process of developing a dictionary of their language, they have discovered it is not just a matter of transliteration of English scientific terms into their own language (te reo Maori) but of articulating the concepts embedded in their language. (McKinley et. al., 1992:589)

Language can often be a source of miscommunication between Mi'kmaw/English speakers and non-Mi'kmaw/English speakers. This is exemplified by the courtroom work done by the Mi'kmaw linguist, Bernie Francis. Francis, in attending trials where Mi'kmaq were accused of various crimes, noticed misunderstandings were occurring between the prosecutors, judges and court workers, and the Mi'kmaq on trial, even though both were ostensibly speaking English. Francis observed that the way Mi'kmaq, who were fluent in their own language, would answer the questions posed by the prosecutors indicated they were not understanding what was being asked. Consequently, Francis began translating or

interpreting Canadian English into Mi'kmaw English and vice versa, because of a difference in concepts rather than the actual words used.

The thing which is most noticeable when an Indian walks into court—that is, an Indian who is a fluent speaker of Mi'kmaq—is...that a judge, and other members of the judicial system...makes the assumption that this person speaks English, that they understand what goes on in the court room using the English language. In fact, those people only speak, they can communicate a little bit in the English language—they can get their groceries, they can go shopping, they can ask for gasoline or whatever, but when it comes to court language, and the precision with which the questions are asked, they get very confused and they often answer questions they really do not understand. (Francis, personal communication, 1995)

Two examples were provided by Francis. The first involved the use of the words "after" and "before." When a Mi'kmaw is asked if he did something before or after the crime, he/she may give the wrong answer simply because the use of these words have a different meaning and connote a different time frame in Mi'kmaq. The word "after" for a Mi'kmaq may mean up to six months after the incident has taken place; they do not make the same assumption regarding the time duration. Mi'kmaw speakers have a more generalized sense of time and if the prosecutor is not absolutely precise in designating exactly how much time they mean before or after an incident, the Mi'kmaw on trial might appear to be lying. In court cases where the timing of events is crucial to a case, these types of misunderstandings can be lead to inappropriate sentencing.

A second example given by Francis was in the use of prepositions, again crucial in determining the precision of particular court cases. Francis discussed a case in which a

woman was asked if she shot her husband in the bed. The English language has the prepositions "in", "on", "at", "to" and so forth to designate specific location. In Mi'kmaq, there are no prepositions but rather the post position, *-iktuk*, added onto the end of the word. This ending means all of the prepositions previously stated, and is a general placing of something. Therefore, when asked if the husband was "in the bed" the Mi'kmaq speaker might reply "yes" when actually the husband had actually left the bed to get a gun and returned to sit on the bed. Such simple words as "in" or "on" can potentially change the whole case, again leading to false conclusions.

The word "we" can also lead to misunderstandings. In Mi'kmaq, there are two uses of the word "we": inclusive, meaning you and I are going to do something together, and exclusive, meaning I am going to do something with some people but you are excluded. Humorous as it may seem, the rhetorical question "What do you mean we?" is literal in the Mi'kmaw language.

Other miscommunications can occur from simply not understanding the way material is presented. Eleanor Johnson of Eskasoni teaches in the Native Studies program at the University College of Cape Breton. She often has to re-explain material taught by non-Native teachers in a way that her students understand. Often the Mi'kmaw students discover that the material was far simpler to understand once it was put in a language, or explained in a way, that matched their way of thinking. (Johnson, lecture, 1995)

Similarly, in Eskasoni, there is an upgrading program for adults wishing to complete their schooling. Shirley Doucette, who was placed in the Grade nine level, described how different it was to learn the same material from a non-Native teacher than a Mi'kmaw teacher. Shirley is an excellent speaker of Mi'kmaq, perhaps on a Ph.D. level if an equivalent with English were developed. She learned fluent Mi'kmaq from her parents, and knows many words other contemporary Mi'kmaq may not know. She has also spoken English most of her life. However, in the upgrading program, she often feels lost when the material is not taught or explained by the Mi'kmaw teacher. Many of the English words do not correspond to Mi'kmaw words or concepts, and non-Mi'kmaw teachers often assume students know words and understand concepts, which they do not. (Shirley Doucette, personal communication, 1995)

For Mi'kmaw children in the provincial schools, how will fundamental concepts that pervade the language be preserved? It is for this reason that semantic categories should be researched in developing a science curriculum for Mi'kmaw children. In my own research, as will be seen in the language chapter, I have only scratched the surface, but it has revealed that a different cultural perspective of the world exists. The difficult question is can a different perspective be part of a scientific dialogue? Can the western educational system move away from subtle hopes of assimilation to actually acknowledging and exploring different world views? Or, will separate systems of education be the answer?

Bloom's reference to clashes that can occur between two sets of cultural beliefs, which in turn can lead to revolution, reflects the current efforts by Native people throughout the country, including the Mi'kmaq, to take charge of their own education. However, there will always be Native children in the provincial system, some by choice and some by necessity. This chapter has presented a variety of issues that need consideration in developing a science curriculum that is truly cross-cultural: cultural contexts, learning styles of Native children, world views, curriculum content, and language. The constructivist model, in theory, holds promise for promoting a more holistic, culturally inclusive method of education, that if instituted, might benefit children of all cultures. However, it is a delicate and lengthy process, one that requires more research and cooperation from the Mi'kmaq.

SECTION TWO

Mi'kmaw Language

MI'KMAW LANGUAGE

[This chapter is offered with the understanding that my knowledge of the Mi'kmaw language is minimal. What I have come to know is through the kindness and patience of Bernie Francis, Mi'kmaw linguist, Dr. Margaret Johnson, elder from the Eskasoni Reserve, Wilfred Prosper, a Mi'kmaw elder also residing in Eskasoni, and John Hewson, linguist at Memorial University of Newfoundland. In addition, Doug Smith, a linguist currently teaching at Northern Lights University in British Columbia, kindly agreed to a videotape session with Bernie Francis to discuss the Mi'kmaw language. Smith was auspiciously in the Halifax area to receive an award, with Bernie Francis, for their work on developing a Mi'kmaw orthography in the 1970s and 1980s. Additional help has also been provided by Vaughen and Shirley Doucette of Eskasoni.]

“Language is the mirror of the soul,” the Mi'kmaw linguist Bernie Francis once quoted during a speech. “In fact, because of our language, not only do we see the world differently, but we live our lives according to those linguistic dictates. Because our language is comprised mostly of verbs, we naturally would see, and act, upon the world differently than, let's say, speakers of English and French, both groups speaking languages from the Indo-European stock.” (Francis, lecture, 1995)

This is the heart and key to this thesis. The Mi'kmaw language, is the first step through the looking glass into another world view, another way of knowing. The language provides a focal point for understanding both Mi'kmaw culture, and the roots of traditional Mi'kmaw wisdom and knowledge, despite cultural and social changes that have occurred since proto-historic times. Even a cursory knowledge of the language may assist in determining why there are misunderstandings and racism between Native and non-Native cultures, and why Mi'kmaw children may have little interest, or no

sense of place, in western educational systems. Simultaneously, incorporating the Mi'kmaw language into a science curriculum (whether in Reserve or provincial schools) offers the potential for enriching how we teach our children, both Native and non-Native. By acknowledging other ways of knowing and of expressing the world as equally valid in their own right, science could become a cross-culturally informed discipline.

Mi'kmaw traditional knowledge about what we call the natural world is different in both content and context from what children are taught today in western educational systems. Embedded in the Mi'kmaw language is a rich and extensive body of knowledge, and a unique way of knowing and relating with the world in its many manifestations. But, for people not brought up in the Mi'kmaw, or other Native American cultures, it requires that we suspend or see beyond our own assumptions regarding world view and the way we teach our children about the world.

There are three fundamental reasons for discussing the Mi'kmaw language. First, language is the reflection and expression of how cultures structure, give meaning to and interact with the world. In regard to syntax, language is the grammatical organizing of a culture's perception and experience of reality that best serves that culture's needs.

(Smith/Francis, videotape interview, 1994) In a semantical sense, it is the ascribing of meaning to words and word parts (morphemes), that hold the implicit values and

assumptions underlying a cultures' world view. Furthermore, language has its own cadence and rhythm, a sound unique to the culture. As the Recollet missionary, Abbé Maillard, wrote in 1755 in reference to speaking to Mi'kmaq in their own language, "I even take care of observing measure and cadence in my words and to make choice of those expressions that properest to strike their attention, and to hinder what I say from falling to the ground." (Maillard, 1758:2)

By contemplating the nature and structure of the language, and its implicit meanings, one may be able to gain some understanding of a different perceptual and conceptual framework at work. This, in turn, may challenge our own (non-Native) constructed realities, including basic assumptions and values in the teaching of the sciences.

Second, and no less important, is that the Mi'kmaw language is a continuous link from past, pre-European contact Mi'kmaw society, to contemporary Mi'kmaw culture. Many Mi'kmaq argue that their language is their culture, the loss of which would be devastating. On a number of reserves, particularly on the mainland, Mi'kmaq is no longer the language spoken in the home. Dr. Marie Battiste, former principal of the Eskasoni School in Cape Breton and currently an Associate Professor at the University of Saskatchewan, feels that without the Mi'kmaw language "we only have a culture of poverty held together by a common oppression. It is necessary to work through

people with the language and incorporate it into whatever program is being presented.

It is a delicate and difficult process to work in the two languages." (Marie Battiste, personal communication, 1993)

Third, a number of misconceptions and misunderstandings can arise between Mi'kmaw/English speakers and non-Mi'kmaw/English speakers simply because each has a different concept of what is being said. As mentioned in the previous chapter, most non-Native people do not realize that even when a Mi'kmaw is speaking English, he/she is not necessarily ascribing the same meaning to the words, or sharing fundamental concepts assumed by a non-Native English speaker. Coupled with differing cultural values, these misunderstandings can lead to racism at one extreme, or simply to a false sense of communication, or no communication at all, between the parties involved. Some examples of this have already been given. For Mi'kmaw children in provincial schools, some of whom speak only Mi'kmaq in their home, this can have a discouraging effect on their ability and desire to learn. In response, they may simply and quietly "drop out."

Despite challenges to its social and cultural integrity throughout the last five centuries, the Mi'kmaw culture has adapted and endured with surprising strength and humour. The attempts of the Federal government to assimilate the Mi'kmaq, especially through educational programs in the post-Confederation era, threatened one of the most

vital components of culture: their language. In the Residential schools, the speaking of the Mi'kmaw language was forbidden and punished. At other schools, on and off the reserves, only English was taught. Fortunately, the language survived on certain reserves, particularly in Cape Breton, where concerted efforts are being made to maintain it and increase its use among Mi'kmaw children.

Not only does the language continue to be vital to the culture, it is beautiful and filled with profundity. Its descriptive and flexible nature, and its ability to compress a multitude of meanings into a single word, reveals a world view western science has only begun to articulate in the last thirty years. It reflects a vast world of interdependent relationships, a world in constant motion, metamorphosing, and filled with the potential for new patterns, new shapes, and a variety of conscious beings with whom one interacts, honours and dances, or who one conquers. The integration of the Mi'kmaw language into a science curriculum would serve not only to preserve the language, but also to teach a world view that is an inherent part of a culture's perception of the world.

MI'KMAW LANGUAGE AND WORLD VIEW

The Mi'kmaw language is an Eastern Algonquian language that evolved and diversified from Proto-Algonquian over the last 10,000 years. When the Mi'kmaw language became linguistically distinct from other Eastern Algonquian languages (e.g.

Maliseet, Passamaquoddy, Abenaki and Penobscot) is not yet determined, but it is thought to be a least 500-600 years ago. Its linguistic differences from other Eastern Algonquian language groups have thwarted Algonquian scholars from making overarching generalizations regarding this language group. Although the Mi'kmaw language shares common roots with other Algonquian languages, it is unique unto itself. Francis gave, as an example, the Mi'kmaw words for "water" (*samuquwan*) and "stone" (*kuntew*). These words should logically share common Proto-Algonquian roots with other Eastern Algonquian languages, but these two words do not fit the Proto-Algonquian mold; they are unique to the Mi'kmaw language for reasons yet unknown. Possibly these words were adopted from another group who were not Proto-Algonquian. This group may have come into the land occupied by the Mi'kmaq about one thousand years ago as suggested by Francis' research into the language. Once (or if) this other group left or was assimilated, these words remained in the Mi'kmaw language. However, to date, this has not been proven and remains hypothetical. (Whitehead, personal communication, 1996; Francis, lecture, 1995; Smith/Francis videotape session, 1994; Francis, personal communication, 1996)

The 19th century Baptist missionary to the Mi'kmaq, Silas Rand, wrote the following description of the Mi'kmaw language, illustrating both its flexibility and descriptiveness.

The language of the Indians is very remarkable. One would think it must be exceedingly barren, limited in inflection, and crude; but just the reverse is the fact— it is copious, flexible and expressive. Its declension of nouns and conjugation of verbs are as regular as the Greek, and twenty times as copious. The full conjugation of one Micmac verb will fill quite a large volume; in its construction and idiom it differs widely from the English. This is why an Indian usually speaks such wretched English; he thinks in his own tongue, and speaks in ours, following the natural order of his own arrangement....The verb is emphatically the word in Micmac. Whole sentences, and long ones too, occur constantly, formed wholly of verbs. All adjectives of the animate gender are real verbs, and are conjugated through mood and tense, person and number....Even the numerals are verbs, and any noun can assume the form and nature of a verb without difficulty. (Rand, 1894/1974:xxxiv & xxxvii)

One of the most distinguishing factors about the Mi'kmaw language, as noted by Rand, is that it is verb-based, not noun-based as in the English language. The verb is where everything happens; it is the focus of the language with prefixes and suffixes added to determine gender, tense, plurality, animacy and inanimacy. (Animacy and inanimacy will be discussed at a later point this chapter.) This focus on the verb, and the "copious" suffixes that can be added to it, allows for extraordinary breadth and creativity of expression. It makes the language adaptable, able to forge new expressions to meet the shifting and unpredictable realities experienced in one's life. The nature of the Mi'kmaw language itself reflects the nature of the universe as being in a continuous state of flux, ever-changing and non-static. It also allows for great humour.

The following discussion, from a video session I organized (in cooperation with the Native Council of Nova Scotia) on the Mi'kmaw language, articulates this quality. Present at the session were Bernie Francis and Doug Smith, a linguist currently teaching at Northern Lights University in B.C. Francis and Smith worked extensively together in the 1970s to develop a new and more precise Mi'kmaw orthography. This orthography has gradually gained wide acceptance in the Mi'kmaw community. In response to a question regarding the differences between the Mi'kmaw and English language, they responded:

B.F. We find it (Mi'kmaq) seems to cut up reality differently as every language cuts up reality in a certain way. Mi'kmaq does it as well, and very different from English in that it seems to cut it up less in my mind. And it seems to reflect reality in a way that the English language, I find, fails to do. That is it just seems to demonstrate in its verb-like way that the world is in constant motion, constant flux. That is one major difference I find. The second thing is that even the so-called nouns in Mi'kmaq, I realize now, that you don't have to dig too far to realize that these are what I call now, recycled verbs and they just sort of changed an ending on them and made it into a noun. Words like *ikan* and *aqan* are suffixes that usually come at the end of words, which gives it that noun-like quality. But I have no difficulty showing that these are old verbs.

D.S. You [speaking to Bernie Francis] mentioned the verb-like quality of Mi'kmaq in that it reflects the Mi'kmaw world view where the world is perceived primarily as flow or as flux, movement as opposed to the Indo-European noun-centered languages which objectify the world; they turn the world into objects which can then be analyzed. They can be gotten hold of, taken apart, put back together and treated as things as opposed to the movements. In the Mi'kmaw language there is an inherent

dynamism or movement that Mi'kmaw speakers themselves are always aware of. Whereas in English, we tend to be more aware of nouns. We are a thing-oriented society rather than a movement oriented society.

B.F. I tend to picture it in the sense that the English language seems to take a photograph of the world—a still photograph—whereas Mi'kmaq is more like a videocamera. (Smith/Francis, video interview, 1994)

Another example of the changeable nature of the language came through a conversation with Bernie Francis regarding the term *Niskam*, adapted by the missionaries to connote the word “God”. Francis explained there was never one word for Creator in the Mi'kmaw language, but rather a number of different verbs, mostly transitive verbs, that articulated different processes of creation. *Kisu'lkw*, *ankweyulkw*, *jikeyulkw*, *tekweyulkw* were all words for creator. These words could become either male or female depending on the suffix assigned to each one. Their meanings are:

Kisu'lkw: the one who created us; he, she, it who (or that which) created us
Ankweyulkw: he, she or it who (or that which) looks after us
Jikeyulkw: he, she, it who (or that which) watches after or over us.
Tekweyulkw: he, she, it who (or that which) is with us

None of these words were nouns that connoted one central being as a source of creation; they are different *processes* of creation. According to Francis, all these words refer to the creator who does all these things, or can be seen as different aspects of creation. With the exception of *kisu'lkw*, when these words are used, it would be understood that the speaker would be referring to the creator each time. As transitive

verbs, these words, or any word for creator, can be conjugated four hundred different ways. These words are verbs; "they are moving and changing like the seasons all of the time." In other words, "God" is a process, a continuously manifesting, creative force.

(Francis, personal communication, 1995, 1996)

This form of the word, *kisu'lkw* is what is called "we inclusive." In this case, the "we inclusive" does not indicate whether something is animate or inanimate, male or female. The difficulty in English of qualifying whether the Creator is a "who" or a "that" is not present. The distinction made between an object and a person is not found in this form of the word. This means that *kisu'lkw* can be male or female or an inanimate object. For instance, the Creator could be an inanimate machine. All these possibilities are included in the word. If the word were given the ending "j" it would be exclusively inanimate. If it were to be given the ending "t" it would be exclusively animate and be referred to as "he" or "she". In Mi'kmaq, an object can be animate or inanimate depending on the status of the word. However, Mi'kmaq always look on the Creator as animate and therefore it is implicitly a "he" or "she." (Francis, personal communication, 1995, 1996)

The early missionaries had difficulty with the Mi'kmaw view of creation. First they were faced with a world view that experienced the universe as fluid and transforming, as was their concept of "God". In addition, it was difficult for the missionaries to perceive God as being both or either male and female. In reaction, the missionaries, in need of a

word to communicate the abstract notion of God, alighted on the word "Niskamij" which means "grandfather", "step-father", and "father-in-law." This is both a literal term for a kin relation, and an honorific form of address. It was also used to address the sun, whom the Mi'kmaq attributed with creating the various worlds, and impregnating the earth from which all life sprang. (LeClerq, 1691/1968:84; Maillard 1758:47-48) Nailing the concept down further, the "ij" ending was dropped by the missionaries, and the word evolved to connote an unchanging, masculine God.

Translated into English, the profundity of Mi'kmaq is often lost. The conventional assumptions of objective and subjective experience are inherent in the English language and assumed in the usual presentation of the scientific method. English translation distorts the dynamic and interdependent world view offered by the Mi'kmaw language. There is no absolute split between the "inner" world and the "outer" world, or the spiritual and physical in the Mi'kmaw world view. Things exist in relation to one another, in shifting patterns of energy.

This associative or relational aspect of the language is fundamental and important in demonstrating the interdependent and fluid quality of the world. Things are spoken of in relation to something else. An example of this is the translation of the Catholic blessing of oneself. The Mi'kmaw language does not have a separate word for "father." The notion of father must be attached to a possessive pronominal marker. *Nujj*, for instance

means “my father,” with the ‘n’ being the possessive pronominal marker indicating ‘my’, but no independent word exists (i.e. *ujj*) for father. Because the Mi'kmaw language does not allow for the existence of a father without a child, or a child without a father, this blessing had to be translated to reflect that relationship. In Mi'kmaw the blessing would be, *Tu'nteluisit wekwisit niskam*, which translated means “In the name of the father who has a son,” and *eujit niskam weji-wli-niskam* which means “in the name of the son who has a father.” In Mi'kmaq, if a father lost his child, the absentative case would be used to designate the deceased child, and the person would no longer be a father by virtue of having no one to refer to him as such (if this was his only child). The deceased child would be referred to as *nijanaq*, which means “my child” in the absentative case. If someone was referring to the father who had lost the child, he would say “*wunjanip*” meaning “he or she had a child.” The endings, *-aq* and *-ip*, on these words indicate the absentative cases. The absentative case is used all the time, according to Francis, to indicate someone whose consciousness is no longer here. It could refer to a person sleeping. (Francis, personal communication, 1995 & 1996)

In English, the word “father” can stand alone, separate from a concrete relationship, and become an abstract concept. The notion of a Jesuit priest “father” who had no son or visible kinship ties was anomalous and abstract to the Mi'kmaq. How could an individual exist in isolation from some form of a relationship?

This relational quality of the language extends to the Mi'kmaw relationship to the environment. A simple demonstration of the inseparable relation between the environment and all things, mental or physical, occurs in the words for colours. Except for the four colours—red, black, white and yellow (also the colours used for the four directions)—all colours are associative, or "analogised" as Francis terms it. Even these four, however, are thought to have derived from Proto-Algonquian words that associate them with blood (red), light/sunlight/dawn (yellow and white), and ash (black). Other colour terms mean "like the sky" (blue), "like the fir trees" (forest green), etc. Thus there is no way to describe the colour of blue and green rocks, or even a dream of blue and green rocks, without ascribing to them a connection, or relation, to the sky and fir trees. (Francis, personal communication, 1995; Hewson, personal communication, 1996, Whitehead, 1982:71)

Furthermore, all colours—including black, red, yellow and white—are verbs. They are intransitive verbs which can be conjugated. The translation of "*maqtewe 'k*" (black) means "in the process of being black", inferring that there is no fixed state of blackness, but rather a stage in a process that could change.

This relational aspect can also be seen in the extension of kinship terms, which we generally associate with human relationship terms, to animals, stars, and other beings. All animate beings are, or have the potential for being, one's relatives and taking human shape. Therefore, kinship terms would naturally be applied. A Kluskap story recounted by Jerry

Lonecloud involves the use of the kin term “uncle,” *nklamuksis* (my uncle: *klamuk* means “he who looks after us”) in reference to a whale. [This translation is unedited and the Mi'kmaw terminology has not been transposed into the Smith/Francis orthography.]

On the Island Sighignish, Glooscup's [Kluskap's] niece (they/the animals and birds/were human then) was in the woods w(ith) bow and arrow shooting small game such as squirrels, rabbits, animals for their prey, and other small animals. When she returned she found the people in the encampment had left in their canoes to go to the mainland when Glooscup [Kiuskap] required them. She didn't know how to get to the mainland. Finally, she saw a whale passing by. She said to the whale, "Uncle, will you be so kind as to take me to the mainland? I am here all alone." So he said, "Yes, I will take you but I can't take you on dry land. But, she said, "Well take me as near as you can." (Dennis/Lonecloud, PANS, MG1, Vol. 2867, Notebook #2:11)

In Rand's retelling of the legend, “The Two Weasels” (also in another version entitled, “The Badger and the Star-Wives”), two sisters inadvertently, by choosing their favourite stars while lying awake one night, cause the stars to transform into humans and become their husbands. Similarly, in sweat lodges, each round of the sweat ends with *No'kumaq*, “all my relations,” and refers to all of creation.

Here we begin to glimpse the interchangeability of energy, the shape-changing quality of the world, seen throughout Mi'kmaw legends, and embodied in the language. Humans commonly shape-changed into animals, birds, plants, rocks and other-than human beings, and vice-versa, in legends. Birds and animals were said to come from the stars. Marriages occurred frequently between animal “Persons’ and humans, or other

beings. As will be seen later in the discussion on animacy and inanimacy, plants, rocks, mountains, thunder, and many geographical features were conscious beings that could change shape unpredictably and at will. (Whitehead, 1988:12)

People also had “animal helpers” or personal alliances with animals, whom they could call upon for assistance, protection or guidance. Both their “spirits” were interchangeable, and inseparable in essence. Whatever happened to one, no matter what form either one was manifesting, affected or transferred to the other, i.e. when the moose leg bone gets broken, the man’s leg also breaks.

This extended to community or family totems, or animals that were particularly significant to the family. (Family, in this case, was an extended family, involving a network of relationships that most likely formed a community.) It was and is the most important social unit of the Mi'kmaq. In one story by Silas Rand, an orphaned boy is brought up by a bear, later retrieved by his village, and from then on carried the name *muin* as his family name. Because of this connection, the family were never to kill bears. The descendants are said to be the Thomas family from Pictou Landing, whose Mi'kmaq name is Muin. (Wallis and Wallis, 1954:431; Rand, 1894/1971:259) The name Googoo comes from the word for owl, *kukukwes*. In Prince Edward Island, Snake was a common name. The word *ntutem* (totem) is derived from the Algonkian word *neto:te:mu* meaning “my family group.” It is cognate with the Cree term *nito:te:m* meaning “my relative” or, as a

term of respect, meaning "spiritually a member of my clan." (Hewson, personal communication, 1996)

In essence, everything was related and thus required that a person act with proper decorum. One could not take these relationships for granted, but needed to respect and honour them properly. Offerings, gift-giving, and proper conduct were ways a person fulfilled one's obligations to others for the gifts they were given. Gift-giving was an inherent part of Mi'kmaw culture, whether in the form of dance, song, feasts or material presents. No chief visited another without bringing gifts. (Maillard, 1755:4) They in turn would be honoured by feasts, dances, orations and many other forms of offering. If one person harmed or insulted another, they would atone by giving gifts. These were a way to acknowledge relationships and maintain the proper balance within the many levels of existence. Life was a continuous and fluid exchange.

One pertinent and final example of the relational quality of Mi'kmaw world view is the Mi'kmaq word *kamulamuk*, the heart. In this word, the intuitive and intellectual, or the cognitive and emotive, are inseparable. The whole concept embodied in this word is better translated "heart/mind." When a Mi'kmaq speaks, it is from the notion of mind and heart being inseparable, not simply that the mind is a function of the brain. A Mi'kmaw speaker might say, "*Atelewey nina kamulamuk*" or "And then I said in my heart..." meaning heart/mind. (Francis, personal communication, 1995)

A number of dualisms—physical/mental, intuitive/intellectual, rational/emotional, objective/ subjective—inherent in western science, are missing. Implicit in the word for heart, is the notion of mind. You can not have mind without heart. The question arises whether anything can be extracted and isolate^d from the relationship or constellation in which it occurs, e.g. can a father exist without a son?

This last question has been a challenge for western scientists. How does the experimenter affect the experiment? At its foundation lies the question of where does man/woman fit in with the rest of nature? How do humans perceive themselves? Is he/she above it, the highest rung in the great chain of being, the great product of evolution, the pinnacle of civilization? Does nature exist in a pristine form without human interaction?

The question of how man or woman perceives his/her "place", or finds identity in the universe varies within different cultures and runs through all levels of existence, from the mundane to the metaphysical. It affects how people relate with space, or how one positions oneself in social interactions. It influences how people address one another, use and view their bodies and body parts in various social contexts, and relate to their environment. It may also affect how a child reacts or responds to a teacher and a teaching situation, and the material being taught.

During a conversation with Francis, we compared the difference between the Japanese, Mi'kmaw and English languages in terms of articulating seeing a mountain from a first-person point of view. As a reference for this conversation, I used Joachim-Ernst Berendt's book entitled, *The World is Sound: Nada Brahma*, in which he contrasts the Japanese concept of self as seen in their language structure, to the Western concept of self. In Japanese, Berendt explained, seeing a mountain would be expressed as "mountain seeing," (Yama ga mieru) versus "I see the mountain," in English. Berendt writes:

Our Western concept of logic is strongly conditioned by Western language. It cannot be an accident that Aristotelian logic came into being in classical Greece, in whose language the separation of subject and object, common to all Western languages, found its first clear expression and was immediately realized, in a magnificent, graphic manner, that was never duplicated by subsequent systems....By way of contrast, the thinking behind the Chinese and Japanese languages does not move in a straight line from the subject to the object with the aid of the verb. It circles around its object and envelops it until it is specified as precisely as the objects in our Western languages (which presupposes an inner predicate); in fact, specialists feel that these Asian languages are even more precise since they do not simply "objectivate" but rather let subject and object "become one" so that the active and passive mode fall together. (Berendt, 1983:46-47)

Berendt provides examples of the differences between the Japanese and English language in structuring how a person expresses his/her relationship to the world. He notes that in Japanese, "there are almost no subjects or objects. But the strange thing is that they have not been excluded but rather have become fused....Furthermore: not only

are subject and object one; the difference between the active and passive mode is also unnecessary.” He further hypothesizes that our western concept of discourse, based on linear, logical thinking, and exemplified in Hegelian dialectics, places contradictions in opposition, in contrast to a circle (a symbol in Zen of unification and oneness, and important to many Native American traditions including the Mi'kmaq) which “leads contradictions toward each other, assimilating contrasts and embracing them....”

(Berendt, 1983:46-48)

Natalie Goldberg supports Berendt's contention further:

Our language (English) is usually locked into sentence syntax of subject/verb/direct-object. There is a subject acting on the object. “I see the dog—with this sentence structure, “I” is the center of the universe. We forget in our language structure while “I” looks at “the dog,” “the dog” is simultaneously looking at us. It is interesting to note that in the Japanese language the sentence would say, “I dog seeing.” There is an exchange or interaction rather than a subject acting on an object... We think in sentences, and the way we think is the way we see. If we think in the structure subject/verb/direct-object, then that is how we form our world. By cracking open that syntax, we release energy and are able to see the world afresh and from a new angle. We stop being so chauvinistic as *Homo sapiens*.
(Goldberg, 1986:62)

In Mi'kmaq, Francis explained, the relationship is indicated by the inflectional ending at the end of the verb. Although the Mi'kmaw language has a pronominal system, pronouns would generally be used only to add emphasis. The following is an extract from our conversation:

- B.F. *Nemitu*, even though it doesn't take the 'I', it's understood that I am the one seeing the mountain, by inflections. Whereas *nemitmk*...definitely the subject is indefinite. There is no predicting who is seeing the mountain. It's just saying "the mountain is seen," but that's all. And it all happens in the one word.
- T.S. So there wouldn't be a distinct separate word for self? It would only be inferred by the inflectional ending added to the verb?
- B.F. That's right...It's not necessary to use any of the pronouns...I mean the pronouns "I" doesn't come into any of those words. It doesn't because when you see the inflection, that gives you a hint....
- TS. Is that back to what you were saying about Mi'kmaq being verb-based? The emphasis is on the verb. The connection, the relationship is already in the word, and you simply add, by inflection, what is relating or being connected to what. In English, it is more the other way around, like you are here, and the mountain is there, and then you create some activity or connection to bring the two together.

BF. That's right.

This conversation reveals a subtle difference that exists between the English and Mi'kmaw language. The difference lies in the relationship already being acknowledged present and ongoing in the Mi'kmaw language. The subject and object are merely tacked onto this already-existing relationship. They are inferred through inflectional endings. In English, however, the subject and object are established before the relationship (the verb or verb phrase) is added to bring the two into contact.

Although the Japanese and Mi'kmaw languages may differ in other respects (a subject I am unable to address), a certain principle seems to underlie the two languages—the placement of the self in the language structure is not the central feature. The self is part of a circle or web of relationships, not the central reference point of the universe. Francis, in yet another conversation elaborated.

Well, you know, of course it seems as though the Mi'kmaq himself, herself, doesn't put themselves, herself, in the forefront of anything in that they seem to—and the language is structured this way—leave themselves second to other things, other people. It seems like the focus will be on another individual first and then the speaker will be second. So, it just seems to be structured that way, in that they're not up front. And I suspect that that's probably very deep in the culture, deeply ingrained into the culture, and as a result of that, that particular cultural trait, chiefs were chosen. So, how were they chosen? Well, of course the best provider, the person who was the best protector, would be the one who would be chosen to lead, or to be the chief of a particular community. It wasn't as a result of you having accumulated a lot of wealth, which in those days might have been food, furs, whatever, you know, or even strength, bodily strength. That wouldn't be the reason why you would be chosen. You would be chosen as a chief because you would put yourself second for everyone else which means that you were a protector, you were a provider, and you used your skills and your strength, and your knowledge and your wisdom to protect the community. (Francis, personal communication, 1994)

This topic of personal identity or how a person perceives their place in the world will be discussed further in the next chapter on “Traditional Principles of Learning in Mi'kmaw Culture.” It has been introduced at this point to illustrate how world view is so deeply ingrained in the language.

Animacy and Inanimacy

Another major characteristic of the Mi'kmaw language is the distinction between things which are animate and those which are inanimate. This distinction can be considered in two lights: syntactically and semantically. The latter is a continuing source of debate for scholars. From the purely grammatical point of view (syntactically) all nouns, according to Doug Smith, in the Mi'kmaw language can be put in one "basket" or the other—animate or inanimate. Discerning between the two can be done by observing a number of suffixes, which indicate animacy. Inanimate words would not have these suffixes. Animate words also take a certain plural ending. Furthermore, nouns endings must also agree with the verbs in terms of animacy, inanimacy and plurality.

(Smith/Francis, videotape interview, 1994)

According to Doug Smith, from the grammatical point of view, the largest and most consistent category of animate beings are humans and "zoologically alive entities", with other noun categories, such as flora, being inconsistent, or following no set rule for animacy or inanimacy. (Smith personal interview:1995) For instance, strawberry (*atuominkin*) and raspberry (*klitew*) are animate while blueberry (*pkwiman*) is inanimate. Tobacco (*tmawey*) is animate as are potatoes, but apples are inanimate. (Smith/Francis video interview, 1994; Hewson & Francis, personal communication, 1995)

When one approaches the semantic level, the question of animacy and inanimacy takes on a deeper significance of trying to determine world view. What criteria are, and were, at work in the mind of the Mi'kmaw speaker to intuitively, perhaps unconsciously, designate an object as inanimate or animate? The process continues into the present day as new material objects are introduced into the culture, with some Mi'kmaq regarding them as animate and others as inanimate. Harold McGee, Professor of Anthropology at Saint Mary's University in Halifax, raised the following questions during the previously cited videotaped discussion with Francis and Smith. Are animate and inanimate the best or only semantic categories that could be applied to the Mi'kmaw language or could other categories, such as shape, duality, size etc. be used? Should animate and inanimate designates remain purely in the syntactical realm and not be used to determine the deeper levels of meaning at work in the culture? Are the words animate and inanimate too "loaded" with meaning from the English speaker's point of view to be applied to Mi'kmaw language?

In response to McGee's questions, Smith stated that there may be other semantic categories at work, but they are purely a question of semantics and would be found by investigating the word parts or morphemes. No matter what the answer regarding semantics may be, it remains that animacy and inanimacy are distinct grammatical categories that are designated by specific suffixes. On the other hand, John Hewson, a

linguist at Memorial University in Newfoundland currently working with Francis, stated, "It is obvious that animacy has to do with life....What is at stake in Alg[onquian] is clearly 'manitou power'—a spiritual element. Even if we know this much, the details have not always been worked out." (Hewson, personal communication, 1995).

Francis cautions not to make too big a deal out of these distinctions. On the other hand, Mi'kmaq have said to me time and again that everything in creation has a spirit. This question is still under debate among linguists, and one that requires far more research. Whatever the ultimate outcome of this debate, the nature of the language still remains as it has for thousands of years—fluid, shape-changing, and multilayered.

There are, however, some interesting insights that Francis has offered. Francis hypothesizes that animacy may have to do with the level of importance an object might have in one's life and survival, or to the working of a mechanism. For instance, a town bus on the Membertou Reserve in Sydney is inanimate, whereas on the Eskasoni Reserve it is animate, perhaps because Eskasoni, being further from Sydney, is more reliant on the bus for transportation. The door frame around a door is inanimate but the door itself is animate. Furthermore, a television as a composite of frame, tube and wires, is inanimate, but when the outside box/frame is removed, the picture tube itself is animate, possibly because it is what is necessary for images to appear on the television. Refrigerator is animate, possibly because of its necessity in preserving food. However,

the logic breaks down by Francis' own admission. A car in both Eskasoni and Membertou is inanimate, whereas a motorcycle in Membertou is inanimate but animate in Eskasoni.

Another aspect to consider is that an object can change from animacy to inanimacy depending on its function or use. The word *k'muj* (tree) is animate. The same word can refer to a stick lying on the ground, but is inanimate. But if the stick was made into a bow, the entire bow including the stick would be animate. Or, if plasticine (inanimate) is moulded into a human figure, it becomes animate. Nicholas Denys described a Mi'kmaw burial in which a copper pot was placed in a grave, along with other items, and punctured with holes. These goods were to serve the deceased in other realms of existence. Denys, in an effort to disavow the Mi'kmaq of their beliefs, tried to argue nothing had travelled to the other world. One of the Mi'kmaw replied:

Do you not indeed see," said he, rapping again upon the kettle, "that it has no longer any sound, and that it no longer says a word, because its spirit has abandoned it to go to be of use in the other world to the dead man to whom we have given it? (Denys, 1672/1968:440)

Similarly, a mountain is sometimes animate and sometimes inanimate. Rivers, lakes, and streams are inanimate but stars, sun, moon, and thunder are animate. The word thunder translates as "the ancestors are raising their voices." In another story recorded by Elsie Clews Parsons, "They Fetch Summer," three brothers go to ask

“Sky”—seen in human form—for warm weather. Similarly, there is a type of sleet that forms a blanket of ice over the branches of trees that crackles when it moves. This too is animate, whereas other types of ice may be inanimate. (Smith/Francis, videotape interview, 1994; Parsons, 1925:74)

But still another level emerges, that, in my mind, has to do with the way the Mi'kmaq experienced and continue to experience the world. This experience seemed to enfold many levels into everyday reality, bringing the metaphysical or invisible into the tangible and physical or articulated realm of experience, and creating relationships with “objects” that non-Natives might term inanimate. For instance, there are a number of sites throughout the Maritimes termed “Grandmother” or “Grandfather” rocks. These rocks have legends associated with them of Kluskap (the legendary Kinap, or powerful hero) turning his grandmother or grandfather to stone. Offerings, such as punk or tobacco would be made at these sites when Mi'kmaq travelled by. However, the term for rock, *kuntew*, is an inanimate noun. When the question is posed how something inanimate, rock, could be viewed as a Grandmother, one sees that it is not the outward image alone but the experience of the rock that brings it into the animate realm.

Francis explained, if someone is turned into a rock, or you say, “I am a rock,” then it becomes an intransitive verb, *kundewalut*, *kundewasit*, *kundewalisat*. However, in the case of Grandmother (and Grandfather) rocks, the rock is no longer a rock but becomes

a Grandmother, or whatever it is attributed with being. If, for instance, a rock is shaped like a bear it might become animate, but the rock would be referred to as a bear, and cease to be a rock. So the experience of the rock is that of a bear, and therefore, it is a bear or bear-like, and one relates to it as a conscious being. It is for this reason that it becomes animate rather than inanimate. (Francis, personal communication, 1995)

The world is pregnant with potentialities for rocks or other objects to become animate beings with whom one can interact and communicate. Certain objects might have particular attributes and be considered to be sources of power one might keep in his/her possession to increase one's personal power. An underlying play of energy is at work which infuses the form with animacy and consciousness. This may be reflected in the external form of the rock, for instance, in a shape that resembles a bear. As Jerry Lonecloud described one Grandmother Rock, she has a blanket over her shoulders, and a table by her side. (Lonecloud, in Dennis MG1, Vol. 2867 Notebook #1:4)

The flexibility of the language allows these semantic shifts to occur. Therefore, things can shift from becoming inanimate to animate depending on what form the energy takes and how someone experiences them. Throughout Mi'kmaw legends these shape changes occur continuously. An island or rock becomes Kluskap's canoe; an inanimate stick becomes part of an animate bow. The Mi'maq recognized and experienced the world as filled with an underlying pattern of energy which can, manifest in different

forms as conscious beings, often unpredictably. As seen in the legends, some of these beings are powerful, both in a negative and positive sense.

According to Francis, the Mi'kmaq make these semantic shifts all the time. We, in the non-native world tend to separate these levels of experience, and do not allow ourselves to readily articulate or give credence to these experiences. Sometimes English does it through giving gender to an object such as calling ships "she" or personification, but this is more a tendency to project anthropomorphic qualities on objects than to truly experience them as conscious beings in their own right.

A. Irving Hallowell's insight into the ascription of animacy and inanimacy among the Ojibwa, a central Algonquian speaking tribe, is pertinent and insightful. Hallowell related the following story:

Since stones are grammatically animate, I once asked an old man: Are all the stones we see about us here alive? He reflected a long while and then replied, "No! But some are." This qualified answer made a lasting impression on me. And it is thoroughly consistent with other data that indicate that the Ojibwa are not animist in the sense that they dogmatically attribute living souls to inanimate objects such as stones. The hypothesis which suggest itself to me is that the allocation of stones to an animate grammatical category is part of a culturally cognitive "set." It does not involve a consciously formulated theory about the nature of stones. It leaves a door open that our orientation on dogmatic grounds keeps shut tight. Whereas we should never expect a stone to manifest animate properties of any kind under any circumstances, the Ojibwa recognize, a priori, potentialities for animation in certain classes of objects under certain circumstances. The Ojibwa do not perceive stones, in general, as animate, any more than we do. The crucial test is experience. Is there any

personal testimony available? In answer to this question we can say that it is asserted by informants that stones have been seen to move, that some stones manifest other animate properties, and, as we shall see, Flint is represented as a living personage in their mythology. (Hallowell, 1976:362-363)

Hallowell raises some further questions. The first is that even the allocation of animacy to "culturally constituted cognitive sets" does not mean every stone will manifest animate properties. What, in Hallowell's opinion, is attributed to stones by the Ojibwa is the potentiality for stones to manifest animate properties under certain circumstances. Continuing on with his hypothesis, Hallowell recounted a story whereby a farmer had dug up a stone in his field that he thought belonged to the ceremonial pavilion of the Ojibwa. The farmer returned the stone to the ceremonial leader of the pavilion who proceeded to ask the stone if it had ever been part of his pavilion. The stone replied in the negative. Hallowell observed that the stone was treated as if "it were a 'person,' not a 'thing,' without inferring that objects of this class are, for the Ojibwa, necessarily conceptualized as persons." The Ojibwa's use of speech raised the "animate status of the boulder to the level of social interaction common to human beings."

(Hallowell, 1976:364)

Whether this applies to the Mi'kmaq is beyond the scope of my knowledge. A number of legends, however, seem in keeping with Hallowell's observations. A creation myth, recounted by Jerry Lonecloud to Clarissa Archibald Dennis in 1924, has a similar

theme but with the exception that Kinap blows life into the stone image, bringing it to life. The following is the unedited version of his story with a few corrections added in brackets for clarification:

Ginup [Kinap] was greater than Glooscup [Kluskap]. Found stone image that was like a person. Come up to it and it looked so like a man he spoke to it and asked, "What are you doing here?" No response. Asked the second time and no response. Third time he stooped and blew his breath in images' mouth and he came to. He said, "Sit up," and he sat up. "Stand," and he stood up. "Walk," and he walked. "Stop," and he stopped. He named him Glooscup. Ginup says to Glooscup, "I have not finished this place. There is a lot of riley water." Wanted water clean for fish...[The story continues on about Kluskap's role in creating the world.] (Lonecloud, in Dennis, PANS MG1, Vol. 2867, Notebook #1:80)

Here a stone did not manifest life yet had the external appearance of a man. It appeared inanimate until it was infused with life energy. Similarly, other matter can be infused with animacy. The language allows for the potential to shift from animacy to inanimacy, or vice-versa. As discussed with Francis, the experience of the stone or rock as having some sort of consciousness, power or sense of animacy, combined in some cases with physical attributes of the stone, may contribute to animacy being ascribed to it. This, in turn, raises the possibility of a differentiation being made between the grammatical ascribing of animacy to an object, as pointed out by Smith, and the object actually being experienced as and attributed with animate properties with whom one can relate.

What is not discussed by Hallowell are "objects" that are inanimate becoming animate. For instance, rocks are inanimate in Mi'kmaq, but have the potential to become animate, or change to other noun categories that are animate (bears, grandmothers, etc.). In the Ojibwa, rocks are all classified as animate, but only some manifest animate characteristics, and can be related to like humans. Therefore, the question still remains, what is animacy, or what gives an object animate properties, ones with whom/which a relationship can occur, who/that have a consciousness, and can be very powerful in both a creative and destructive sense. What is the underlying psychological basis for ascribing animacy to an object and does it matter in the context of understanding world view?

Whatever the answers to these questions, the flexibility of Mi'kmaw language allows for the articulation of the a world filled with potentiality for things to metamorphose and manifest animate properties. It is a world filled with social relations, with objects and "persons" that are not necessarily of human or animal form, or attributes familiar to non-Native thinkers. This is mirrored in the legends, where animals, rocks, stars, people, plants, thunder, lightning and so forth, as well as a pantheon of other-than-human beings, shape-change, unpredictably and at will. In Ruth Whitehead's words:

To the Old Ones of the People, Creation itself was fluid, in a continuous state of transformation. Reality was not rigid, set forever into form. Here form changed shape according to the will and whim of the Persons

manifesting those forms, at any given moment. This Creation is clearly depicted in Micmac stories: not only through their content, interestingly, but through their basic structure and the language in which they were told....

Modern science maintains that all matter is energy, shaping itself to particular patterns. The Old Ones of the People, took this a step further: they maintained that patterns of Power could be conscious, manifesting within the worlds by acts of will. They thought of such entities as Persons, with whom one could have a relationship. (Whitehead 1988:2-3)

This same quality is still present in Mi'kmaw culture. I have heard the term, *Wiklatmujk*, or "small people" (not human), mentioned a number of times. Ghosts, telepathic experiences, forerunners, dreams as messengers, and a host of other experiences are still meaningful to a number of Mi'kmaq. These are not mere superstitions as some (even Mi'kmaq) might say, but the way the world is experienced and articulated. It illustrates a different perception of how the world works and how one relates with it. This seems important to remember in teaching the sciences.

Concepts of Time: Past, Present and Future

Concepts of time, or alternatively, the way(s) cultures order space, can also be approached in terms of the language. Because the Mi'kmaw language is so flexible, a multiplicity of levels can be expressed in one word. In a sense, there is no past or future, at least not in the English sense of the word. What occurred is still occurring now. One of the difficulties Mi'kmaq have encountered in writing English papers, is that they often

tell stories in the present tense, as though something happened long ago was happening now. (Francis, personal communication, 1996)

Benjamin Whorf's research and analysis of the language of the Hopi Indians of the southwestern United States defied notions of cultural universality in articulating and ordering perceptions of time and space. Whorf's research illustrated that the Hopi mental construct of the universe, as expressed in the Hopi language, was premised on a completely different paradigm of what English would term time and space.

[The Hopi language] contained no words, grammatical forms, constructions or expressions that refer directly to what we call 'time,' or to past, present, or future, or to enduring or lasting, or to motion as kinematic rather than dynamic (i.e. as a continuous translation in space and time rather than as an exhibition of dynamic effort in a certain process), or that even refer to space in such a way as to exclude that element of extension or existence that we call time, and so by implication leave a residue that could be referred to as time. Hence the Hopi language contains no reference to "time," either explicit or implicit. (Whorf, 1956:122)

Furthermore, the fundamental Hopi concepts could only be feebly alluded to in the English language, given the fundamental structuring of the English language, and its implicit notions of time and space. Hopi language has no past present and future, no linear evolution. (Whorf, 1956:122)

It is not exactly the same in the Mi'kmaw language, according to Francis, but there are similarities. Mi'kmaq has past time and future time but sometimes the use of the past

tense has more to do with the consciousness not being there at the moment. An example provided by Francis was of a person sleeping in a room where others are conversing. The sleeping person might be referred to as not present because his consciousness is not present; he is sleeping. The mental presence vs. the physical presence is the determinant. Conversely, stories in the Mi'kmaw language are commonly told in the present tense because the storyteller is bringing the past into present consciousness as if it were happening this very moment. When the past is brought back to consciousness in the present-tense form, it is because it is being reawakened or happening in the mind of the speaker. Mi'kmaw students have had difficulties in writing English essays because of their lack of use of tense delineating time and sequencing events in terms of western logic. Many have been written papers they felt were good, only to receive a low grade. Upon inquiring the reason for the low grade, they were invariably told they did not have proper grammar, and their logic needed sequencing. (Francis, personal communication, 1995) One Mi'kmaw woman who recently entered university told me that an elder, who had completed university, advised her she would do fine if she just learned to think in a linear fashion.

In my personal experience listening to Mi'kmaw elders tell a story, they seem to spiral inwards from the general to a specific point, then out again, as though first creating a landscape out of which something arises. This at first was frustrating to my own "get

to the point" upbringing, because I would often be asking a specific question of an elder, to which I expected a specific answer. Instead, a story would unfold that would initially appear unrelated until, suddenly, the answer would arise within the story. Listening to the tape of the interview later, it became evident that the elder had provided an incredible amount of information that embellished the point for which I was searching; he or she had provided context and shared his/her experience with me. I have also noticed that elders can begin at any point in a story, not conscious of chronological time. During a newspaper interview with an elder, she would "drop in" at various points in the story, unaware that the interviewer had no idea of the connection or time frame from which she spoke. The interviewer never quite got the story right.

Similarly, traditional Mi'kmaw legends do not necessarily have conclusive endings, which is what may have prompted the Baptist missionary, Silas Rand, in his rendering of Mi'kmaw legends, to add finalizing sentences to the end of some of the stories. For example, Rand wrote at the end of "The Magic Dancing Doll," "Here the story abruptly ends. One feels strongly inclined to supply what may be supposed a 'missing page'...." (Rand, 1894/1971:13) The stories themselves do not always follow a logical sequence, but according to Harold McGee, the emphasis is more on the storyteller's ability to link events to particular kinds of characters. (McGee, personal conversation, 1995)

Feast orations were an inherent part of traditional Mi'kmaw events honouring the host or an esteemed guest. During these orations, Mi'kmaq would regale the host for hours with exaggerated praise of the honoured one's ancestry. In so doing, the past was continually brought into present consciousness. One did not forget their place in the world and how to live appropriately, honouring the virtues their ancestors had bestowed on them. (Storytelling and orations will be discussed more in the chapter on “Major Forms of Transmission.”) Similarly, at pow-wows, people speak about the ancestors being present, as though all levels of the apparent and not apparent phenomena are always present in each moment. At spirit feasts, Mi'kmaw traditionalists, or Mi'kmaq who have chosen to practice Native spirituality, say you are eating for all the ancestors when you eat. When I requested just a little serving of potatoes at one such feast, the food server heaped mounds on my plate—with a smile, of course. In sweat lodges, pipe ceremonies, and smudges, the ancestors are invited or invoked into the circle. They are present. My personal feeling in these situations is that time collapses into a plane on which past, present and future co-exist.

The Mi'kmaw language does have a simple past tense, a future tense, a reported past, an "if conjunct" past tense, and an "if conjunct" future tense. The simple past is used most often when it is necessary or important to be specific, or to use as emphasis for a point. The past time is often for a consciousness not presently there, or to

deliberately distance oneself, i.e., "I was drunk but I am no longer." The following examples were provided by Francis.

telusi: present - "My name is..."
teluiap: simple past - "My name was..."
tluisites: future - "My name will be..."
teluistass: reported past - "It is reported that my name is..."
tluisikapn: if-conjunct past - "I would have been called _____, if..."
tleuisikk: if conjunct-future - "I will be called _____, if..."

John Hewson, upon my request, gave a synopsis of the use of tenses in Mi'kmaq.

However, the subject matter goes way beyond the scope of this thesis. The following, as Hewson said, are the basics: Hewson wrote:

So let me concentrate on the basics, and say that as far as I know there is no Algonkian language that has tense distinctions, i.e. that divides a representation of Universe Time either binarily (Past vs. Non-past as in English) or ternarily as in French (Past, Present, Future). Here you have to recognize that the future in English is not represented by tense but by aspect, using a modal auxiliary, 'will/would' which has the same two tenses as any other verb in the language.

Micmac has, as far as I can see, only one tense, a vast present, which can be used to represent both past and future events as well as what is ongoing. This is what is called the **Present Indicative** in Pacifique, but called the **Neutral** by Proulx [Paul Martin Proulx] in his PhD thesis [*Micmac Inflection*, at Cornell in 1978]. What is called the **Past Indicative** in Pacifique is a mixture of two modal forms that do not occur in Indo-European languages, called **Attestive** and **Suppositive** by Proulx.... The Attestive represents an event witnessed by the speaker, the Suppositive an event of which the hearer only has hearsay knowledge. Both of these, by their very nature, can only be used of events in past time, but they are nevertheless modes, not tenses, in much the same way that the English future is an aspect, not a tense. Consequently Micmac

speakers who do not wish to use either the Attestive or the Suppositive for a past event, will use the Neutral, and Micmac speakers have all kinds of problems with tenses and sequence of tenses in writing English, because their own language has no tense distinctions.

What Pacifique calls the Future is called the **Potential** by Proulx, and is basically a representation for an imaginary event, which if it is to be realised, must necessarily be sometime in the future. Again this would appear to be a modal representation. (Mood concerns the status of the event: possible, probable, actual, necessary, etc, hence the adjective "modal").

In the past ten to fifteen years many Algonkianists have begun to realize the important role on modality in the verbal systems of Algonkian languages, and to realize that to speak of tense in these systems betrays a certain ethnocentricity: seeing i.e. verbal categories where there are none. There's much more to be said... (Hewson, personal communication, 1995)

For the purposes of this thesis, Hewson has provided an explanation that points to inherent differences in how concepts of time are formulated in the Mi'kmaw language, versus Indo-European languages. We are again left with the quality, in this case linguistically, of potentiality that seems rife throughout Mi'kmaw legends and the experience of the world as being shape-shifting and unpredictable. It is an open system.

In Chrestien Le Clercq's account of the Mi'kmaq of the Gaspé, he discusses time.

They count the years by the winters, the months by the moons, the days by the nights, the hours of the morning in proportion as the sun advances into its meridian, and the hours of the afternoon according as it declines and approaches its setting. They give thirty days to all moons, and regulate the year by certain natural observations which they make upon the course of the sun and the seasons. They say that spring has come when the leaves begin to sprout, when the wild geese appear,

when the fawns of moose attain to a certain size in the bellies of their mothers, and when the seals bear their young. They recognize that it is summer when the salmon run up the rivers, and when the wild geese shed their plumage. They recognise that it is the season of autumn when the waterfowl return from the north to the south. As for the winter, they mark its approach by the time when the cold becomes intense, when the snows are abundant upon the ground, and when the bears retire to the hollow of the trees, from which they do not come forth until the spring....They have no regular weeks; if they make any such division it is by the first and second quarter, the full and the wane of the moon. All their months have very expressive names. They begin the year with the Autumn, which they call *Tkoors*; this expresses that the rivers begin to freeze, and is properly the month of November. *Bonodemeguiche*, which is that of December, signifies that the Tomcod ascends into the rivers....And that is the way with the other months, each of which has its particular designation. (LeClercq, 1691/1968:137-139)

Time was reckoned by natural cycles of birth and death, the waxing and waning of the moon, animal migrations, and the seasons. Time seemed to be a dance with nature that was practical and respectful. Survival, it seems, depended on understanding these natural rhythms. Stories, songs and dances, mirrored these rhythms such as in hunting dances that mimicked the movement of animals. (Le Clercq: 1671/1968:136) In a twist of logic, it could be said Mi'kmaq were more aware of time than cultures that abide by fabricated "clock" time.

From both historical texts, and spending time listening to and being with Mi'kmaw elders, it seems that the process and preparation for any task, how one related to what he or she was undertaking, was as important as the undertaking itself. As one Mi'kmaw

elder said, you do something when your spirit feels strong. In other words, the process, for instance of preparing for a hunt or tanning a hide, and how a person related to this undertaking was as important as the product. Or, worded differently, one might speculate there was ultimately no “product” in the sense that everything seemed like a process of giving and taking, of honouring and being honoured. Again, a person was in a relationship with the rest of the universe which one honoured both to maintain harmony and cooperation, and to avoid disaster or death. A hunter, for instance, would prepare for the hunt through dances and chants. The animal was considered to have its own will, and would be requested to give its life. Once the animal gave its life, the women then went to butcher and bring the animal back to camp, singing and dancing as they went. Then a feast of thanksgiving might be held, with more songs and dances. The animal was divided up according to protocol and need. Feasting, orations and dances would celebrate the food given to the people. Bones of the animals were placed in appropriate places (bones were never left on the ground) so that the animal would reanimate and return to its habitat, and continue to care for the people. The cycle continued.

(McGee, class lecture, 1990; Le Clercq, 1691/1968:118-119)

Time, in general, can be a point of contention between non-Native and Mi'kmaq, particularly when it comes to work situations. When I asked Francis about Mi'kmaw

sense of time he said, "What I can say? Mi'kmaq just don't get overly excited about it."

(Francis, personal communication, 1995)

Joachim Berendt discusses different senses of time in terms of "lived" time and "measured" time, or "objective" and "subjective" time. "Lived" time is one's own personal time and rhythm. "Measured" time is precise, outside oneself and obligatory. These two are often in contradiction to one another. Berendt points out that in current times, "lived" time (also called "relative" time) has come to be viewed by scientists as more dependable than "objective" time. This shift in view regarding time has come about through contemplating the theory of relativity and principles of uncertainty. Physicists, he points out, have come to realize that "objective" time cannot be measured dependably and "nothing certain can be said about it." (Berendt, 1991:100)

As a closing anecdote to the discussion on time, the following story was told on a CBC *Ideas* program by Lister Sinclair. Sinclair was discussing the British anthropologist Edward Evans Pritchard, who had spent many years studying the Nuar, African people from the Upper Nile region. Sinclair related:

On one occasion, after interviewing some of them about their religious beliefs, he invited them to ask him any questions they might have about his. One man pointed shyly at the anthropologist's wrist and said that he was curious about the divinity he wore there and seemed to consult each time he had to make a decision. Evans Pritchard in his book about the Nuar religion, explains how surprised he was by the question, and surprised also by the difficulty he had explaining that his wrist watch was not a deity." (Sinclair on CBC/*Ideas*: Feb. 1&8, 1996)

The question is can we respect the Mi'kmaw sense of time as they are expected to respect the non-Native "clock time" so prevalent throughout the world? Can this type of cultural difference be accommodated, or is it a tongue tied proposition as Evans Pritchard found in trying to explain his watch was not a deity. Time is just another way different cultures organize their world. Time is a cultural patterning of space.

LANGUAGE AS RELEVANT TO THE STUDY OF SCIENCES

Literalness and Descriptiveness

As previously stated, one word in Mi'kmaq can carry many levels of meaning, again encompassing the various realms of experience from the mundane to the "spiritual" or metaphysical into one moment or one phrase. The microcosm is the macrocosm. Simultaneously, it is also a very literal and detailed language. It is literal in the sense that things are what they are, with the profundity being implicit—the symbol and the symbolised are not separate. Yet the seeming literalness applies to a vast array of experiences that in English language might be considered abstract or in the realm of superstition. In other words, what the English language would consider abstract or metaphysical is inherent or implicit within the mundane in Mi'kmaw language.

Win Blevin eloquently articulates this quality in his novel, *Stone Song: A Novel of the Life of Crazy Horse*. The scenario involves a young, tormented Sioux warrior,

Curly, (not yet cognizant of his full power) questioning his uncle Spotted Tail, a venerated warrior, about where power comes from.

At last Curly began, "Where does that power come from?" The boy forced himself not to mumble the second sentence. "You couldn't be touched by enemy fire."

"A gift," Spotted Tail said. He looked his nephew in the eye. "From...?"

Spotted Tail shrugged. He was not a philosopher, did not trust words for the big things everyone knew. He waited.

Curly seemed to turn the words over and over and look at them carefully. "You saw beyond?"

Spotted Tail shook his head. "No. I didn't. I seldom do."

The boy's face spoke a thousand words. Always so serious. "But how do you know you're safe?"

Spotted Tail looked within himself. He didn't want to give a facile answer. He wanted to look at the reality and describe it simply and accurately. "You listen to your spirit helper. You feel...everything. The sun, the wind, everything. Sometimes you feel something rise in you, and you know." (Blevin 1995:53)

Francis made a statement along the same lines when I was probing him for the meaning of a word. He said, "It is true that people didn't take time to muse or to philosophize or whatever... You know, people simply lived those [laws], you know, it seems like everybody understood the laws." (Francis, personal communication, 1995)

Often I will ask Mi'kmaw friends what something is or means, searching for a profound exposition. In return, I will get the literal meaning of a word, perhaps a one-word definition. In this vein, I asked Bernie Francis about the concept of Mother

Earth in Mi'kmaq, a term that has become the lingo of environmentalists and Native spiritualists. The drum at pow-wows, for instance, is referred to as the "heartbeat of Mother Earth." The question posed to Francis was based on the conversation cited earlier in which he explained that there was never one word for Creator, but rather a number of different verbs, mostly transitive verbs, that articulated different processes of creation. Applying the same logic to the concept of Mother Earth, it seemed illogical that there would also be one noun or one fixed concept of a Mother Earth.

Initially, Francis just gave me the word for earth, *wskitqamu* (inanimate). *Wskit* means 'surface', and *qamu* means 'sphere'. *Wskitqamu* literally means "the surface of the sphere, or earth." Another word, *lamqamu'k*, means underneath the surface of the earth, or underground. Neither of these words if translated literally give a sense of spirituality; it just means earth. Francis explained, there is no concept of Mother Earth in Mi'kmaq. But, inherent in Mi'kmaq culture is respect for the earth and the importance of the earth. This is implicit in the culture, in one's relationship to the earth. The creation myth previously cited regarding how all things sprang from the earth, is an example of this. In February, for instance, food is placed outside for *Apiqumujet* to show respect for the fierceness of the month of February and as a way to protect members of the community from hunger. It is this type of offering that embodies the relationship to the earth, the seasons, and the universe. (Francis, personal communication, 1995; Maillard, 1755:23)

Another example of the literal and “spiritual”, or the symbol and the symbolised, being inseparable is seen in the following description of the burying of the war club by Mi'kmaq in the seventeenth century during a treaty ceremony.

At the conclusion of the treaty, according to their custom, the Indians had their peace dance and ceremony of burying war weapons. The Priest (Maillard) was present with some Acadians and many English people. A hole being dug, the Chief at the head of his warriors began the dance with the Casse tete in their hands. They made more rounds than customary and the chief shewed some reluctance. He had much talk that was not understood by the bystanders but by the priest who came nearer and whispered to the Chief to fling his hatchet in the hole. The Chief observed that perhaps they would be oppressed and could not afterwards make war again. The Priest then told him that if any wrong was done them, they might take their arms again. Then the Indians flung down instantly their weapons, which were [illegible] covered red with the earth. (PANS R.G. 1:1761)

Both Smith and Francis discussed the descriptive and holophrastic quality of the language, its' ability to encapsulate and create a whole picture in one word. As previously stated, in Mi'kmaq, the verb is the locus, where things happen. Aside from the inflectional endings which indicate tense, gender, animacy or inanimacy, etc. each word is made up of several morphemes, each of which has meaning. In English, it might take a whole clause to describe an image, using different parts of speech—adverbs, adjectives, nouns, verbs etc.—each of which has its placement within the grammatical structure of the language. In Mi'kmaq, these parts of speech are encompassed within one word. An

example was given in a word used for a man who walks with his head swivelling from side to side. In Mi'kmaq the word *Asui'skipeteinte'w* which means "he walks swivelling his head from side to side."

Eleanor Johnson, in a lecture given at the Gorsebrook Institute in Halifax on Mi'kmaw oral tradition, described how frightening it was to be told that she had to write a one thousand-word essay for a class she was taking at University College of Cape Breton. She said, "I come from a one-word language where one of my words is a whole sentence in English language. Can you imagine how it felt to write trying to think out 1,000 words?"

(Johnson, lecture, 1995)

Similar to Benjamin Whorf's observation that the Hopi language "is capable of accounting for and describing correctly, in a pragmatic sense, all the observable phenomena of the universe," the Mi'kmaw language provides extraordinary detail of the world while simultaneously imbuing it with meaning relevant to the Mi'kmaq. (Whorf 1956:122)

Rand also documented the voluminous terminology and knowledge the Mi'kmaq used to articulate innumerable features of the environment.

They have studied botany from Nature's volume. They know the names of all the trees and shrubs and useful plants and roots in their country. They have studied their natures, habits, and uses. They have killed, dissected and examined all animals of North America from the

nestugepegajit to the *gulwakchech* (from the buffalo to the mouse). They have in a like manner examined the birds and the fish.... (Rand, 1894:xi)

Rand goes on to describe their knowledge of geography and science as well.

But one does not need to go outside the culture to appreciate the detail and descriptiveness of the language, nor the knowledge of the natural world. Simply looking at the language, hearing it and contemplating it, one can easily appreciate the extraordinary detail, and simultaneous descriptiveness expressed in the language. Furthermore, in amassing some of the literal translations for words that have subsequently been given English definitions, e.g. ash tree, cedar tree etc., the qualities valued by Mi'kmaq in their daily lives becomes more evident. In developing a science curriculum that incorporates Mi'kmaq knowledge and world view, the semantic categories that were (are) of importance to the Mi'kmaq in viewing their world should be considered.

As an example, I have compiled the following list of terms for relating to various apparent phenomena of the world. This list is derived from the work of Wilson and Ruth Wallis' *The Micmac of Eastern Canada*, and from Rand's *Dictionary of the Language of the Micmac Indians*. The words have been retranscribed in the Smith/Francis orthography, and checked for meaning by John Hewson, linguist at Memorial University in St. John's Newfoundland, and/or

have not been rewritten, I have indicated their orthography. Margaret Johnson and Wilfred Prosper from Eskasoni have also redefined words for me, as well as added words they remember having to do with various flora and fauna. This list is by no means complete, and further research is needed for this to be meaningful for use.

plmskw: male beaver (animate) and **nusumskw:** female beaver, (animate). These are both ancient Proto-Algonquian words, with the *pl-* indicating male and *nusu-* indicating female. *Nusu-* is from the Proto-Algonquian, *no:nʂe*, which means "bearing young".

kopit: beaver (animate) but according to John Hewson, it is a hunter's tabu nickname meaning "he comes out of the water." Hewson explained that the hunter's tabu nickname was used to refer to the animal in place of its real name for fear that the animal being hunted would "catch on" to its being hunted. [Most likely it had to do with respect for the animal, and its spirit which the hunter did not wish to destroy.]

muin: bear (animate) The literal translation is "berry picker". This again, according to Hewson, is the hunter's tabu nickname. The Proto-Algonquian word, *mawinsowa*, means "gathers berries," This root, *muin-* is still used for berry-picking in Mi'kmaq. However, the proto-Algonquian word for bear is *ma&kwa*, which is *-u&kwa* in compounds, as in *napeskw* and *nusesw*, where the initial *nape-* is male and *nuse-* is female.

qalipu: caribou (animate) This again, according to Hewson, is a hunter's tabu nickname, meaning "snow shoveller", because of the way the caribou used its antlers to shovel snow. The original term for caribou is the Proto-Algonquian word, **atehkwa*.

aqmoq: White Ash tree (animate) The literal translation is "snowshoe tree." *Aqm* means snowshoes and it was from the White Ash tree that the rims of the snowshoes were made. This word is derived from the Proto-Algonquian word, **akema'xkwa*, which means "snowshoe tree."

māskwi: White Birch (animate: this refers to both the tree and the bark according to Margaret Johnson and Wilfred Prosper.) The Proto-Algonquian word is *ulukwesk* which means "strips" according to John Hewson.

kawatk: spruce (animate) According to Silas Rand, the name is indicative of the noise made by spruce trees when they sway in they wind, and applies to red, black or white spruce. (animate, plural - *kawatkuk*: Smith/Francis orth.)

kākalōpskusow: quartz (Rand orth., most likely inanimate) According to Margaret Johnson, this means something like 'the rock for making fire.' This definition makes sense because iron pyrite, carried by the Mi'kmaq for making fire, had to be struck against a quartz type of rock in order to generate the piezoelectric charge for creating the spark.

mekwe'k askus: Red Cedar (animate) Margaret Johnson said this word means something like 'board tree,' such as for getting slats for the canoe. (*mekwe'k* means red, and is third person singular verb)

atuomkmin: strawberry (animate). *Atuo* means sand and *-min* is a noun final meaning berry according to John Hewson.

keneskwejjik: Ground Juniper (animate, plural verb form) Margaret Johnson says this means "they're sharp" referring to the sharp needles on the Ground Juniper.

welima'qewe'l msiku'l: Sweet Grass. Literally, this means "sweet smelling grass." *Msiku* (inanimate, *msiku'l* pl.) means "blade of grass"

na'ku'set: sun (animate) This is literally "the day shiner"

tepknuset: moon (animate) This is literally "the night shiner"

kisiku kloqowej: North Star (animate) *Kisiku* is old man and star is *kloqowej*.

militaw: humming bird (animate). *Mili-* literally means all over the place according to Francis.

amu: bumble bee (animate) This word, according to Francis, is a shortened version of *mijipjamuej* meaning something like "the honey collector."

jipunuk: east (animate) This word comes from "it is forever summer" according to Bernie Francis.

All tree names ending with **-musi** are animate and originally designated a fruit or berry tree, although Margaret Johnson stated it means "wood." For example, *suomusi* (beech) bears beechnuts, and *e'psemusi*, (Mountain Ash) has dogberries. (Margaret Johnson, personal communication, 1995; Hewson, personal communication, 1995)

With the few animal terms that have been collected and researched, it seems that characteristic traits peculiar to the animal were used for reference or identification. In terms of the flora, the words seem to portray a specific function or use for the resource, e.g. White Ash and Red Cedar, or a defining characteristic that would help in identification, e.g. strawberry, Ground Juniper and Sweet Grass. The same may apply to rocks and minerals, as seen in the one example given. This has obvious common sense in terms of resource use, but along with the practicality, there are legends associated with each animal, plant, and tree (not to mention stars, rocks and other phenomena.). These stories abound in information about the resources, and, again, marry the "spiritual" to the physical and practical. This will be discussed further in the chapter on pedagogy.

In a similar vein, the language is extraordinarily detailed. In a recent visit to the Eskasoni Reserve, I was treated to two sessions (over five hours of discussion) with the Mi'kmaq elders, Dr. Margaret Johnson and Wilfred Prosper. During these two sessions, we reviewed a number of words from Silas Rand's *Dictionary of the Mi'kmaq Language* to ferret out the meanings of a number of words having to do with flora and fauna. We also discussed resource use and technology, specifically the building of a canoe and the use of birchbark. Wilfred, at one point, launched into a whole litany of words associated with the different grains of wood in trees. One word, *welikpa'q*, meant the grain ran straight and did not split off during cutting (literally, "strip or split well," according to Hewson). Another word, *ksu'sk awinaq*, referred to a type of grain found on one side of a spruce (black spruce, I think). The grain of this wood was different from the rest of the tree, and was the best for making bows. It has extraordinary strength and resiliency. Margaret, also mentioned the word, *kakjet*, that meant brown, burnt-like wood that had a hard grain and was no good for basketmaking. The terminology for and knowledge of the wood grain itself is extensive, not to mention the other parts of the trees. This was and is important to the Mi'kmaq in terms of their numerous uses of wood. Silas Rand documented over seventy words applicable to the making of the canoe, as well as a similar number related to birchbark and its uses. This, I learned from Margaret and Wilfred, was not even a full accounting.

The examples given barely scratch the surface of in terms of the wealth of information embedded in the language. Some terms have been lost as traditional technologies have fallen out of use. Terms for rocks and minerals, and technologies associated with their use, are difficult to find since the early introduction of iron by Europeans decreased the need for stone tools.

Any integration of the Mi'kmaw language into the sciences would bring both Mi'kmaw and non-native children to a broader understanding of the many aspects of resource use, as well as the semantic attributes of various natural phenomena. The use of the language would introduce children to a different perception of and relationship with these resources, as well as foster an appreciation the extensive knowledge, wisdom and history held by the Mi'kmaw culture. This, in conjunction with the rich oral history available, would create a comprehensive, and meaningful, learning environment.

Relationship of the Language to the Land

The land is always stalking people. The land makes people live right. The land looks after us. The land looks after people. (From an Cibecue Apache quote collected by Keith Basso in Andrews, 1990:6)

Sakej Henderson once stated during an interview that the Mi'kmaw language was the language of the Maritimes. Henderson, I believe, was alluding to the fact that the language evolved from the Mi'kmaq direct experience of the earth, sky and water, and the many

things that lived and grew here, and that the words reflected or embodied the qualities of what they experienced. This has already been illustrated with the words for colours.

(Henderson, personal communication, 1991)

The landscape of the Atlantic Provinces (and part of Québec) itself is imbued with the culture and history of the Mi'kmaq if one contemplates the place names and delves into the legends associated with them. Place names in Mi'kmaq not only tell of features of the landscape, historical events and important resources, but acted as a mnemonic device to remind people of how to “live right.” There are numerous legends where animals and people are transformed, or transform themselves into stones, trees, mountains and islands. “Grandmother” and “Grandfather” rocks have already been mentioned as being associated with legends. These legends, in turn, have values embedded within them. As well, they served a practical purpose in that their anomalous character and prominent appearance in the landscape could easily have acted as guideposts or landmarks for travellers. More importantly, they were regarded as having power, or as conscious beings, and offerings would be made in respect and supplication—as to a relative—again acknowledging the reciprocal relationship one had with the world.

Similarly, creation myths abound regarding the various landscape formations of the Maritimes. The creation of Moose and Partridge Islands in the Bay of Fundy, were

formed by Kluskap during his hunts, according to one version of the legend. The story as told by Jerry Lonecloud to Clarissa Archibald Dennis is as follows:

He [Kluskap] says to his dogs, "Now we will have a moose chase." They chased the moose—he calculated to kill the moose but didn't and the dogs chased him in the water of Advocate Harbour and the moose was swimming out toward Isle Haut or Spencer's Island. And when Kluskap came to shore, he say to the moose, "I am going to leave you here for a landmark. You turn to stone, Moose." And there was, until twenty years ago, a stone island a perfect shape of a moose, but twenty years ago the head of the moose disappeared owing to storms, etc.

Kluskap went back to camp without any moose and he went up to get some water out of Kluskap Lake, and he saw a partridge when he was getting the water. He didn't have his bow and arrow and he took a stick and chased the partridge on to the shore of Truro Basin or Cobequid Bay. The partridge waded out into the water and Kluskap couldn't reach it to hit it with the stick he had. "Now," he says to the partridge, "now I'm going to leave you as a landmark. You will be an island, and your feathers will turn to trees." They call it Partridge Island in Parrsboro. Then Kluskap went back to his wigwam at Advocate Harbour. (Lonecloud in Dennis, MG1, Vol. 2867, Notebook #1:135-238)

Again, other layers of energy are at play beyond the external physical form. On a practical level, Partridge Island was an excellent quarry site for the Mi'kmaq, where high-quality and beautiful agate and jasper could be found for spear points, arrow heads and knife blades. At the same time, the story reminded people of their connection with the world of creation, and the powers at play. Additionally, these stories acted as maps, telling travellers of the geography and resources of an area. This will be discussed in greater detail under the section on storytelling.

Thomas Andrews in conducting research into the significance of place-names in the Dene culture, stated that:

Place names provide a "hook" on which to structure the body of narratives, and in doing so become an integral part of the narrative itself. This is particularly evident in myths and legends recounting the travels and exploits of mythical heroes, which list in great numbers places relevant to the story line. Place names are therefore mnemonic devices, providing a mental framework in which to remember relevant aspects of cultural knowledge....It is clear from the previous discussion that within many societies possessing rich oral traditions, landscape may be viewed as a collection of symbols which record local knowledge and meaning, and where place-names become memory aids for recalling the relevance of a "message" encoded in associated narratives. Physical geography is transformed into "social geography" where culture and landscape are fused into a semiotic whole. In essence, one cannot exist without the other. (Andrews, 1990:3&8)

Andrews cites a number of examples from various cultures, e.g. the songlines of the Australian aborigines, the work of Keith Basso among the Cibecue Apaches and the Roti of Indonesia to name a few, all of which demonstrate the inextricable union between these cultures and the land. Similarly, in his own research with the Dene of the Mackenzie Valley in the Northwest Territories, Andrews found particular stories were told at specific locations. At two specific locations, moral stories were told regarding the consequences of excessive gambling. As the stories unfolded, two members of the party retreated, not joining in the humour and camaraderie of the story. These men had expressed an interest in gambling whenever they reached their destination. (Andrews, 1990:17)

In conducting research into traditional land use practices of the Mi'kmaq and Maliseet for the Canadian Parks Service (now Heritage Canada) I spoke with several Mi'kmaq who suggested that place names be integrated into any interpretation of the land. It also became apparent during this research, that where CPS was looking for "in situ", visible evidence of land use within park boundaries, the Mi'kmaq and Maliseet with whom I spoke, placed much more emphasis on the oral traditions associated with various regions. For instance, the Bay of Fundy National park has produced little archaeological evidence of Native presence. However, a strong oral tradition exists regarding the use of the land, which is valid evidence of Native presence to the Mi'kmaq themselves. (Sable, Traditional Sources Study, 1991; Joe Knockwood, personal interview, 1991)

The notion that narrative tradition is rich in place-names that become mnemonic devices, providing a framework in which to remember relevant aspects of cultural knowledge, does not seem so different from European cultures. This fact alone would not justify the claim that traditional Mi'kmaq held, and still have, a different "world view." It is the *power* of the stories and the *consequent significance* of the place-names to individuals within the cultural community that gives us a glimpse into what can be termed another world view. The Mi'kmaw culture, essentially, is inseparable from the land of the Maritimes.

Andrews cites a number of semantic categories devised by Cornelius Osgood in his research into Gwitch'in place names in the Great Bear Lake and Fort Norman regions. These semantic categories, he points out, may not have meaning to the Gwitch'in themselves, but serve as a research device for those outside the culture. They are included here simply to give non-Native readers a handle in understanding the scope of meanings embedded in the place names. The categories include:

- purely descriptive names,
- names associated with fauna or faunal activities,
- names associated with material culture,
- names associated with flora,
- names associated with historical events,
- names associated with mythological events,
- names associated with particular individuals,
- metaphorical names,
- names which reflect aesthetic qualities,
- names borrowed from other languages, and
- names unanalyzable/untranslatable.

(Andrews, 1990:8)

In my own research into Mi'kmaw place names, these categories seem applicable, with the addition of two others—names descriptive of activities not related to resource harvesting, and names for quarrying rock or finding minerals such as red ochre. Again, the meaning of the categories may have no relevance in Mi'kmaw culture and are simply research tools.

The list of place names that will be provided in this discussion are a small sample. The literal definitions have been given to illustrate the information conveyed in the names. These names have been taken from a number of sources. Some have been provided by Mi'kmaq, and others are from Silas Rand. However, some caution is needed if the names are used for curriculum material. Some names are names in Mi'kmaq but refer to use of the land by non-Natives, such as Sydney (*Si'puk*) translated as "place of coal." With other place names it is difficult to know what is being referred to because of cultural change or change in use. For instance, *Pne'katik*, is translated by Rand as "the humble place." Furthermore, Rand's definition, as is often the case, may be inaccurate. Other names most likely combine a number of attributes; both practical and mythological, as is often the case in the Mi'kmaq language. Yet other names are adaptations of Basque or French words. Ruth Whitehead provided the example of the word Souriquois, used by the early French explorers as a designation for the Mi'kmaq. Samuel Champlain mentions a Souricoua River. Most likely the word comes from the Basque word *zurikoua*. Whitehead speculates that, in an odd twist, the Mi'kmaq used a pidgin Basque term to indicate the name of the river when asked by Frenchmen. The word is glossed, "the people of the white man's place," which most likely meant a place where they would meet white men for trade. When early French explorers inquired the name of the river

from the local band of Mi'kmaq, they were told in pidgin Basque that it was the Zurikua. The French then most likely expanded the word as a generic term for Mi'kmaq.

Place names in Mi'kmaq can be verbs or nouns. If the location was a place of a particular activity, such as eel-spearing, the name would be a verb. If the area was a specific landmark, such as a lake or specific resource, it might be a noun. Two endings which indicate that the place name is a noun are *-a'ki* or *-e'kati*. The word "place" does not exist in Mi'kmaq, but is used as the closest English word to translate the meaning.

(Francis personal communication, 1995) The names in parentheses after the definition refer to the source from which they were taken. This source name is then followed, in some cases, by the name of the person who has translated or re-spelled the word in the Smith/Francis orthography. For instance, Rand/Francis indicates the source was taken from Silas Rand and re-spelled and/or defined by Bernie Francis.

Wanpa'q: calm water (Cole Harbour; verb; Native Council map/Francis)

Wlaqajk: the name connotes a place of ochre but *wiaq* suggests a blending of both yellow and red ochre. (Margaree; noun; Native Council map/translation provided by Wilfred Prosper, Eskasoni with additional comments from Margaret Johnson and Bernie Francis)

Tmaqnapsk: the pipe-stone place (place in Miramichi; noun; Rand/Francis)

Tlaqatik: A village where they live. (Tracadie noun; Francis)

Pankweno'pskuk: lice-picking falls; literally where they hunt one another's head [for lice] (Gabriel Falls; verb; Jerry Lonecloud/Francis)

Penatkuk: bird nesting place (island in Shelburne River noun; Lonecloud/Francis)

E'sue'katik: the place of clams (St. Esprit, C.B; noun; Rand/Francis)

Sikepne'katik: where ground nuts are found (Shubenacadie; noun; Native Council map/Francis)

Kajoogwajëk: place where gold-thread grows (Stream flowing into Sheet Harbour noun; Rand: not known by Francis)

Amagápskeget: rushing over rocks (Gold River; verb; Rand)

Kukwesue'kati: haunt of the giants. (Middle River, Sheet Harbour; noun; Rand/Francis)

Kopitewe'kati: According to Margaret Johnson and Wilfred Prosper, this means "place were there are lots of beaver or where beavers gather." According to Silas Rand, "tradition has it that Kluskap threw one of the large rocks there at the mythical beaver." (Beaver Harbour; noun; Rand/Francis)

Gespegoitg: the last place in the water (one of the seven traditional Mi'kmaq districts; Native Council map/defined by Wilfred Prosper)

Kjipuktuk: the great harbour (Halifax; noun; Native Council map/Francis)

Epekwiik: in the water but up above, in the sky (one of the seven traditional districts; Native Council map/defined by Wilfred Prosper/Francis)

Matuesuatp: the head of a porcupine (Porcupine Head; noun; Rand/Francis)

Pne'katik: the humble place (Benacadie, C.B; noun?; Rand/Francis)

Waqmitkuk: clean flowing water (Wagmatcook; Native Council map/Francis)

Mntuapuskuk: Devil's Rock, Jeddore (noun; Rand/Francis)

Plekteok: the columnar rocks at Cape Split; a handspike. Tradition has it that Kluskap used one of these handspikes to open up the passage at Cape Split and drain the Annapolis Valley. Wilfred Prosper and Margaret Johnson said this "handspike" is something with a sharp end for moving heavy objects. (Blomidon; Rand/Francis)

Naboosakunuk: place for stringing beads (St. Mary's, N.B.; noun; Rand)

Potlotek: Francis said this referred to Port Toulosse, the French fort erected in St. Peter's, Nova Scotia. (Chapel Island, Nova Scotia; Native Council map/Francis)

Tepotekewey: originally translated by Margaret Johnson as "shaped like a boot." John Hewson stated that it is from the French "des bottes." He wrote, "to this has been added a locative *-ek*, so that *Tepotek* would be "boot place." Then when a common noun, "lake," is added, the original name is made into an adjective by adding *-ewey*. Presumably the full Mi'kmaw name is *Tepotekewey Qospem*, Boot Lake, or rather Boot Place Lake. (lake in Eskasoni, Nova Scotia; Margaret Johnson/John Hewson)

There are a number of other site references that are not named but are connected with legends. For instance, there is mention of a rock at St. Peter's in Cape Breton said to be Kluskap's canoe. The rock is in the shape of a canoe with a person in the middle of it,

and a paddle alongside of the person. The legend, "How the Beaver Got His Tail," documented by Ruth and Wilson Wallis, begins, "When Gluskap was in Cape Breton, he obtained a canoe. He had such power that he took for this purpose a big stone which is now at St. Peter's Cape Breton, and resembles a canoe with a person in the middle and a paddle alongside." (Wallis and Wallis 1954:329)

Near Upper Musquodoboit, Nova Scotia there is a rock referred to as a Grandfather rock. According to Ruth and Wilson Wallis, it resembles a "recumbent figure of a sleeping man covered by a blanket.

Micmac call it "Grandfather," and say it is an old Indian who went there to hunt. After he lay down to sleep, he was transformed into the stone, as he is seen today. In 1912 the older Indians laid a penny or some small offering by it and "made their wishes on it," in the expectation of fulfillment. at this spot, my Micmac guide did not specifically name Gluskap. (Wallis and Wallis 1954:154)

In my own travels, I have been shown a number of sites by Mi'kmaq that are associated with legends, resource use, or documented or known to be "Grandmother" and "Grandfather" rocks. Out of respect for these sites and for the people who took me to them, they will remain unnamed. All sites mentioned in this text are already published in books or documents. These include Scots Bay, known to be quarry site for Mi'kmaq, Blomidon and Cape Split, Moose and Partridge Islands in the Bay of Fundy, connected with Kluskap legends, and Cape D'Or where Mi'kmaq may have quarried copper. This

last site was part of the territory of the famed chief, Membertou, which he gave as a gift to King Henri of France. (Whitehead, personal communication, 1996) Many more exist. Each of these sites is rich with oral history and resource use, which could be woven into educational materials in a number of ways. Some of these sites are regarded as sacred and any use or reference to them would have to be done in cooperation, or with permission from the Mi'kmaw Grand Council.

Tying in place-names and legendary sites to a science curriculum has a number of values. It can show how the land is a visible, tangible part of the Mi'kmaq world view. How the land was formed is seen through legends, and visible sites are associated with these acts of creation, e.g. Kluskap's handspike, Partridge Island and many more. Place names tell of where to find resources, features of the landscapes or where particular events took place. These legends, in turn, provided geographical information. Again, such a study would allow children the opportunity to explore a different cultural view and use of the land. This information could be presented in conjunction with, and complementary to, the western scientific information, showing differences and similarities. The two views could be woven into a more comprehensive understanding of how different knowledge systems relate to and use the same resources.

A short lesson on place names is introduced in the Grade Six provincial social-studies curriculum. In the source book, *Nova Scotia, All About Us*, three pages address

this subject. In these three pages a number of names are discussed in terms of the culture from which they came—English, Scottish, French, Mi'kmaq and Irish. This alone could provide a rich, cross-cultural research experiment as children begin to see that some cultures prefer naming places after famous people, i.e. Halifax, Cornwallis, and Dartmouth, while other names were transplanted from the homelands from which the various settlers originated—Lunenburg, Glencoe, Inverness etc. Still other place names refer to industry, events or resources. This knowledge could then easily be integrated into science lessons as children begin to gain insight into different cultural views and use of the land. (Cassidy, 1983:17-19)

Place names can offer a valuable entry point for children to begin connecting a culture's relationship with the land with resource use. It is a way for children to understand the interaction of culture with nature, the reciprocal relationship, and the cultural relativity of resource use. In developing a science curriculum, the interdependency of Mi'kmaw with the land would be a crucial concept to communicate. This concept infused the Mi'kmaw culture, and was sung, danced and recounted in legends, continuously reaffirming this relationship.

In the piloting of the Energy Mines and Resources program discussed in the introduction, the map of Mikamaqi was hung on the wall. During the discussion of different rocks and minerals, children were given the name of the harvest site in Mi'kmaq.

They were then asked to go to the map and find the place where their ancestors were known to have quarried or harvested a certain resource. In this way, they were given a physical and visual reference point for their knowledge. Ideally, any science program for Native children would involve a number of field trips to actual sites, letting them stand where their ancestors stood, see what their ancestors saw, and contemplate the changes that have occurred through time. The power of the land to speak for itself is a potent tool in and of itself. These types of field trips, whether to petroglyph sites, quarry sites, Kluskap's medicine gardens and so forth, should be an integral part of the curriculum, if the Mi'kmaq feel it is appropriate.

CONCLUSION

In interviews with various Mi'kmaw educators and administrators, the question of using the Mi'kmaw language in the science curriculum was a matter of debate. The majority of people living on Reserves in Nova Scotia are not Mi'kmaw speaking. Shubenacadie, Bear River, Acadia, and Horton do not use the language in their daily lives or in their homes. On the Millbrook, Pictou Landing and Afton Reserves, Mi'kmaq is spoken by some of the elders, but not by the children. The children on the Millbrook Reserve who speak Mi'kmaq are generally from Eskasoni. The youngest Mi'kmaw speaker in Membertou, who is actually from Membertou and has not moved there from

elsewhere, is thirty-seven years old. The Bear River school (grades 1-6) has introduced some language into the curriculum. In Eskasoni, Mi'kmaq is spoken in the home, as it is in Waycobah, Chapel Island and Wagmatcook, yet the Eskasoni school curriculum is taught primarily in English, although it has one of the strongest language curriculum of all the Reserve schools. In response to my question what the status of the Mi'kmaw language was, Francis responded, "It's not in good shape It's in better shape in Cape Breton than anywhere else in Nova Scotia, but it's not in good shape. A tremendous amount of work needs to be done on it". (Sable, EMR report: 1993; Francis, personal communication, 1996)

Other Mi'maw educators agree regarding the importance of using the Mi'kmaw language in the curriculum, yet cautioned that introducing the language too early on would create complications for Native children who do not speak the language. However, if the proposed curriculum is developed for use in the provincial educational system, it may also serve to educate non-Native children in how the Mi'kmaw language embodies a different cultural perspective. One Mi'kmaw mother is currently fighting the school where her son is in attendance, for the right of her child to learn Mi'kmaw instead of French. She has been told that the child, whose grade point average is quite high, will be given a failing mark if the child does not complete the course. The Mi'kmaw mother feels that French language is not as important to her child as learning Mi'kmaq, although she

recognizes the importance for those of French or Acadian heritage within the Maritimes.

(Sable, EMR report: 1993; Personal communication, 1996)

The use of language in a science curriculum, if adopted in the provincial schools, would have to be dealt with delicately and with input and cooperation from Mi'kmaw representatives. There would have to be room for individual adjustment depending on number of Mi'kmaw speakers in the classroom. However, the importance of using the language to illustrate a different world view than that currently promoted in the education system in provincial schools, seems essential for reasons discussed throughout this chapter. Children from homes where Mi'kmaq is the primary language, are faced with having to speak and write the English language fluently when entering the provincial school system. The problem is not just learning the language, but learning the conceptual framework associated with English, and the appropriate cultural behaviour. To date, this process has not been a two-way street, but rather a dead-end for some Mi'kmaw children.

There are other benefits as well. Research among the Maori has shown that bilingual education brings many "cognitive benefits." Bilingual children have been shown to perform better than monolingual children in "general intellectual development, divergent thinking, linguistic analysis and meta-linguistic ability, and awareness and sensitivity to feedback." (McKinley et al. 1992:588)

In this chapter, I have attempted to outline features of the Mi'kmaw language which reveal a different world view, another way of perceiving and conceptualizing the world. It is a language filled with descriptiveness, playfulness, and one that encapsulates multiple layers of meaning within one word. The terms used for trees, animals, plants, and other phenomena, if integrated into the science curriculum, could act as a window for children to explore different features of the physical world, as well as learn the history of the Mi'kmaw and the richness of their traditional knowledge.

SECTION THREE

Principles of Learning in Traditional Mi'kmaw Culture

Major Forms of Transmitting* Knowledge and Values in Traditional Mi'kmaw Culture:

Legends

Dance

Songs and Chants

*** The use of the term “transmission”, or the concept of “transmitting” knowledge, is currently out of vogue among western educators because of the connotation it carries of “dumping data” on to children and students. In my use of this term, it is based on traditional Mi'kmaw methods of education, which were done in a manner meaningful and personal to children. Knowledge and values were taught to children in such a way that they became internalized and inseparable from their lives. This will be discussed throughout the following chapters.**

PRINCIPLES OF LEARNING IN TRADITIONAL MI'KMAW CULTURE

There is continual joy in their wigwams. The multitude of their children does not embarrass them for, far from being annoyed by these, they consider themselves just that much the more fortunate and richer as their family is more numerous....This duty...is viewed by our Indians as very honourable, very advantageous, very useful, and he who has the largest number of children is the most highly esteemed of the entire nation. This is because he finds more support for his old age, and because, in their condition of life, the boys and girls contribute equally to the happiness and joy of those who have given them birth. They live, in fact, together--father and children--like the first kings of the earth who subsisted.. (Le Clercq, 1691/1968:107)

In this section, the underlying principles of learning, and values, in traditional Mi'kmaq culture will be discussed. These are included because they affect how children learn, and what they learn, as well as tell of how a child relates to their environment. This will be followed in the subsequent chapters by a discussion on traditional forms of transmitting knowledge, and the extensive "scientific" information that was transmitted through these forms.

Since I am not Mi'kmaq, the following discussion should be regarded as my personal reflections about what I have heard, read and experienced. It is, as Bernie Francis continually reminds me, just what *I* think. I have also been cautioned that individual Mi'kmaq in contemporary Mi'kmaq culture might relate differently to the concepts presented here, particularly ones regarding personal identity. For instance, many Mi'kmaq are Catholics, and others consider themselves traditionalists, or people

practicing native spirituality. There is a wide range of beliefs and practices in both these groups, as well as others, so how each person defines "soul" or "self," could vary.

However, my personal view is that although the terminology may vary from person to person, the fundamental concepts are present. The first part of this discussion is intended to raise the issue of different cultural concepts of self or personal identity, instead of purporting to establish any absolute truth. It is meant to introduce this concept into the consciousness of educators so that they can begin to contemplate how self-perception may affect children's learning. Simultaneously, to state the obvious, everyone is an individual and there are always exceptions to every generalization.

Traditional forms of education within Mi'kmaw culture were based on a number of implicit principles, many of which modern educators, constructivists included, have come to recognize as important for learning to be meaningful to children. These included:

- a child's personal journey and development of personal autonomy was recognized
- learning was interpersonal and communal
- learning was contextual and holistic
- learning was multi-sensory
- learning was reflective

Principles One and Two: Learning was Personal and Communal

The first two principles are inextricably linked to one another—the personal and communal. In contemplating the concept of personal identity within the Mi'kmaw culture, three co-existing and inter-related aspects have emerged. These have arisen as themes in my reading of legends, from discussions with Mi'kmaw friends and colleagues, and through my own experience. These might be visualized as three concentric circles existing within one another and shifting concentration depending on circumstances.¹ All three are premised on and in response to the experience of the world as a dynamic relationship between the “self” and “other.”

The first, most inner circle has to do with the cultivation, knowledge and confidence in one's own strength or power, which was and is realized through a child's personal journey, choices and experiences in the world. Dr. Harold McGee refers to this as personal autonomy, a term that will be used in this discussion. Orin Hatton, in his work among the Gros Ventres, refers to it as “mastery and resourcefulness.” (McGee, class notes, October, 1990; Hatton, 1990:15)

¹ After writing this sentence regarding concentric circles of identity, I was reminded of a description of the world told to Clarissa Archibald Dennis by Jerry Lonecloud during one of their numerous meetings. In it, Lonecloud describes the earth as two concentric circles. The inside circle represents the earth, and the outside circle represents vapour. Lonecloud said, It [Earth] was thought to be flat. Inside ring represents flat earth. Outside ring, 'the tumbling off place' Kespoomig/(Indian word for water/ or the water. Indians never went out of sight of land in their canoes. Off Yarmouth there is an Island called Green Isld. which was supposed to be another land. One day some Indians went in a canoe to the Isld. Were never seen again. It was thought/by the tribe on the mainland/ that the Evil Spirit enticed them and they fell over the tumbling off place. (Lonecloud, in Dennis 1924:MG1 Vol. 2867, Notebook #2:4)

Personal autonomy is the ability to be self-governing and independent. This may appear contradictory to the previous discussion regarding the dynamic relationship between self and other. Instead of being contradictory, it is essentially based on a recognition of and response to a world in flux, shape-shifting and unpredictable, and how to relate properly with that world. Mi'kmaw children were and are encouraged to develop a sense of autonomy, to come to know their strength and skills through personal experience, and personal choice. In this way their experience and learning was and is meaningful and individual. This is seen in legends, such as "The History of Usitebulajoo" [Wsitiplaju], in which the young boy and girl find their power and grow to be adults overnight while alone in a foreign territory.

As will be discussed, this benefitted the community as a whole. Within the community, a person's opinion and personal choices were respected and trusted if they caused no harm. Murdena Marshall from Eskasoni described this principle of child rearing in Mi'kmaw culture.

We would rather encourage our children to observe, explore and make judgements using their observations to reach a conclusion. In cases where a wrong has been done to another, either another child or a family of a child, restitution must be made by that child. In this way, a child is very much aware of his wrongdoings and usually will never forget that incident or the events that led up to it. (Marshall, unpublished manuscript, n.d.)

Ruth Whitehead uses the term "power" to describe the importance of this personal autonomy to survival in traditional Mi'kmaw culture.

Because of this aspect that nearly everything in the six worlds—including the geography—can change both its shape and its mind, the universe is unpredictable, unreliable in a European sense. So how do humans and other Persons survive when nothing is necessarily as it seems? They survive by accumulating Power of their own, the ability to change their own shapes and modes as circumstances require. This is such an important tenet that almost every story of the People has Power as its central theme: how to acquire it, how to use it, how to lose it and the consequences attendant on all of the above. (Whitehead, 1988:13)

What Whitehead terms power, infused all of existence and could be acquired in a number of ways: through alliances or “marriages” with Animal Persons or other Beings such as the *jipijka'm* (horned serpent), chipmunk, bear, or moose. This is recorded in legends, and is spoken of by some Mi'kmaq in current times. One's power could be increased by the possession of certain objects such as particular stones, feathers, hairstrings, bones or teeth of animals, and many other items.² Through the motifs one drew on clothing, shelter and other objects, power could be accrued. These objects contained life energy, and could enhance one's own power through possessing them and treating them with respect.

Power also came from songs, dances, and stories—virtually the whole of existence—if persons understood and conducted themselves properly. Thoughts had power; breath had power; words had power. Again, as I have been told innumerable times, “the Creator gave everything a soul.” All of creation was infused with life energy.

² There is another concept termed *keskamzit* (Wallis' spelling) that has to do with personal “luck” or enhancement of power derived from certain objects. W.H. Mechling gives a lengthy account of many incidences regarding a person's *keskamzit*. These can be found in *Anthropologica*, 1958 (7):186-205

This energy could be destructive, neutral or creative. Proper conduct required both awareness and discipline.

A look at the language might help understand this concept more clearly. In the Mi'kmaw language there are a few words that designate what we would call "soul" or "spirit", lacking comparable terms in English: *mjijaqmij*, *mimajuaqan*, and *Skue'kmu'j*. *Mjijaqmij* was defined in 1991 by Francis as like "a shadow or spirit." This might be something (a spirit or power) you would try to control, but ultimately was something you could not control. In a more recent conversation, Francis said it originally meant shadow, but has come to mean spirit. (Francis, personal communication, 1991 & 1996) John Hewson translates *njijaqmij* as "my spirit, my soul, my shadow," and again, like the term for father, can not exist in unpossessed form. (Hewson, personal communication, 1996) Rand defines it as "my soul" (*njijaqmij*). This term has also been defined by Ake Hultkrantz as "free soul." Abbé Maillard said it signified "shade." He also stated there is "no word in their language that answers to that of soul in ours." (Hultkrantz, in Hoffman, 1955:365, Maillard, 1755:14)

John Hewson gives the meaning of *mimajuaqan* as "life" and states it is the nominalisation of the verb, *mimajit*, meaning "he/she is alive." This is derived from the Proto-Algonquian verb stem "to move". Hultkrantz described it as "the real organ or function-soul of the body," and Rand defines it as "life, seat of life, and soul." (Hewson, personal communication, 1996; Rand, in Hoffman, 1955:368; Hultkrantz, in Hoffman, 1955:368)

Skite'kmu'j has been most commonly defined as “ghost.” Wallis and Wallis described it as “the ghost of a dead person,” but often the apparition of a living person. When death draws near, the *skite'kmu'j* of the dying may leave the body and show itself in various ways.” (Wallis and Wallis, 1954:151) Mi'kmaq were said to leave a portion of food for the souls of their relatives. Interestingly, the Milky Way is called *Skite'kmu'jawti*, or “Spirit Road.” Hewson defines it as “ghost path.” (Hoffman, 1955:368; Hewson, personal communication, 1996)

The difference between *njijqumij* and *mimajuaqan* was explained by Vaughen and Shirley Doucette from Eskasoni. Again, according to Doucette, the interpretation may vary from person to person. *Njijqumij* can literally mean “my shadow”, but it can also be an inner spirit that can take on physical characteristics and transform shapes. It can also appear as a mist or apparition. *Njijqumij* rises from your body when you die. It can be a good or bad spirit or an animal spirit. It is not the same as *skite'kmu'j*. *Skite'kmu'j* is like ghost or spirit who would haunt you. It tends to be more associated with fear or harm, whereas *njijqumij* tends to come in a good way. Spirits that come during dreams or visions are called *njijqumij* and can be the same as what many people term one’s “animal spirit.” *Mimajuaqan* is your life force energy, most likened to a soul in the Christian religion. *Mimajuaqan* can also mean food or what you need to live. Doucette also said these terms can vary in definition depending on the context. (Vaughen and Shirley Doucette, personal communication, 1996)

These two terms, *mimajuaqan* and *mjijaqmij* are not the same. One seems to indicate that there was a life essence (*mimajuaqan*), and the other a shadow/spirit (*mjijaqmij*) which could transform into other shapes. It was the loss of *mimajuaqan* that caused death to a person in human form, but his/her *mjijaqmij* could then transform into other forms, or travel to the "Land of Souls," as in the story of Papkootparout, in which a father retrieves his son's 'soul' from the "Land of the Souls." The son's soul is given to him by Papkootparout inside a nut, which he must diligently guard on his return to earth. (Le Clercq, 1691/1968:210-213)

In a number of legends, a person's spirit/life essence/power is kept in a small bag or box, and kept hidden or in the safekeeping of a relative, often a sister. In some cases, it is embodied in an object, such as a hairstring, or associated with an animal. (Whitehead, 1988:13) In the story, "The Invisible Boy", retold by Silas Rand, it is a moose leg bone which is bonded to the boy/man's life essence. He is moose, and moose is him. The life force/essence of the moose was encapsulated in the leg bone of the moose which was to be protected by his wife in their wigwam. When the bone of the moose is inadvertently smashed by his unsuspecting young son while the wife was preoccupied, the man's leg is broken. The man then requests that his sister kill him since "his end has come." Prior to his execution, he informs his sister that he will transform into a moose upon his death. She must then skin and cure him as a moose. The skin from the head must be taken and

always kept with her in a medicine bag. This will protect her and ensure prosperity. If she, however, loses the bag, or someone tampers with it, disaster will result.

(Rand, 1874/1971:107)

This ties in with a comment made to me by a Mi'kmaw from Shubenacadie who once said that you never fully reveal yourself because that could give someone else a foothold in you; it could make you vulnerable. (Personal communication, 1993)

Competitions to prove one's power or mastery are a theme that runs throughout Mi'kmaw legends. Competitions also took many forms: through dance, through song, through physical strength such as ball games and races, and through wit. Le Clercq noted the "ardor" with which Mi'kmaq competed with one another in reading and writing "as to which would be the most learned and most clever." (Schmidt and Marshall, 1995:6) In many legends, one powerful *puoin* or *ginap* (male or female) tries to out-trick, out-run, out-swim, out-dance the other until one is defeated. In the process, he or she might become a loon, lightning, or a number of other shapes. Jerry Lonecloud describes competitions of courtship to win a woman as a wife. One involved a foot race whereby the fastest runner won the woman as his wife. Another account tells of a competition in the form of singing. The best singer was chosen by the girl. In all of these accounts the man must prove himself worthy, able to provide for the family, and protect against harm. Most likely this was true of women as well. (Lonecloud, in Dennis, MG1, 2867, Notebook #2:75-77)

Competitions of strength that occurred within communities seemed to be to test and increase one's strength but not to diminish the other's in the process. Within one's community, these served to strengthen one's individual power, but would ultimately serve and benefit the community. It was put to the test, but it was not done to harm. Cases where competition was truly to disempower or conquer another seemed to occur in foreign villages, or villages outside one's own familiar territory. In foreign communities of unknown relations, these were for survival or to gain something for one's own community or for oneself. This will be discussed in further detail later in the chapter. (McGee, personal communication, 1996)

Personal autonomy is important in current Mi'kmaw culture. Mi'kmaw children are allowed to take responsibility for the choices they make, while at the same time being included in everything. Anyone visiting a reserve cannot help but note the presence of children at all the events. Often this seems chaotic and disorderly. Many non-Native people have attributed a lack of discipline to the freedom given to the children, but Mi'kmaq have told me children are treated like adults. I have never once seen a child forced to sit down to supper. Whether the child wishes to eat or not is up to them. One parent said he and his wife give their children options from which to choose. A Mi'kmaw mother said to me that she did not understand how people could get embarrassed by their child's behaviour as though it was a reflection on them. In this light, I once asked a Passamaquoddy friend what difference he perceived between the

way he was treated in his own community and his experience at a non-Native boarding school. He responded that at the boarding school, he always felt as though he was expected to be something other than what he was. In his own community, he felt as though he was allowed to be who he was.

Personal choice is seen in the social structure of early historical settlements. Although there were *sakimaw* or headman of each of the seven traditional districts, and for smaller, localized bands, it was an egalitarian society. No one was forced to follow the *sakimaw*. Their position was based on merit, on their generosity and on their skill. If someone was displeased within their own community, they could leave and go reside elsewhere. It was a matter of their own choice.

The Sagamos has not absolute authority among them, but rather such as Tacitus reports of the ancient German kings: 'The power of their kings,' says he, 'is not unlimited or infinite, but they guide the people rather by example than by commandment.' (Lescarbot, 1609/1968:265)

A number of Mi'kmaq have talked about non-interference in terms of letting a person find their own way as seen in Murdena Marshall's comments. On many occasions, I have asked Mi'kmaw elders for advice on certain decisions. Inevitably they tell me to do whatever I think is best or that it is up to the individual to decide, even if this means they will be making a mistake. Once, I made the mistake of speaking on behalf of another person, a Mi'kmaw. I had the illusion that I was being helpful. He curtly told

me that he could speak for himself. Murdena Marshall writes about this quality of non-interference in terms of counselling:

There is one concept that baffles non-Natives the most. They cannot understand how one can be counselled if there is no verbal direction to take. A Mi'kmaw counsellor will use the metaphorical approach instead to show another Mi'kmaw how a situation and the consequences occurred. Making one aware of behaviour and consequences of another enables one to see the patterns of similarity and provides necessary information to make judgements accordingly. (Marshall, unpublished manuscript, n.d.)

Metaphor, as will be discussed in the section on storytelling, is a way to give examples of human behaviour and its consequences, without being directly confrontational.

This sense of self is closely tied with a child's self-esteem and place in the world. In historical Mi'kmaw society, personal autonomy went hand-in-hand with proscriptive behaviour and discipline. Children had a specified place in the wigwam, and sat in a specific posture (legs extended). (Rand, 1850:13) They were never to walk between their parents and the fire. Brothers and sisters also maintained formal relationships, exercising great modesty in their communication with one another. Terms for older and younger siblings were also used. Ceremonies would celebrate various rites of passage such as their first tooth, first killing of the moose, their naming and so forth. In this way a child was nurtured into adulthood with a sense of knowing her/his own power, their own being, but

also a sense of his/her place in the world. They had to prove that they were worthy of being a man or a woman, and when they did, they were recognized for their skills.

(Le Clercq, 1691/1968:290; Wallis & Wallis, 1955:228-230)

This is a very complicated topic, which has various interpretations. It is not my desire or place to define exactly what the different types of “souls” or “spirits” there were and are in Mi'kmaw culture. There are many interpretations in current Mi'kmaw culture, depending on the person's view and religious outlook, and in a sense, the terms are not important. What is essential to the discussion is two-fold: first is the development of one's personal confidence in the midst of a fluid and unpredictable world. The power spoken of in the previous discussion may not be the term used today, but one might speak of confidence or self esteem. How is a child come to know him or herself as a confident human being in an unpredictable world? Second, how does the child see and interpret this unpredictable and shape-changing world. Traditionally, people had to come into, sing, dream their own power. It was individual what animal would be an ally or which objects increased one's personal power or good fortune. How a person conducted themselves in the world determined their survival. Those who did not respect these gifts invited chaos or personal destruction.

The second circle regarding identity might be termed the communal spirit or identity. Personal autonomy, and the encouragement to develop strength and power, were and are encouraged in Mi'kmaw culture, but not for selfish use. This went hand in

hand with a sense of communality. The stronger the individuals, the better each could take care of and serve their family and community. It also meant that children could benefit from a network of expertise. As in any culture, there were individuals more skilled in certain areas. Maillard's account of a feast oration, in which the virtues of the host's ancestors are honoured, illustrates this type of individual strength. Each ancestor mentioned is esteemed for a particular talent or virtue (for men in Maillard's account: the making of snares, the imitating of birds, generosity in sharing seal oil, the knowledge about beavers; for women: bringing about alliances, arranging marriages, giving birth to mighty warriors, and courage in dealing with enemy prisoners). (Maillard, 1755: 8-12, 15-18)

The community, in turn, benefited and protected the individual. It was a reciprocal relationship that relied on humility, respect and generosity of spirit. Selfishness, self-proclamation or arrogance were antithetical to the community's well being.

When...some one begins to assert himself and to act the Sagamore, when he does not render the tribute, when his people leave him or when others get them away from him; then...there are reproaches and accusations as that such a one is only a half Sagamore, is newly hatched like a three-days chicken, that his crest is only beginning to appear... (Biard, 1616:89)

Great emphasis was placed on sharing. Sharing was one of the basic values of the Mi'kmaw culture. This included knowledge.

They refused nothing to one another. If one wigwam or family had not provisions enough, the neighbours supplied them, although they had only that which was necessary for themselves. And in all things it was the same. (Denys, 1672/1968:415)

Le Clercq provides a lengthier description.

The strong take pleasure in supporting the feeble; and those who by their hunting procure many furs, give some in charity to those who have none, either in order to pay the debts of these or to clothe them, or to obtain for them the necessaries of life. Widows and orphans receive presents, and if there is any widow is unable to support her children, the old men take charge of them, and distribute and give them to the best hunters, with whom they live, neither more nor less than as if they were the actual children of the wigwam. It would be a shame, and a kind of fault worthy of eternal reproach, if it was known that an Indian, when he had provisions in abundance, did not make gift thereof to those whom he knew to be in want and in need. This is why those who kill the first moose at the beginning of January or February, a time at which those people suffer greatly, since they have consumed all their provisions, make it a pleasure to carry some of it themselves very promptly to those who have none, even if these are a distant fifteen to twenty leagues. And, not content with this liberality, they invite these latter also, with all possible tenderness, to join their company and to remove closer to their wigwams, in order that they may be able to aid these people more conveniently in their necessity and in their pressing need, giving a thousand promises to share with them the half of their hunting. (Le Clercq, 1691/1968:117)

In contemporary Mi'kmaw culture, in Eiskasoni, when someone dies, an auction is held. People donate some item to the auction, then attend the auction to bid on some item. The money from the auction goes to help the family of the deceased.

Connected to sharing was the non-materialistic quality of early, historical Mi'kmaw culture. As Nicholas Denys observed, "The hunting for the Indians in the old times was easy for them. They killed animals only in proportion as they had need of them." (Denys, 1672/1968:426) Le Clercq also comments on how little attachment they had to the few material items in their possession. (Le Clercq, 1691/1968:244)

Community, in essence, was bi-laterally related households that cooperated with one another in the exploitation of resources and shared reciprocal relationships. Harold McGee believes that early, historical Mi'kmaw society followed a deme structure. In brief, he defines demes as "bilateral descent groups, that "approach corporate exclusiveness as kin groups, and "possess corporate exclusiveness as community groups."

(McGee, 1977:109)

Demes would seem to be ideal for organizing labour under conditions which normally only require the coordination of large task groups at certain specified times. The construction of fishing weirs and traps for the spring and autumn runs of anadromous fishes would be one such task, game drives would be another, and undoubtedly there are others. The majority of production activities would require fewer people and the resources would be more efficiently exploited with dispersed households scattered about the periphery of a bay, or along the banks of rivers. The compounds of prestigious headmen would be larger than those of others in order to accommodate the bachelors (*ulbadoo*) who were normally attached to his household. The community would be the collection of scattered, bilaterally related households who recognized a common headman, and whose corporate identity was symbolized by a particular animal. (McGee, 1977:111-112)

Within one of the seven districts distinguished by the Mi'kmaq, there might be eight to ten local communities, perhaps consisting of 150-250 people. Bi-laterally related households would be scattered along bays and mouths of rivers in such a way as that the individual households could exploit the resources each needed to survive. These exploitation territories would be determined annually by the *sukimaw* and adjusted to changing demographics and resources. At times when greater manpower was needed,

such as for the fish runs and game drives, people would come together cooperatively in larger groups. This would be a time of visiting, marriage arrangements, and council meetings to determine matters of importance such as war and alliances. (McGee, personal communication, 1995, class notes, 1990)

The extended family is the most important unit for the Mi'kmaq. Personal relationships, particularly among extended, bi-laterally related family members were, and still are, highly valued. It meant children could reside with other family members to learn, to be supported, or simply to escape an uncomfortable situation, such as the re-marriage of a parent. As previously stated, the word, *Klamuk* found in the word *nklamusis* (uncle) means "he who looks after us" in the event that one's own parents cannot. (Francis, personal communication, 1995) Margaret Johnson related that Chapel Island, prior to centralization (1940s and 1950s) was made up of six families, three of whom were interrelated through either blood or marriage. (Johnson, personal communication, 1996)

More research into kinship terminology may reveal an organized system of reciprocal relationships and kinship terminologies in early Mi'kmaw society. W.H. Mechling has elaborated a whole network of kin terminologies that indicate a system of reciprocal relationships. Terms for brother and sister for instance, might extend to first cousins of the same sex on the side of the opposite-sex sibling (which would in turn include certain first cousins) of a parent. This also would hold true of parental roles being extended to include certain nephews and nieces, who might be addressed as "son" or

“daughter.” (Mechling, 1927:75-101, McGee, personal communication, 1995; class notes, 1990) The term *nilmus* refers to the spouse of a sibling of the same gender as the speaker. Therefore, it can mean both “sister-in-law” (brother’s wife, male speaking) or “brother-in-law” (sister’s husband, woman speaking). The term *nmaqtam* refers to the spouse of a sibling of the opposite sex from the speaker, and therefore can refer to a brother-in-law or a sister-in-law depending on the gender of the speaker. Other terms refer to older and younger siblings. *Nmis*, for instance, refers to one’s older sister. (Francis and Johnson, personal communication, 1995) *Kwe’ji’j* refers to one’s younger sister. Different relationships would be accompanied by certain codes of conduct depending largely on age and sex.

Bernie Francis, however, feels that kin terminology, as it is today, is a looser designation for people who one feels plays a particular role in one’s life, i.e. like an uncle or father, or someone you might call grandmother because of her wisdom. A number of Mi’kmaq have told me about this type of relationship they have with a person(s) in their community that are not literally their uncle or father or whatever.

Kinship terminology also extended to animals and other features of the world, as seen in legends and mentioned in the language chapter. This implies that one’s relationship to the world, and its many resources, was one of respect and one which required proper conduct. It was not one of dominance.

This extension of family members, of reciprocal relationships, whether formal or informal, allowed, and allows, for a young Mi'kmaw to have flexibility in residence, and, according to McGee, go live with uncles or aunts or other relatives to learn particular skills. This flexibility and shared parenting among a wide number of households, gave the young man or woman a wider scope of educational options, and provided a welcome home into which they could enter on their travels or in setting up a new residence.

(McGee, class notes, 1990)

The strength of the family is still evident today. Some extended families number well over one hundred people. Invariably people are in some way related to one another. On large reserves, such as Eskasoni, family members tend to live in clusters of households. (Doucette, personal communication, 1996) Fluidity between the households is common. Children may go to live with relatives on other reserves, be brought up by grandparents for a period of time or for the child's whole life. In a project I conducted for the Native Council of Nova Scotia regarding Aboriginal parents use of family resource centres, a number of parents preferred to leave their children with their own families instead of taking them to an unknown child care facility. One mother drove one half hour each way to take her child to her mother's house, instead of to a child care facility near where she worked. (Sable, CHIP report, 1994)

I have been told that children are the responsibility of everyone. Vaughn Doucette told me how it may appear that children are out playing by the road, seemingly

unsupervised. In reality, everyone in the surrounding households are keeping an eye on them. In one incident where an unknown stranger stopped his car along the road to speak with the children, everyone in the surrounding households began phone calling one another regarding the stranger's presence on the reserve. Within one half hour, a notice was posted on the reserve television station alerting people to the possible danger.

(Doucette, personal communication, 1995)

Reciprocity and gift exchange were inherent in Mi'kmaw culture, again illustrating the fluid exchange between oneself and the world. This manifested literally in the exchange of material goods and presents between people.

...in the presents of peltry they make to other savages, who come either in quality of envoys from one country to another, or as friends or relations upon a visit to one another. Then it is, that a village is sure to exhaust itself in presents; it being a standing rule with them, on the arrival of such persons, to bring out every thing that they have acquired, during the winter and spring-season.... (Maillard, 1755:4)

This type of offering was made to animals, to trees, and to certain "Grandmother" or "Grandfather" rocks and other animate beings when requesting assistance, asking the animal to give its life, or of simply out of respect. Some Mi'kmaw hunters still do this.

This practice of gift exchange was adopted by the French, and subsequently the English, in their relationship with the Mi'kmaq. It essentially became part of the diplomacy practiced by the French and the English in relating with the Mi'kmaq. Annual gift-giving ceremonies were established at various central points throughout the Maritimes at which time the French and English delivered gifts to the Mi'kmaq. (Dickason, 1976:83-89)

Forgiveness is perhaps one of the most subtle Mi'kmaw values I personally have encountered. The quality of humility in regard to one's community has already been shown linguistically in Francis' example of how Mi'kmaq tend not to put themselves in the forefront. However, when a member of the community commits a crime or social injustice, they are not forever judged by that crime. I have been told, the person is forgiven if they show he or she is making an effort to change their behaviour. Again, this reflects the notion that people are responsible for themselves coupled with sense of inclusiveness into the society as a whole.

This quality was noted early on by Biard. In describing how a community handled offenses of one member against the other, he wrote:

The little offenses and quarrels are easily adjusted by the sagamores and common friends. And in truth they are hardly ever offended long, as far as we know. I say, as far as we know, for we have never seen anything except always great respect and love among them; which was a great grief to us when we turned our eyes upon our own shortcomings.... The great offenses, as when one has killed another or stolen away his wife, etc. are to be avenged by the offended person with his own hand; or if he is dead, it is the duty of the nearest relatives; when this happens, no one shows any excitement over it, but all dwell contentedly upon this word *habenquedouic*, "he did not begin it, he has paid him back: quits and good friends." But if the guilty one, repenting of his fault, wishes to make peace, he is usually received with satisfaction, offering presents and other suitable atonement." (Biard, 1616:93)

Bernie Francis told me that people from outside the Mi'kmaw community noticed how forgiving Mi'kmaq are. If, for instance, someone has committed a crime, they would be forgiven as their behaviour displayed efforts to improve. In other words, if

the person began to act decently, be generous and helpful to others, the community would come to forgive him or her. Francis also described a feast, *wi'kupaltink*, he remembers held on New Years where the basic idea was to extend forgiveness to anyone to whom you felt ill will.

B.F. *Wi'kupaltink* is a feast, a once-a-year feast where people have an opportunity to come and eat together. At least on the surface, that's what it looks like. And they do eat together. But there is more to it than that in that that's the time of year whereby people have an opportunity to get together, people who have had difficulties with one another. This would be the time whereby they would come and be, in a way, gently persuaded into coming to eat together and to let bygones be bygones by eating together, sharing the same food, sharing the same laughter and jokes and so on, ultimately leading to the shaking of hands of everyone. Therefore, that would be the end of the conflict between families or individuals. If you refused, it appeared as though... It's done very subtly by the way....If you refused to come to agreements, or if you refused...to shake hands with someone that you've been in conflict with and everybody knows that you have been, you are the bad guy....You're not going to be given much respect....It's almost like you are holding back the happiness that is possible by not having forgiven.

T.S. Happiness for yourself or the community?

B.F. No, for the community. Because if one community member, or one family is unhappy, it spreads around. It's conflict all around. And you do as an individual or as a family have an effect on the rest of the community. So nobody says anything to you, really, it's just that nobody really wants to deal with you either, you know. That's the beautiful part of the culture. (Francis, personal communication, 1994)

Yet these values were not in terms of an enforced directives or abstracted morality, "thou shalt not kill" but were spoken of metaphorically, or through silence, and inherent in the behaviour of the elders and community members. Feedback also occurred through

gossip. If one member of the community did something, the whole community might soon know about it. Although nothing may be said directly to the offender, the murmur of gossip will reach him or her in one way or another. In short, a child existed within a wide network of relationships which both allowed for a range of possibilities in the child's personal journey, yet provided a mirror that reflected back on the child when his or her behaviour was inappropriate or had negative consequences for the community.

The third circle or aspect of self is how one relates to the world outside the community or network of relationships. Outside one's own known set of relationship lies an unpredictable world of relationships. Forming alliances was important, as was being aware of impending dangers and shifting alliances. In legends, as pointed out by Harold McGee, there are many accounts of terrific struggles and competitions between two men, both usually *puoinaq* or *ginupaq*, people with extraordinary power. These always take place in territories beyond the challenger's village, or in unknown territory. Here the traveller is tested to the utmost of his strength. In these situations, one had to test for trustworthiness. As seen in the story, "The Hidden Life", the man hid his life essence before facing his enemy.

On one occasion when I was talking to an elder, I was surprised that he kept asking me such questions as "What do you think?" "Is that right?" when they were obviously questions I could not answer simply because I was not a Mi'kmaw. Later, another Mi'kmaw friend told me the elder was testing me, seeing where I was coming from.

This brings up notions of trust. Again, I have been told that elders will not just begin telling you information or stories just because you ask. This takes time for them to come to know you, what you want, who you are and how you are going to use the information. Similarly, with children in situations outside of the community, it may take time for them to fully trust or come to know a situation for them to fully interact. This, however, could be said of any child.

Returning to the notion of competition mentioned in the earlier part of this discussion, Nancy Allen's research among the Kickapoo found that Kickapoo children were unwilling to compete with one another in the classroom. Vaughn Doucette, when asked about this among the Mi'kmaq responded with his own story. Now in his mid-thirties, he described going to an off-reserve, provincial school where education was in English. He was the most fluent English speaker of all the Mi'kmaq in his class, and therefore was able to answer questions with more ease than the others. The other Mi'kmaw students in his class had Mi'kmaq for their primary language. These students did not wish to be called upon because they were embarrassed by or unwilling to expose their inefficiency in the language. At that time, not being fluent in English was perceived, mostly by non-Natives, as a mark of ignorance and lack of education. Vaughn, on the other hand, felt comfortable enough in his speech to respond to questions posed by the non-Native teacher. Outside the classroom, his Mi'kmaw classmates chided him and knocked him about because he stuck out from the group. His ability in the English

language made others appear less intelligent. I asked him, knowing that Mi'kmaw competed with each other within their community, if it was a matter of not competing or of being embarrassed. Also, I asked, would the same response be true in a reserve school with Native teachers? In other words, the off-reserve classroom was not an even playing field where children could shine in their own way. It was based on one set of criterion, to articulate and respond to questions in English. It was also in "foreign territory."

(Allen, 1995:152-153; Doucette, personal communication, 1996)

This notion of self has been discussed to raise the question of how different concepts of individuality and self may affect the way children respond within the classroom. It has also been raised to provoke contemplation about how different cultures perceive the world, their relationship to the many resources that western science has defined in only one set of terms, and the time required for trust to develop. Mi'kmaw educators and administrators with whom I have spoken believe that Mi'kmaw children experience a loss of self-esteem when they attend non-Native, provincial schools. These children, it appears, do not always live up to expectations.

Principle Three: Learning was Contextual and Holistic

The third principle is that learning was contextual. It was not divorced from personal experience, nor was it lacking in relevancy or meaningfulness to a child's life. Everything, from clothing to features of the landscape and the stars in the sky, was integrated into and reinforced a child's learning. Everything was related. The world was

a mirror into which the child could look for guidance and feedback. Learning occurred throughout life in a broad experiential context in which knowledge was applicable. Many scientific experiments occur isolated environments, including the classroom, in which variables are isolated into tests and control groups. The transmission of knowledge in Mi'kmaw culture occurred throughout life. Learning from direct experience and through example and imitation were a constant for children. Children, early on, became active in the daily activities. As babies, they were carried on their mother's back as she went about her daily activities. When the child cried, she would dance and sing until the crying ceased. As children grew out of their cradleboards, they would participate in the activities according to their strengths. For instance, according to Nicholas Denys, "daughters help carry when moving camp depending on their strength. They were thereby accustomed at a young age to work, as well as to do everything they had to do, even to masticating the Fir gum" (Denys, 1908/1968:424) Similarly, young boys would undertake hunting of small animals, and mimicking the actions of men. (Mechling, 1958:28-29)

The whole way of life in Mi'kmaw culture was literally woven and encapsulated into the fabric of their clothing, painted on their canoes and wigwams, or many other material items. Not only was everything children wore directly taken from nature, but motifs and animal figures painted on clothing were sources of power, and attributes to their relation with the rest of the world. Porcupine quillwork, skilfully collected, dyed

and woven, adorned the girls hair and clothing. Matachias, dew claws, and tinkler cones of copper all sang and danced with them as they moved through he world. In other words, communication with their world was both very personal and universal at the same time, with the tiniest details being an encapsulation of the whole.

As Barman, Hébert and McCaskill wrote in their book, *Indian Education in Canada*:

Whatever their ecological base and specific lifestyle, Canada's aboriginal peoples shared certain cultural attributes... The responsibilities of family life were valued highly, particularly the obligation to educate children in a holistic fashion. As Jacqueline Gresko documents in her chapter about the Plains Cree and the Coast Salish, the process of education encompassed all aspects of the child's life. Children were raised to assume adult roles in an atmosphere of warmth and affection. Learning emphasized such values as respect for all living things, sharing, self-reliance, individual responsibility, and proper conduct. Children also had to learn how to utilize the environment most effectively for economic survival. Integral to all aspects of education of the young was the spiritual, and events in the lifecycle from birth to death were marked with ceremonies stressing the individual's link to the spiritual and the sacred. Cultural continuity was thus ensured. (Barman, Hébert and McCaskill, 1986:3)

Their classroom was, and in some cases, still is, the world around them. In walking around a pond near my house, a young Mi'kmaw boy described in extraordinary detail every aspect of a beaver's life and the building of a dam. This boy learned from his father. Learning was not initially abstract; it was concrete and contextual. These life experiences were further reinforced through stories songs and dances that provided children with metaphors for how to be in the world, as well as the means to embody and communicate

that knowledge that ensured the continuity of their culture. Isabelle Knockwood, writing about her life during this century, describes her memories of her childhood:

My mother passed on some of her traditional knowledge to me. Like other Mi'kmaw mothers, she took care to teach us things which would keep us safe. For example, when she was walking with me in the forest, she told me to listen to my footsteps as I went along so when I retraced my steps back home I would recognize the different sounds and realize if I was going the wrong way before going too far.

When we were taken into the bush as tiny children we began learning about the environment from the cradle-board strapped to our mother's back or from sleeping and waking up in a hammock between two trees. As our mother walked along, we saw the changing landscapes. Day after day, from sunrise to sunset, in all kinds of weather, the sky, the trees, the ground, and the waters are what we saw. Upon waking in the morning, our first sight was usually the branches and leaves silhouetted against the ever-changing sky and the last thing before the dream world took over, we saw the moon and stars and the Milky Way of the night world. (Knockwood, 1992:18-19)

Irving Dana, a Passamaquoddy acquaintance, related that when he was a child, he would learn by doing the task with the elders. As they made the basket, canoe, or whatever, they would be telling stories. These stories would tell him about where everything they were using came from, its' relation with the rest of nature. In this way, he did not just learn that birchbark was used to build a canoe, but where it grew, how to get it, and how to use it properly. (Dana, personal communication, 1995)

Principle Four: Learning was Multi-sensory

Contexts were established through information accumulated through all the sensory channels, as well as the kinaesthetic and extrasensory or spiritual, e.g. dreams and visions.

Multi-sensory, or multi-channelled learning included the extrasensory/spiritual and intuitive. For instance, learning and communicating through bodily movement was an inherent part of traditional Mi'kmaw culture. Derrick De Kerckhove, a student and colleague of Marshall McLuhan discussed orality (storytelling and speaking) as a multi-sensory experience. In De Kerckhove's opinion when you speak mind and body are not separate, and you use your whole body, playing with the space around you. (DeKerckhove, in *CBC Ideas* transcript, 1988:4)

Smell was important to gathering of medicines and is still important for some Mi'kmaq I know. They smell plants and berries while walking in the woods. Some Mi'kmaq smell me. Sweetgrass (*welima'qewe'lmsiku'l*), burned as an offering and purification by Mi'kmaq, literally means "sweet smelling grass." (Hewson, personal communication, 1995) A Passamaquoddy friend told me smell was important to picking the right medicines. Similarly, he was also told that he had to always be sure to pick the right versus the left medicine (explained as the good from the poisonous). There was no verbal or visual instruction which was which, he just had to know intuitively. (Dana, personal communication, 1995)

Information or messages could be, and still is by some Mi'kmaq, received through visions, dreams or experiences with the phenomenal world that included communication with animals, other-than human beings such as *Wikaladamujk* (small people or fairies) or a host of other forms of energy. Telepathy and dreams are commonly mentioned in

conversations today. These experiences in turn were believed, and trusted, as potentially of importance for the information they carried.

Marie Battiste writes:

The fundamental premise in tribal epistemology or traditional religion is that beyond the immediate world of perception, memory, imagination, and feelings exists another world from which knowledge, power or medicine is derived and which the traditional native peoples have been taught in their oral tradition will aid them in their survival. The process of knowing is thus derived first from the immediate world through personal and tribal experiences, and secondly, from one's interactions with the spiritual world. Since elders' experiences in both worlds are considered invaluable for tribal members, the oral tradition was a critical element in the transmission of knowledge and culture. Religious traditions and rituals provided access to the storehouse of knowledge, and provided harmony for all life, including plants and animals. The various native texts thus catalogued essential knowledge of the two worlds in holistic and meaningful ideas or visions. Dreams and visions were inspired by the spirits and their manifestations in graphic form provided indicators of spiritual intentions. Often the services of a medicine man helped one to discover the true essence of a visionary experience. (Battiste, 1983:47)

In brief, the use of many sensory channels allows for information to be received and assimilated in a more holistic and comprehensible way. It allows the individual to imbue experience with meaning. Once this personal meaningfulness is established, then a person is able to share and test it among others.

Principle Five: Learning Was Reflective

A number of examples of the “reflective” quality in learning in other Native cultures have been provided in the first part of this thesis. Of interest in Barnhardt’s observation of Native and non-Native teaching styles, is that reflectiveness is not just to words, but to

rhythms which include bodily movements. (Hampton, in Battiste & Barman, 1995:25) Abbé Maillard, documented a feast oration in 1758, honouring the ancestry of the host. He wrote of the orator speaking of the host's father:

He was particularly admirable for decoying of bustards by his artificial imitations. We are all of us tolerably expert at counterfeiting the cry of those birds; but as to him, he surpassed us in certain inflexions of his voice, that made it impossible to distinguish his cry from that of the birds themselves. He had besides, a particular way of motion with his body, that at a distance might be taken for the clapping of their wings, insomuch that he has often deceived ourselves, and put up to confusion, as he started out of his hiding place. (Maillard, 1758:11)

Another example may be seen in the journals of Arthur Silver and included in Parker's book. Silver wrote: "There is something peculiar to the Indian speech, abounding as it does in soft vowel sounds, which lends itself readily to the imitation of every sound of nature." (In Parker, 1995:18)

This reflecting, tuning in, mirroring or imitating of the world, was important to survival, but it also points to a world of reciprocal relationships which were respected. A person did not simply go out to conquer animal for food, but talked with them, danced with them, cajoled them and honoured them. The dances, songs, chants, ways of speaking were the way one communicated and shared a language with the world. A person learned the language of the trees, the animals, the birds, and the many manifestations of the universe.

Some aspects of this have been discussed in the previous chapter, regarding the quality of storytelling. However, what has not been addressed is the importance of listening in oral cultures, not just to elders, but to everyone and everything, the sounds of the world, for the important information, the wisdom they shared or the caution they advised. In other words, oral traditions are not just based on speech, but on silence, listening, and reflecting. One must hear what is spoken, whether from human, animal, weather, or other beings, to learn and survive in the world, and to create a holistic and comprehensive understanding. It is as if everything carries a message which informs the whole. It is also respectful to listen.

Campbell Hardy's description of his Mi'kmaw guides during a hunting trip in Nova Scotia provides a glimpse of the role of silence and listening.

A walk through the forest under heavy loads, is generally a tedious and silent affair. At long intervals, the Indians exchange a few syllables in their melodious language and impressive manner. Their subdued tones draw no echo from the woods, as does your quick and boisterous exclamation. Though they have no intention of hunting, should they find tracks quite fresh, their step is as light and their caution as unrelaxed as on the trail. In fact, either when hunting, or merely travelling through the woods, they avoid disturbing, in any way, game that might be in the neighbourhood of their route. " (In Parker, 1995:10)

In the same description of the feast just cited, the Abbé Maillard observed:

After grace being said by the oldest of the company, who also never fails of pronouncing it before the meal, the master of the treat appears as if buried in profound contemplation, without speaking a word, for a full

quarter of an hour: after which, waking as it were out of a deep sleep, he orders in the Calumets, or Indian pipes, with tobacco. (Maillard, 1755:6)

This type of spacious silence is seen in innumerable accounts, and is connected with reflectiveness, or mirroring. It seems again to point to a relationship with the world that first acknowledged the silence and space out which things take shape—to be receptive. Yet this was not a dull silence, as seen in Hardy's account, but an aware silence, a time to be receptive for cues to any number of messages.

Related to this is the tones in which Mi'kmaq speak, as seen in Hardy's account. More accurately, it is a different way of emphasizing words than heard by English speakers since individual Mi'kmaq have as many different vocal qualities as any culture. Many times Mi'kmaw friends have said something without major tonal emphasis, the meaning of which will not immediately sink in. Often, these things quietly enter my consciousness like a little echo; later I will realize the person has said something important. In one case, it was that the pavement was about to end, and, as my car went crashing onto a unpaved portion of the road, I said, "What?" He said, "The sign said the pavement was about to end." This is still a joke between us.

I have raised this issue because the tone of speech in which people speak, or the emphasis given to words, is yet another way miscommunication occurs or misunderstood messages are conveyed. For me, it is often a source of humour, but for a child in a classroom, it may convey a lack of interest or understanding to the teacher. Many times

things that are important seem understated, not voiced with the same emphasis I, and people of my cultural background tend to give things we want heard.

Although this aspect of speaking can not be generally stated about Mi'kmaq, it seems to reflect a way of relating to space, which in turn, has to do with how and what we reflect back to the world. The quality of reflectiveness and mirroring, and modes of communication, will be discussed in the subsequent chapters on story, song, and dance.

CONCLUSION

Five principles of learning have been discussed, but there are inevitably more. These are the ones that have continued to arise in my own research as themes. The concept of self has been raised as a question for educators to consider in teaching children from different cultures. Mi'kmaw children were and are encouraged to develop personal autonomy through personal experience and choice. The encouragement of individual strength was not for selfish reasons but benefitted the community. The community in which children grew up was their extended identity in the sense that everything was shared in a fluid exchange of reciprocal relationships that required proper conduct. The community, in turn, was like a mirror which reflected back to the child in a generally non-confrontational manner.

Learning occurred in a holistic fashion through a number of sensory-channels, including the intuitive. This multi-sensory and extra-sensory quality of children's experience in learning and communicating meant that many avenues of communication

with their world were at play, each of which informed them in many important ways to create an comprehensive understanding of the world. Information was shared, and individual experience was both trusted and respected. As will be seen in the subsequent section, these principles were embedded in the many cultural expressions of the Mi'kmaq and were part of how children learned and perceived the world.

MAJOR FORMS OF TRANSMITTING KNOWLEDGE AND VALUES IN TRADITIONAL MI'KMAW CULTURE: LEGENDS, DANCE, SONGS AND CHANTS

As long as they have anything, they are always celebrating feasts and having songs, dances and speeches....(Pierre Biard 1616:107)

Biard's comment, at first glance, might create the image that the Mi'kmaq did nothing but eat, drink and be merry. When, however, one takes the time to look into these stories, songs and dances, one finds an encapsulation of a vast world of knowledge that explodes into an intricate web of information. One story, one song, or one dance could take up hundreds of pages of writing in English just to articulate all the information embedded in it. Again, multiple layers of meaning are compressed into each one, similar in nature to the language.

These three modes of transmitting knowledge—story, dance and song— will be discussed in this section. These have been chosen for a number of reasons. First, to show that they are effective and potent means for transmitting knowledge, ones that contemporary educators, including constructivists, have come to recognize and incorporate into teaching methods. Second, that through story, song and dance, extensive knowledge regarding the “natural” or physical world was communicated. This knowledge could easily be incorporated into a science curriculum. In fact, the knowledge communicated in the stories, songs, and dances reveals an extraordinary awareness of the physical properties of the world and the interconnectedness, or relatedness, of all things. Third, that the principles outlined in the previous chapter were reinforced in story, dance

and song. Other means of transmitting knowledge, such as games and other forms of art, were also important but will not be discussed in this thesis.

Story, dance and song were pervasive throughout Mi'kmaw culture. They most commonly occurred together—song and dance, song and story, story, song and dance. All three are still important in the Mi'kmaw culture although contexts have changed, and some information has been scattered or is held in the memory of a few. For this reason, as well as their effectiveness as educational methods in the teaching of sciences and all subjects, their use should be encouraged, particularly for the elementary school grades. This should, however, be done in cooperation with the Mi'kmaq.

Some modern, non-Native educational initiatives are integrating various forms of the arts into the curriculum, and not just leaving them as separate classes or as supplementary activities. Two such initiatives can be seen in the Leonard Bernstein Center for Education through the Arts created by the world-renowned composer/conductor, Leonard Bernstein, and the Enki approach, developed by the educator, Beth Sutton. The Leonard Bernstein Centre, headquartered in New York City, has been working with elementary schools for two decades, teaching an approach to education through the arts. This they term “aesthetic education” and integrates all subject areas, including the sciences, into its technique. The Enki method is practiced at the Shambhala Elementary school in Halifax, and in schools in Boulder, Colorado and Boston. There are many others (Rudolf Steiner, Maria Montessori, and Chogyam Trungpa, Rinpoche are examples.) The constructivist

approach also promotes the use of various forms of expression for children to articulate their experiences. Again, the question that should be kept in mind with all of these approaches is whether teachers are teaching a pre-determined principle and world-view, or truly allowing the children to discover the world and understand the choices in articulating that knowledge. My experience to date with both the Enki and Bernstein methods is that they fundamentally strive for the latter. This, however, must be grounded in direct contact and input from other cultural groups, e.g. the Mi'kmaq.

Native educators are also developing their own pedagogy. Such initiatives are being undertaken by the Maori of New Zealand, and are part of ongoing research by Native educators (Gregory Cajate, David Petes, Marie Battiste, Eber Hampton among others.) Michael J. Caduto and Joseph Bruchac's series, *Keepers of Life* (1994), is based in Native legends and strives to teach science in a holistic fashion, using a number of creative activities, including dance, to reinforce and personalize learning. These initiatives are drawing on the principles inherent within Native cultures, the ways of thinking and relating to the world, as the foundation of effective education for Native children. (Battiste, personal communication, 1996)

LEGENDS AND STORIES AS A MEANS TO TRANSMIT KNOWLEDGE AND VALUES

Storytelling was and is a traditional Mi'kmaq form of learning and communicating knowledge. As well, it was a source of power, a way to channel energy, and shape

reality. It is for this and many other reasons that a Native science curriculum should incorporate storytelling as a vital and effective means to transmit knowledge. Mi'kmaw culture has an oral tradition; it is an oral culture. Stories, no matter what the subject matter, are the way information is communicated. My phone bill can attest to this. It is a way of thinking and a way of communicating that is distinct and applies not just to the telling of myths and legends, but to talking about everyday occurrences.

For instance, I once went to an award ceremony with two elders, one from Eskasoni and one from Waycobah. The function was attended by a number of local dignitaries. As we were leaving the ceremony, the wife of one of the dignitaries approached the elders to offer her congratulations and the formal greetings expected of her role. It seemed obvious the dignitary's wife expected this to be a short encounter, a quick hello-how-are-you conversation before moving on to the next person. The elder, in response, began to tell a long, involved story about one of her daughters. When the story was finished, the woman said her polite goodbyes and moved on to the next person.

This incidence, and the ones previously cited, highlight some fundamental differences in communication. These include goal orientation (the get-to-the-point attitude) versus process orientation (taking time to create a context from which the point emerges.) It also involves taking time to share, taking time to acknowledge, and taking time to reflect upon one another.

Nicholas Denys wrote the following description of storytelling in the mid-1600s.

The Indians were very fond of feats of agility, and of hearing stories.. There were some old men who composed them, as one would tell children of the times of the fairies, of the Asses' skin, and the like. But they compose them about the Moose, the Foxes, and other animals, telling that they had seen some powerful enough to have taught others to work, like the Beavers, and had heard of others which could speak. They composed stories which were pleasing and spirited. When they told one of them, it was always as heard from their grandfather. These made it appear that they had knowledge of the Deluge, and of matters of the ancient Law. When they made their holiday feasts, after being well filled, there was always somebody who told one so long that it required all the day and evening with intervals for laughing. They were great laughers. If one was telling a story, all listened in deep silence: and if they began to laugh, the laugh became general. During such times they never failed to smoke...Those story-tellers who seemed more clever than the others, even though their cleverness was nothing more than sportiveness, did not fail to make fun of those who took pleasure in listening to them. (Denys, 1672/1968:418-419)

Campbell Hardy recorded two categories of Mi'kmaw stories related to him by Mi'kmaw hunters in the nineteenth century. The first were termed *aknutmaq̄n*, meaning, "he tells news." These were oral history. The second term was *a'tukwaq̄n*, meaning "stories treasured up, indeed, and handed down from age to age, and often told for diversion, and to keep in memory the habits and manners of, domestic and political, of the 'sahk-ah-waych-kik [*sa'qwe'ji'jk*], the ancient Indians." (In Whitehead, 1988:221)

Examples of the first type, *aknutmaq̄n*, have already been given. The second type, *a'tukwaq̄n*, have been the source of innumerable studies in a variety of cultures, (Boas, Levi-Strauss, Malinowski, Cruikshank et al.) and will be discussed in this section.

Myths or legends are not fictitious, but are grounded in a reality as experienced by the Mi'kmaq. They were (are) an ongoing dialogue between a culture and the universe in which they dwelt, an interpreting and reinterpreting of reality.

...what people choose to talk about is always important for our understanding of them, and the narratives they choose to transmit from generation to generation and listen to over and over again can hardly be considered unimportant in a fully rounded study of their culture. When, in addition, we discover that all their narratives, or certain classes of them, may be viewed as true stories, their significance for actual behaviour becomes apparent. For people act on the basis of what they believe to be true, not on what they think is mere fiction. Thus one of the generic functions of the "true" story, in any human society, is to reinforce the existing system of beliefs about the nature of the universe, man and society. (Hallowell, in Smith, 1995:19)

These realities may be reinterpreted, added to and sculpted to adapt to changing times, but the fundamental and timeless cultural values endure through generations despite textual change. A number of legends have been personally related to me that incorporate Christian beliefs, angels and apostles. Silas Rand's collection, *Legends of the Micmac*, include many European motifs. Nevertheless, much of the values and qualities noted by early chroniclers of the Mi'kmaq, if stripped of the Eurocentric commentary, are still present in contemporary Mi'kmaw culture despite obvious external changes.

The notion of choice that Hallowell discusses needs to be highlighted. Reality, in a sense, is interpreted and used for a culture's purposes. Situations change and choices are made continuously, but cultural values and beliefs about reality are the mirror against

which a person or culture makes these choices—they are the continuous reflection of who we wish to be and the reality we choose to create.

In yet another definition proffered by Theresa Smith, based on her research into Ojibwe myth, she states, "Myth... is the inherently meaningful memory of the people spoken in the form of a symbolic narrative. It both defines and reflects reality and possibility in the world." (Smith, 1995:20) This possibility, or potentiality, was previously discussed in the chapters on science and language. Mi'kmaw world view is an open system, filled with possibility, mutability and ongoing interpretation based on personal and shared experience. As one Mi'kmaw told Wilson Wallis regarding the origin of stories:

Among the first generation of old-time Micmac there were no stories. The second generation told a true story about the first generation; the third generation made a story about the second, and added it to the other. The process continued and today a great many stories are known to us all. (Wallis & Wallis, 1955:317)

Legends transcend time; they are not fixed in any one point in time. In Paul Thompson's work done among African cultural groups, he notes that there is a point where actual historic occurrences make a transformation to myth. This transformation takes place when the event itself passes beyond peoples' informal memory, a time when people's direct experience and perception of what happened no longer exists. What then takes place is a concentrating of the meaning of the story which becomes shaped and stylized by tradition bearers into traditional forms of narration. The emphasis of what

happened then becomes extracted from the actual event into a account of meaning and values that transcend historic time. (Thompson, 1978:111) Mi'kmaw legends, as reported by Wilson Wallis, often begin, "there at the home place, among the old people." (Wallis Wallis, 1955:318)

Ruth Whitehead, assistant curator at the Nova Scotia Museum, provided an example of this process of mythologizing an historical event in the legend of L'kimu (meaning "he sends"), a Mi'kmaw who was a very powerful puoin and war chief during the "Kwedejk wars" [unknown date], with enemies who were possibly the St. Lawrence River Iroquois. L'kimu, is the hero of a number of war stories involving Mi'kmaq and Kwedejk, and was said to have died twice. The first time, his people put him up on a scaffold in winter, and L'kimu told them to come back in the spring. When they did, he was still alive. While he was dead, or possibly in a coma, a marten had gnawed a hole in his cheek, and the people took that as proof that he had really died and come back to life. The second time he died, he said he would reanimate himself the day following his burial and thereafter stay with his people forever. His burial site was near the river at Amherst Point in Cumberland County, Nova Scotia. He instructed his people to await the sign that would tell them to open his burial mound—the sky would be completely clear but "there would come a peal of thunder just at the time the spirit would reanimate his clay." The people, apparently fearing this event, buried him deep in the ground and piled a mound of stones over him in hopes of preventing his reemergence. This tactic proved successful, and L'kimu did not re-arise from the dead. (Whitehead, personal communication, 1995; Rand, 1894/1971:296-297)

The earliest citing of the name Arguimeau [L'kimu] appears in a 1708 census, in which mention of a Pierre Ulgimoo [L'kimu], born in the 1600s, is mentioned. Around 1740, a shaman—chief named Arguimaut was interviewed by Abbé Maillard in Prince Edward Island, confirming the actual presence of a L'kimu lineage. The basic story of L'kimu, with his arisal from the dead, has been told elsewhere, but with alterations in names and details. Wallis and Wallis documented a version said to have occurred on an island near Pictou. The name of the puoin is Tcedjaginwit [“Clean Life”], and when he was dying, he instructed the people to return in seven years. He tells them “On that day it will be as clear as glass, and you will not see a cloud. At twelve o’clock, you will see a little cloud near the sun, and will hear thunder.” The ground apparently cracked open but Tcedjaginwit never successfully reemerged. It is said that one can procure good luck in the hunt if you make a request of Tcedjaginwit when you pass the island. Another rendering of the story took place in Cape Breton and was attributed to Kluskap.

(Whitehead, personal communication, 1995; Whitehead, 1991:84, Wallis and Wallis, 1954:386)

Similarly in my own research, I traced how the missionaries were woven into legends replacing the traditional shamans in their power. In one legend recorded by Rand, a priest is said to have drawn the devil from the ground in a similar fashion to the descriptions of the early shamans curing the ill. (Rand, 1850:29) Fundamental themes remain and are refitted, while the actual event might be shed or altered to fit a current context. Yet these myths still retain fundamental qualities and elements that have endured, such as notions of power, shapechanging, social relationships and relationships

one had with the world in general. In fact, the myths themselves reflect the shapechanging nature of the world. (Sable, unpublished manuscript, 1993)

As previously mentioned in the discussion on concepts of time, Harold McGee proposes that storytelling is not focussed on time-sequencing, or on the development of plot and character, but rather on linking events to particular kinds of characters.

“Whether things are plausible or implausible determines whether it is a good story or not. The artistry is what you link together rather than in plot development or character development.” (McGee, personal communication, 1996) This type of linking can be seen in a legend told to Wilson Wallis in 1953 on the Eel River Reserve in New Brunswick.

Two dogs arrived at Ste Anne de Restigouche to warn the Indians that a French warship was coming to attack them. They had never seen a Frenchman or a ship. When the vessel appeared and pointed its guns at the shore, a Micmac with the ‘power’ rendered them useless. Not one cannon could be fired. The Indians killed all of the French aboard and then sunk the ship. It has now been raised, and you can see it over there next to the church. (Wallis & Wallis, 1955:318)

This particular ship, the *Marquis de Malauze*, was actually an unarmed supply ship sunk by the British. It was raised in 1936 in efforts organized by Father Pacifique, with much accompanying publicity. But, as Wallis and Wallis note, “with total disregard of available facts, the defenceless *Marquis de Malauze* was given a second two hundred years of age, grafted to a typical hero story, and made legend.” (Wallis and Wallis, 1954:318)

Eric Havelock's work on the ancient oral traditions of Greece reinforces this point, a crucial point for educators to understand. In oral societies, stories were told to give

examples of what would happen if one acts in certain ways. Moral lessons are not taught directly ("Thou shalt not...") but through tales, similar to the Dene telling a gambling tale in the presence of gamblers they hoped to deflect from gambling. The stories allow for the listener to reflect upon his/her own behaviour and make an independent choice whether to heed the lesson of the story, and to accept the consequences of their actions. Stories were metaphors for how one should live in the world. (Havelock, in *CBC Ideas* transcript, 1988:2-3)

Metaphors abounded in Mi'kmaw speech; "...as nothing enchants those people more than a style of metaphors and allegories, in which their common conversation abound...." (Maillard, 1758:3) The use of metaphors, much noted by early chroniclers, is a method for transmitting knowledge or information that is neither abstract, nor personally confrontational. As discussed earlier, non-interference is inherent in the culture. Examples are provided and then people make their individual choices in their behaviour. Murdena Marshall has stated that many people in the non-Native world fail to recognize the Mi'kmaq need to work with metaphors versus confronting a person one-on-one. (Marshall, unpublished manuscript, n.d.)

A delineation should be made between metaphor and abstraction. Metaphor is an image given to reflect and compare experience in a comprehensible form. It also allows the speaker to not personally confront another, but speak through imagery and example. Abstraction may have roots in experience but can take on meaning of its own, beyond the actual experience itself. Havelock theorized that the creation of writing, for instance,

brought with it the notion of an absolute, divorced from the uncertainties and individual dilemmas faced by people in their daily lives. Inherent in this is a depersonalization of morality, and other codes of behaviour. Havelock cites Achilles as an example, whereby one sees a human being "fighting, quarrelling, loving, talking...not pronouncing ideas or principles, he's just himself....The numerous stories of Kluskap are similar. Kluskap dances, sings, smokes pipes, has adventures and misadventures, and generally acts as humans but has powers that are of suprahuman level. (Havelock, in CBC "Ideas" transcript, 1988:3)

This human quality also makes the message of the legend practical, one that can be applied in daily life. Murdena Marshall recounted that as a child, the elders would warn the children to not go any further than the woods because they would disturb the *Wiklatmujk*, or small persons. *Wiklatmujk* were friendly and helpful by nature, but if you disturbed or abused them, they could disturb you back. According to Marshall, this acted as both a protective device for the children, as well as taught her to respect the woods. (Marshall lecture, 1995) In my personal experience, a number of accounts have been told about sightings of *Wiklatmujk*, and particular sites have been documented regarding their whereabouts. In other words, in contemporary Mi'kmaw culture, *Wiklatmujk* are not imaginary but have been seen to exist by some Mi'kmaq, and to dwell in actual physical locations.

Stories and legends share a widespread thematic and aesthetic framework but can be locally adopted to reflect local geography, resources or needs.

...clearly one of the things with folklore studies is that these themes, these concepts and ideas disseminate very widely. The names of heroes and probably some other basic context would be fairly widespread and what would be localized would be those things that relate to the particular audience. A good storyteller would take the widespread cultural theme and adapt it to their local culture.” (McGee, personal communication, 1996)

McGee then illustrated this point by telling the Maliseet story of Babaloos recounted by Peter Perley of Tobique, New Brunswick.

The story of Babaloos, the story about this plant that comes to the people to heal the people. The closing of that story is that after the people have been healed, they send off runners to the other communities to share the knowledge and as these runners were getting ready to leave, runners from the other communities are coming in to share their knowledge. And it all happened the same night in all these communities. And I would agree with you [about stories being localized] because they all go down to a particular spot on the Saint John River where this plant grows to show the people in that locale where the plant grows. But the same story is associated with other locales on the Saint John River. So the story proper exists all over but it is adapted to specific locales. And part of the magic and mystery is that it took place simultaneously and this plant came to give this medicine, or to share the knowledge of this medicine simultaneously all over the place. So it doesn't become rooted in a particular place....By allowing the story to change location, then it has survival significance. (McGee, personal communication, 1996)

Stories and story cycles have different functions. Many stories involve animals, their behaviour, and their interchangeability with humans. Others are mapmaking and directional, giving geographical and resource information, as well as origins of natural features. Others still are moralistic in the sense of teaching the consequences of certain behaviour, or reinforcing values. Commonly, these and other features are integrated into one story. McGee gave another example of a Mi'kmaw “Windigo” myth, in which Jenu

(cannibal) is the inverse of what proper human conduct is deemed to be. He screams in a blood-curdling manner or is sullen, hates heat, eats humans and other food that is tabu or distasteful to Mi'kmaq, and is generally anomalous in character. The legend tells of humanizing Jenu, bringing him into the realm of culture. (McGee, in National Museum of Man Mercury Series: n.d.)

Some stories may have been associated with different times of years, as will be seen in the example of the Serpent dance in the discussion on dance. Others may have been told only at a particular physical location as seen in the Dene gambling story. Elsie Clews Parsons told how her informant, Mrs. Morris, took her away from the crowd, and would not let anyone listen as she told Parsons her stories. This may have been because it was not the appropriate time or place. Parson's also noted a story, "Ugluchopt: Thunderbirds," told to her by a woman informant. After finishing the story, the woman asked her to not tell anyone else on the Island (Chapel Island) that she had told this story. (Parsons, 1925:71) Harold McGee has told me a similar story regarding a Maliseet who wished to tell him a story, but not within his own community. (McGee, personal communication, 1996)

McGee also pointed out that the aesthetics and values of stories told by women most likely differ from those told by men. This is an area that has received little attention among the legends of the Native people of the eastern areas of Canada. Such research is being done on the west coast by Julie Cruikshank, but, to date, little has been done on the Mi'kmaw legends with the exception of Elsie Clews Parsons. This statement

makes logical sense. Women, although having integrated and overlapping roles with men, (i.e. fishing and bird hunting) also had their own spheres of activity, which required different criteria for undertaking.

Dr. Margaret Johnson related a story about the creation of sweetgrass along the Bay of Fundy. Later, she told me she had originally heard this story from her father but she had made it better. One feature of the story that had impressed me during Dr. Johnson's telling, was the description of the woman's hair, which was subsequently to become the sweetgrass that grows along the Bay of Fundy Shore. Johnson's description of the girl's hair talked of its beauty, its length, and generally highlighted the hair as a central feature. In retrospect, I wonder if this is the type of emphasis a woman, versus a man, might give to a story. Hair, as seen in "The History of Usitebulajoo" (Wsitiplaju), was one of a woman's powerful aspects. It is the sister's hair greased with tallow that drew the puoin-bear's attention. I have also been told by traditionalists that hair is very powerful and a man should only touch the hair of his wife, and never the hair of other women. (McGee, personal communication, 1995; Johnson, personal communication, 1995; Rand, 1894/1971:44)

Jerry Lonecloud, in the 1920s, remembered that the "Chief Medicine Man" would gather the young boys around him to tell the legends, which reinforces McGee's contention.

Chief Medicine Man would once in a while (probably once a week) tell them about legends while the young Indian (sic) (young Indians only) sat around the wigwam. In those days they had a council wigwam where they

held all their sayings and doings and it was in this council room these legends ([legends] were told. Dr. Lonecloud [Dennis reporting] remembers this taking place 70 years ago in his childhood. They would be 70 or 100 young Indian boys present. Only Indian boys. The girls were not present. The women taught them. Dr. Lonecloud says they knew little of what the girls were taught but the girls were told the story of the canoe being 1st made by a woman—it was so smart in the women. (Lonecloud, in Dennis, PANS MG1, Vol. 2867, Notebook #1: 2)

Bernie Francis speculated that stories were also told differently depending on the age of the audience. In his reading of the legends he found that stories varied depending on age groups. This might be yet another reason for the variations in stories noted by many documenters of legends. (Parsons, Rand et al.) (Francis, lecture, 1995) This, again, can be seen in the story of “The History of Usitebulajoo” (Wsitiplaju), as well as other stories such as “The Magic Dancing Doll.” These are both stories in which young boys find their power as men. In “The History of Usitebulajoo” the boy initially performs ceremonies that empower him (he grows into a man/puoin overnight) and then subsequently performs the ritual for the girl to gain power (she becomes a woman overnight). Later in the story, it is the girl/woman who frees the boy/man from the spell of a puoin through her courage and use of powerful medicine (red ochre).

(Rand, 1894/1978:101)

The Enki approach recognizes these different stages of development in the themes that are chosen for each grade level. For instance, in Grade Two the Enki literature states:

The second-grader becomes acutely aware of the wonders of social life and is all-too-ready to play a trick or turn a situation into a game. Therefore, the theme for this grade is the play of relationships. Trickster tales and

skits give the children an arena to explore their own clever and mischievous nature. Stories of sages from a variety of cultures and traditions show them how the courage and strength born of that boisterousness can help them work with the conflicts and resolutions that are part of both second grade and the rest of life. (Shambhala Elementary School brochure, 1995:12)

Both these factors— gender and age—need further research to truly understand Mi'kmaw storytelling as a precise and appropriate method of teaching children.

Legends, as a means to transmit knowledge and cultural values, are not fantasy, nor a free-for-all improvisation, but they are open to interpretation by the storyteller and the audience. Eric Havelock in his research into the Greek oral traditions, noted that the stories were not "inventive", nor were they fiction as we understand it. He illustrates his point in his discussion of the bards of ancient Greece.

It's not the creation of a free mind, it is a bard all the time responding to and telling his tale according to what his people also want and expect to hear. The tale may entrance them, but they don't want people to act out of line without getting it. And they don't." (Havelock, in *CBC Ideas* transcripts, 1988:3)

This observation is in keeping with the following account taken down from Jerry Lonecloud in which he describes how the old people monitor the storyteller. Lonecloud stated that it was the Chief Medicine Man who related the historical legends. His description of the storyteller in Mi'kmaw culture provides more insight into the discipline and skill required to become a storyteller:

When I was a young boy, the Chief Medicine Man would gather the children—boys & girls into his camp and tell them stories. Some old people would be there also listening (judges like) to see if he told them correctly. Every word has to be put in proper place. People there know

the stories as good as him but they're not to be told by them, only by the chief Medicine Man. Supposed to be not one word out of the way—same as scripture. Often time by making mistakes they lose chiefship. Then he is put away and a new chief elected. It is not very often this occurs but this is what happened when it did occur... Stories without end. I heard them over 60 years ago [1860] and also since in the camps. Heard them at Point Lei [Lepreau?] when I was 20(?) Heard them when I was 20 years old the last time. Different Medicine men told them in their different tribal languages. Stories told in those long nights—all the sports we used. Those stories are not told now except in Maliseet tribes who live in New Brunswick. (Lonecloud, in Dennis, PANS MG 1, Vol. 2867, Notebook #2:114)

This account highlights the accuracy in storytelling, and the role the audience plays in monitoring and ensuring the accuracy of the stories as they are passed down to the younger generations. It was a form of group consensus. Lonecloud's account also insinuates there was a time when both boys and girls were told legends together.

Similarly, a number of accounts exist that describe the interaction between the orator and the group. Most commonly, as will be seen in Maillard's account of a feast, the orator or dancer is responded to by the monosyllable "heh" (*ahe* was how Francis spelled the syllable uttered in response to songs and dances), which supposedly signified approval. As will be seen in dances, before a dance was repeated, the dancer looked toward the assembled group for approval. If given, the dance would continue.

The quality of transmission through generations was put to the test by Tom McFeat's experiments with small group cultures in the 1960s and 1970s. McFeat enlisted three different control groups, to which he gave a body of text to be memorized, and

subsequently passed to new generations of people who were introduced to the initial group at intervals. In his experiment, McFeat monitored three aspects of knowledge transmission: the actual content as memorized from the original text (to which the group no longer had access once initial memorization took place), interpretation, and innovation. Although each group related differently to each of these three, giving greater or lesser emphasis to each one, what became apparent was that choices were made regarding whether or not to interpret and innovate, and if interpretation were to take place, the group had to accept or dismiss interpretations. Those accepted would be integrated into future transmissions to the newer generations, either as part of the corpus of knowledge or as possible alternatives. Constant in all groups, however, was the retention of the accuracy of the original text, which was monitored by the group as a whole.

(McFeat, 1974:117)

And stories have power. Isabelle Knockwood talks about the word being a sharing of spirit. She writes, in reference to the custom of children being told not to walk in front of people who are talking: "This custom stems back to the old belief that everyone is a spirit and a conversation between people is a spiritual experience because they are also exchanging their most valuable possession, their word." (Knockwood, 1992:14)

Stansbury Hagar interviewed Pierre Clemeau, "a famous Micmac storyteller," who told him that weather could be controlled by the appropriate use of certain legends

...To bring rain or warm weather, talk of whales, or relate a legend describing the migrations of birds and the alternations of the

seasons....Several other legends will produce a little result, and in general, any discussion of old times has a tendency to cause wet weather. To bring cold or dry weather, among several legends, that of Until(?), or Fair Weather, is especially efficacious...It suggests another in which the rainbow is called Glooscap's [Kluskap's] carrying strap. When he is at home, he hangs it upon the sky, that men may know that all is well."
(Hagar, in Hoffman, 1955:250)

Parsons, in a footnote to the story, "Gluskap [Kluskap] Transforms Two Girls," states there is a song that accompanies the story. The story is associated with Cape Blomidon. However, whenever this song was sung by her informant, Lucy Pictou, as a child there was a storm. (Parsons, 1925:85)

Orin Hatton, in his work *Power and Performance in Gros Ventre War Expedition Songs*, pinpoints what he terms the "speech continuum," which he defines as "thought:speech: crying: singing." Hatton also adds wailing to this continuum, and I would add dance. (Hatton, 1990:7)

The moral universe is ordered and maintained through the privileged category of linguistic behaviour. The instrumental relations of creative works are linguistic, and each relation is located on the speech continuum. Breath is the first tool; breath carries thought as utterance and as song. It also carries humility upward in crying and wailing. Speech behaviour is important to the use of the power of thought for individual desires, but also for using the collective source of power residing in social relations. Speech orders social behaviour and extends the speech continuum into the domain of social and ceremonial organization. Speech behaviour thus locates social relations in the moral universe. (Hatton, 1990:20)

The power of this "speech continuum", can be seen in a number of instances. Breath, thought, word, songs and dance all have transformative, creative and destructive power. This again points to the inseparability of a human's life force from that of the

universal energy, Manitou, or whatever the appropriate term is. For instance, in one creation story told by Lonecloud, it is the breath of Ginap that is blown into the rock in the image of a man that brings it to life. (Lonecloud, in Dennis, PANS MGI Vol. 2867, Notebook #1.80) In the legend, "The Two Weasels" referred to in the language chapter, it is the two sisters' idly speaking about which star they favour that inadvertently catches the attention of the stars. The stars then transform into humans and become the girl's husbands. Marriages in Mi'kmaw society occurred if a boy and girl spoke to one another. In all the accounts of shamans (Lescarbot, Le Clercq, Denys, Diereville et.al.), it is the breath that is blown on the sick person that is used to drive out the malevolent force. This is accompanied by chants and dances. In the legend of "Glooscap, Khukw, and Coolpujot", recounted by Rand, a man expresses his wish to serve Earthquake (Kuhkw: Rand orthography) forever. This wish is taken literally and the man is transformed into a cedar tree.

In a similar vein, hunter tabu nicknames, not mentioning a person's name after death, and other speech proscriptions also attest to the power of thought and words to affect outcomes. *Puoinaq* were those whose thoughts had the most power in terms of being able to both curse and heal people. In this light, one's conduct and discipline, how a person addresses another, where and when a person sings a song, dances a dances, or tells a story becomes a matter of creation or destruction. Therefore, the telling of legends is a means to order the universe and, in a sense, to continuously recreate the world.

Hatton also discusses the role of repetition as a recreation of a paradigm mirroring the act of creation. He writes, "The act of creation involves transformation....The initial transformation has been completed, and transformation is replaced by repetition. Repetition is a source of power in that it extends the initial creative act." (Hatton, 1990:16)

A clear example of this type of recreating creation is seen in the songlines of the Aboriginal people of Australia. Songlines, invisible to anyone outside the culture, crisscross the Australian landscape. These songlines hold the story of creation which is continually sung into being by the people. Thousands of ancestors sang all the different species into creation. All species were considered to be Dreaming. During this dreamtime, each totemic ancestor was said to have travelled throughout the country scattering a trail of words and musical notes along the lines they walked. These dreaming tracks lay across the whole Australian landscape, connecting various tribes. Human beings who knew these songs could find their way over distant territories.

(Chatwin, 1986:14)

In the same sense, legends also recreated one's relationship with the everchanging world with each telling. These legends provided continuity and context. Repetition reinforced this message and implanted it in the memory so legend and listener became inseparable. In other words, the story became so internalized in each person that their life was not separate from the legend itself.

Exaggeration is also present in the legends and stories, particularly the orations, of the Mi'kmaq. "How great...art thou, through thy great, great great grand-father, whose memory is still recent, by tradition, amongst us, for the plentiful huntings he used to make." (Maillard, 1758:8) Rand also notes the Mi'kmaw propensity to "boast that they are the bravest and best of the Indian nations," and to exaggerate the number they had killed in warfare. (Rand, 1850:8) This use of exaggeration may have been a means to give greater power to certain attributes of a person, and highlight qualities that were worthy of emulation, and ultimately survival for the people. Exaggeration increases and intensifies the energy, and creates a larger vision and more vivid picture of a chosen reality. In this way, it makes events or important features prominent in the memories of the listeners. It also is a means to entertain, as is the opinion of Ruth Whitehead, and to embellish stories with colour. (Whitehead, personal communication, 1995)

Sound, rhythm and tone were also important elements to the telling of a story. Ann Morrison, in her research into music of the Wabenaki Confederacy (which included the Mi'kmaq), proposes that "there is...evidence that Wabenaki oral literature was traditionally chanted. Chanting, or the use of heightened speech in recitation, would accord with the ceremonial nature of the material and its importance in the cultural canon. The function of chanted speech is so close to that of music in ceremonial and ritual contexts that it deserves some attention....." More will be discussed about the "singing"

of stories in the section on song, but it again points to the multi-channelled approach to communication. (Morrison, 1991:254)

Abbé Maillard reported two distinct styles of speaking.

...the one noble, or elevated, for grave and important subjects, the other ignoble, or trivial, for familiar or vulgar ones. But this distinction is not so much with them as with us, marked by a difference of words, but terminations. Thus, when they are treating of solemn, or weighty matters, they terminate the verb and the noun by another inflexion, than what is used for trivial or common conversation. (Maillard, 1758:35)

Maillard is noting a differentiation between formal and informal styles of speech depending on the subject at hand. Differentiations of this kind were also made in dance.

Francis, when asked about different styles of speech, had not seen or heard of Maillard's differentiation of speech styles. He did discuss more respectful terms that might be used in speaking of an elder.

There are certain words that Mi'kmaq would use in a formal or respectful way, and other words they would use for anybody. Say for instance an elder was drunk. Even in that situation, they wouldn't say *ketkiet*. *Ketkiet* is definitely drunk, but it's sort of disrespectful to use that word. They would say *welo'pskiet*, at least at one point in time. It's no longer true because they would simply say *ketkiet*, not in a disrespectful sense, it's just that the other word sort of fell out of use(?) (Francis, personal communication, 1996)

Rand made an similar statement in 1850 describing how children would speak in reference to one of their parents being inebriated. He adds that *welopskiet* is a "much softer term though it is not easy to express the difference in English." (Rand, 1850:15)

This type of behaviour might have implications on how Mi'kmaw children relate to teachers.

Orations in Mi'kmaw historic culture were commented upon by a number of chroniclers. These orations could last for hours, and required both eloquence and a good memory. Lescarbot described Membertou's long orations when attending feasts put on by the settlers at Port Royal. Abbé Maillard also documents lengthy orations in praise of the host, in which the ancestors of the host are praised one by one from the great, great, great grandfather into the present generation. Oratory skills were one of the skills necessary to being a *sakimaw*. In McGee's opinion, this was so that they could speak eloquently and persuasively to express the hearts of their people when in council.

(Lescarbot, 1914:184; Maillard, 1755:7-18; McGee, class notes, 1990)

Storytelling was also a physically expressive mode of communication, in which the whole body was used to tell the story as well. "They can describe an exciting scene, with every muscle in motion, and with gesticulation so perfect, that you would scarcely need to understand their language in order to know what they are telling. (Rand, 1850:17) In a feast oration in praise of the host, the speaker stated, "He was particularly admirable for decoying of bustards by his artificial imitations....He had, besides, a particular way of motion with his body, that at a distance might be taken for the clapping of their wings, insomuch that he has often deceived ourselves...." (Maillard, 1755:11)

The use of the body to reinforce the story, to communicate through physical gesture, and to communicate well, was part of the medium for storytelling. Mind and

body, voice and gesture told the story. As DeKerckhove mentioned, speaking is multisensory; when you speak, you speak with your whole body. "The sensorial content in direct human dialogue is enormous. All the senses are involved." (De Kerckhove in *CBC Ideas* transcript: 1988:4) Parsons noted a particular gesture, "a quick movement of the right hand," that was used throughout a story. This she thought was to elucidate the points in the tale. (Parsons, 1925:66)

Although the story proper may be couched in metaphors, an abundance of literal information is embedded in the story. As previously stated, metaphor and literalness were inseparable. For instance, Ruth Whitehead of the Nova Scotia museum, is currently undertaking the study of the Giant Beaver, *Casteroides ohioenses*, that once existed in Nova Scotia. These animals, cousins to the modern beaver, were eight feet high and ten feet long; they died out after the last ice age, approximately 10,000 years ago. Beavers are featured in a number of legends describing the creation of the landscape and waterways throughout the Maritimes. The Giant Beavers may have been models for such stories. An example of this kind of legend will be given later in the chapter. (Whitehead, personal communication, 1995)

Stories of people, animals and birds transforming from the stars are also not so far fetched when one realizes that the earth, as scientists have discovered, was formed from star dust. Similarly, as one realizes the earth is continuously in motion, tectonic plates are shifting, eruptions occurring, floods inundating vast tracts of land, soil eroding, novas exploding, life dying and decaying in a constant recycling of matter, one can see that these

are the same powers that are being wrestled with today, only we don't relate to them as conscious beings.

Levi-Strauss's work with Tsimshian myth compared the various levels on which myth evolves: geographic, economic, sociological and cosmological. He further noted two "aspects" of the construction of myth: the sequences and the schemata.

The sequences form the apparent content of the myth; the chronological order in which things happen...But these sequences are organized on planes at different levels (of abstraction), in accordance with schemata, which exist simultaneously, superimposed one upon another; just as a melody composed for several voices is held within bounds by constraints in two dimensions.... (Levi-Strauss, in Leach, 1967:17)

Levi-Strauss's description is similar to the characteristics outlined regarding the Mi'kmaw language—the simultaneous existence or play of a number of levels of experience and meaning. The same could easily be said of Mi'kmaw legends, songs and dances.

"SCIENTIFIC" KNOWLEDGE EMBEDDED IN LEGENDS

The following story, documented by Stansbury Hagar (*italicized*) with commentary by Bernard Hoffman (not *italicized*), provides an example of Levi-Strauss's theoretical levels of storytelling, as well as the richness of information relevant to scientific learning embedded in the legends. Hagar's work, in conjunction with legends provided by Silas Rand and Jerry Lonecloud, illustrate the mirroring of the sky on earth, and earth in sky and how each reflected and embodied the other.

These stars and constellations are so arranged in the sky that the Bear:

...is represented by the four stars in the bowl of what we call the Dipper. Behind are seven hunters who are pursuing her. Close beside the second hunter is a little star. It is the pot which he is carrying, so that, when the bear is killed, he may cook the meat therein. Just above these hunters a group of smaller stars form a pocket-like figure - the den when the bear has issued....(Hoffman, 1954:252)

The activities of these celestial characters were integrated by the Micmac in a legend which not only explained their relative positions in the sky, but also contained the motif of annual death and resurrection. In this case the celestial bear emerges from her den in the spring of each year, to be spotted and chased by the seven (the Micmac magic number) hunters. The chase goes on throughout the summer, and finally, in mid-autumn, the hunters who remain overtake their prey and kill her. Robin, becomes covered with her blood in the process and attempts to shake it off, which he does except for a spot on his breast. The blood which he shakes off however *...spatters far and wide over the forests of earth below, and hence we see each autumn the blood-red tints on the foliage; it is reddest on the maple, because trees on earth follow the appearance of the trees in the sky, and the sky maple received most of the blood. The sky is just the same as the earth, only up above, and older....(Hoffman, 1954:253)*

After dancing around the fire and offering their thanks to the "Universal Spirit," the chickadee, the moose bird, and the robin feasted on their catch. *But this does not end the story of the bear....Through the winter, the skeleton lies upon its back in the sky, but her life-spirit has entered another bear who also lies upon her back in the den, invisible, and sleeping the winter sleep. When the spring comes around again this bear will again issue forth from the den to be again pursued by the hunters, to be again slain, but again to send to the den her life-spirit, to issue forth yet again, when the sun once more awakens the earth... And so it is, the Micmacs say, that when a bear lies on her back within her den, she is invisible even to those who might enter that den. Only a hunter with great magic power could perceive her then....(Hoffman, 1954:252-254)*

[The Micmac]...say that they know the Celestial Bear never dies, because she is always in sight, and that is why her earthly descendants never die of

natural causes, but only fall asleep each autumn and come to life again in spring. For all earthly animals are the descendants of the ancestor animal in the sky, and their appearance and habits are but reflection of hers. In all things as it was on is in the sky, so it is on earth.... (Hoffman, 1954: 252-254)

Robin (*jipjawej*), according to Lonecloud, is the very red star seen after 10:00 , and is called such because of its red breast. (Lonecloud, in Dennis, MG1, Vol.2867, Notebook # 2:99)

Lonecloud provides other information on the stars:

The seven stars are known by the Indians as the Bear's den. Hahjalquetch (possibly *qaqjalkwej*: Hewson, translation unknown) meaning seven stars. The bear having come to earth at the call of the young man to his pets. There are two stars that come out before daylight. (Ganet bird is this star...Orion is three stars in a row supposed to be three chiefs fishing together. Each has a line consisting of a row of stars (three in a row, each has a line of stars from it.) (Lonecloud, in Dennis:PANS MG 1, Vol. 2867, Notebook #2:100)

Our forefathers were Stars. When they came upon earth, the woman star, she had bird pets which she dearly loved and she did not want to leave them up with the other stars, and she couldn't get back up there again. And she made a vow to remain on earth forever. She called her pets the birds. First the White Eagle, Fish Hawk, Ganet, [the list continues through a number of birds]...bumble bee, yellow wasp, black hornet. These were stars in her days and she called them down. The man was longing for his animals and he called moose [*tia'm*] caribou [*qualipu*], bear [*muin*]...[Lonecloud goes through numerous animals.] (Lonecloud in Dennis PANS MG1 2867/2:103-104)

There is also a Mi'kmaw song about the stars recorded originally by Mrs. Wallace

Brown.

We are the stars who sing
We sing with our lights;
We are the birds of fire,

We fly over the night.
 Our light is a voice;
 We make a road for spirits,
 For the spirits to pass over.
 Among us are three hunters
 Who chase bear;
 There never was a time
 When they were not hunting
 We look down on the mountains.
 This is the Song of the Stars.
 (In Hoffman, 1954:349-350)

As a final note to this description, the Mi'kmaw word for Milky Way is *Skwe'kmu'jawti*, meaning "Spirit Road" [Hoffman] or "Ghost Path" [Hewson].

Levi-Strauss's four aspects of the story can be easily be applied, but all four aspects occur simultaneously, enfolded within each other. In this story, we see the earth mirrored in the sky, and vice-versa. The interconnectedness between the movement of the stars, the changing of seasons, the hunt of the bear, the robin and the other birds, the trees, and the celebration and honouring of all of this is embedded in this one story. Earth, stars, seasons, birds, stars, animals, trees and men move in synchronization - they are all related.

As one opens up the story, a number of "scientific" topics could easily be developed. The bear, was the most honoured of all animals in Mi'kmaw culture, perhaps because of its human-like qualities, its power, and as a provider of food and skins for shelter and clothing. The Black Bear (*Ursus americanus*) is omnivorous, feeding on vegetation and fish, insects and other meat. Like humans, they have a plantigrade, or a

flat-footed, walk allowing them to place their foot flat on the ground and to stand up straight. (Reader's Digest, 1992:64; Wildlife Education, Ltd., n.d.:3-4)

The Black Bear begins its preparations for hibernation in September, when it [he or she] begins to gain weight and collect leaves and tree branches, which it drags into its den. The den might be a hole in the ground, a cave, or under fallen trees or other protected areas. Nicholas Denys reports that the Black Bear hibernates in hollow trees. (Denys, 1672/1968:363) About a month later, as the snows begin to fall, the bear goes into hibernation where it remains for up to six months. While in hibernation, they live off their stored fat. Denys reports that they suck their paws "for their entire living" while in hibernation (a potential exploration for children to find out why.) (Denys, 1672/1968:363; Reader's Digest, 1992:64; Wildlife Education, Ltd., n.d.:3-4)

It is during the latter part of hibernation, usually in January, that the sows (female bears) give birth to their offspring. As Hagar's account of the story says, "Through the winter, the skeleton lies upon its back in the sky, but her life-spirit has entered another bear who also lies upon her back in the den, invisible, and sleeping the winter sleep." (Hagar in Hoffman, 1954:253) This probably is an allusion to the sow giving life to her embryonic cubs. The bear referred to in Hagar's rendition is a she-bear.

Denys relates that hunters might kill a bear in the winter if they happened upon it. ("Only a hunter with great magic power could perceive her then...") Looking among large trees, they would search for "breath in the form of vapour" as an indicator for the presence of a bear. (Denys, 1672/1968:433-434) Normally, bears would be hunted in the

spring and through to the autumn by tracking them or with the use of dead fall traps.

Denys relates another account, again involving breath, if the Mi'kmaw hunter is unsuccessful in taking the life of the bear.

If the hunter does not bring it down, the Bear embraces him, and will very soon have torn him to pieces with his claws. But the Indian to escape this throws himself face down upon the ground. The bear smells him, and if the man does not stir, the Bear turns him over and places its nose upon his mouth to find if he is breathing. If it does not smell the breath, it places its bottom on the [man's] belly, crushes him as much as it can, and at the same time replaces its nose upon the mouth. If it does not then smell the breath, and the man does not move, it leaves him there and goes fifteen or so paces away. Then it sits down on its haunches and watches [to see] if the man does not move. If the man remains some time immovable, it goes away. But if it sees him move, it returns to the man, presses him once more upon the belly for a long time, then returns to smell at his mouth. (Denys, 1672/1968:433-434)

In both cases, breath is used as an indicator of life, and for survival. Bear is mirroring man's behaviour, and man mirrors bear's behaviour. This in turn is mirrored in the sky by the constellation of stars and in the story.

This story could be approached from a number of entry points. It could be used in studying about the seasons, and the many indicators that tell us that nature is shifting gears—the change in leaves on the trees, the migration of birds and their reappearance in spring (traditionally associated with robin red-breast), the hibernation of the bear and the movement of the Big Dipper throughout the winter. In the depths of winter, the bear is seen “on its back.” The children could watch as the sky bear comes out of hibernation in the spring. Other obvious information could be integrated relating to the north star, the

morning star, the red star (most likely Algol), and so forth. Cross-cultural comparisons could be made regarding the naming of the stars and the association with legends. The most important lesson is that the children begin to see the connectedness between man, bear, stars, trees, birds, and other animals, along with the cycles of life. These principles are universal.

The terminology could also be incorporated into a curriculum, including the notion of “tabu nicknames” used by hunters. [muin: bear; tabu nickname: “berry picker”]. This also could lead into current issues regarding hunting and fishing rights, as well as the taking of life. This topic might well be contentious. Many children have been brought up not to kill. While conducting the research for the Native Council, one man brought it to my attention that hunting was traditional for Mi’kmaq. Would this be honoured in programs he queried? (Sable, CHIP report, 1994)

In many creation myths, the landscape, like the stars, is the mirror of the universe, with pieces of stories associated with individual sites. The following story is included to show the rich geological and socio-cultural information that could be brought into the curriculum, and the mirroring of both world view and practical knowledge embedded in the land. Part of this story was recounted in the chapter on language.

Kluskap’s camp was the point at Advocate Harbour. His stationary wigwam was at Advocate Harbour. That is where he lived. There was a Beaver Dam there from Cape Blomidon to Spencer’s Island (about 9 miles across). Kluskap being a great hunter wanted to kill one of these beavers for his food. He set a deadfall trap (a wooden trap) on Blomidon. He did not catch any; they wouldn’t go in the trap so he took his bow and stuck it

above the upper part of the beaver dam. With that he slewed the Beaver Dam out of business. So he thought his plan was to kill one of the Beavers as the water was leaving Truro Bay or Basin, whatever it is called. The Beavers riled the waters up in Truro Basin -- made it muddy looking so the Beavers escaped unseen by him. (This is why Truro Bay is so muddy. The Beavers weren't out in the Bay of Fundy.)

Then Kluskap went to Saint John to the falls there. He thought the Beavers would go up Saint John's River and he would head them off. They didn't go up there. He looked at the Briar Island --it was a point at that time. He saw a Beaver going over the neck of land. He picked up a stone, fired at the Beaver and missed it (forty miles away it was) and made a channel. The stone cut the neck of land and made it a little passage called Petite Passage now. The other Beavers---there were two (he missed the first) went to the western part of the Island and at Briar Island Passage, made a passage and is now that island, and that Island is the stone thrown from Grand Falls (it is a little Island with a light house on it.) He missed both Beavers and returned to his camp at Advocate and there was some beautiful stones there -- amethysts. These he made beads of and wore them for good luck.

Then he went to Cape Breton Island---leaped over. Here he discovered the same Beavers. He killed the smallest Beaver with bow and arrow and had a great feast by himself (he always lived alone.) Then he was satisfied with what he had got for all his trouble. (A bone found here of the animals existing here before the flood is in the museum and is supposed to be one of the bones of these beavers.) [This is the mastodon's thigh bone according to Ruth Whitehead] Then he went back to Advocate to his old camp again. Where he got his water to drink was at Parrsboro fifteen miles from camp, from a lake called Kluskap Lake. When he came back he told the people and told his dogs (he had two dogs) he was going away north and "I will come back at the end of the world. I am going to make you a happy hunting ground." He says to his dogs, "Now we will have a moose chase." They chased the moose---they calculated to kill the moose but didn't and the dogs chased him in the water of Advocate Harbour and the moose was swimming out toward Isle Haut or Spencer's Island. And when Kluskap came to the shore, he say to the moose, "I am going to leave you here for a landmark. You turn to stone, Moose. And there was, until

twenty years ago, a stone island a perfect shape of a moose but 20 years ago the head of the moose disappeared owing to storms etc.

Kluskap went back to camp without any moose and he went up to get some water out of Kluskap Lake and he saw a partridge when he was getting the water. He didn't have his bow and arrow and he took a stick and chased the partridge on to the shore of Truro Basin or Cobequid Bay. The partridge waded out into the water and Kluskap couldn't reach it to hit it with the stick he had. "Now," he says to the partridge, "now I'm going to leave you for a landmark. You will be an Island and your feathers will turn to trees." They call it Partridge Island in Parrsboro. Then Kluskap went back to his wigwam at Advocate Harbour. He told his people and his dogs, "Now I am going away to leave you." Then he went North. (Lonecloud, in Dennis, MG1/2867, Notebook #1:135-238)

In one legend retold by Silas Rand, Kluskap goes from Partridge Island to Cape Blomidon, where he decks his aged mother out in beautiful minerals, goes back to Spenser's Island where he butcher's cooks and eats animals, turns his kettle upside down to form an island called Wtuoml ("his/her pot": Francis), then to the River Hebert, and over to pitch his tent near Cape D'Or. He creates a causeway, called the Boar's Back to connect Partridge Island to Cumberland Bay. The following spring Kluskap hunts a moose, with his dogs, and the moose is turned into Isle Haut. The dogs were changed into rocks. On returning to Cape D'or, he feasted on moose, and the leftovers became the rocks that are seen today. He then turns the old woman into a mountain, and leaves for his island home in the far west. (Rand, 1894/1971:291-293)

To date, attempts to match Lonecloud's legend with the geological history of the Minas Basin, have been unsuccessful. (More in-depth research might change this view.) One geologist speculated that a formation of the soft basaltic rock did continue from Cape

Blomidon to Cape Spencer. The nature of the rock was such, that its soft constitution could have easily been eroded away, opening the channel in recent history [5,000 B.P.]. Major earthquake activity in the Minas Basin area is dated to approximately 3, 000 B.P. and possibly could have affected the area. (Grantham, personal communication, 1996) Two other geologists, Gordon Fader and Ralph Stea, discounted this theory saying the Minas Channel was formed millions of years ago, and its depth alone would disprove any possibility that Cape Split was joined by land to Cape D'Or or Spencer's Island. Furthermore, the floor of the Bay of Fundy shows no signs of disruption that would accompany an earthquake. In response to a second question posed regarding the creation of Petite Passage, the geologist, Gordon Fader, responded that it was formed millions of years ago, during the Triassic period. (Fader, personal communication, 1996, Grantham, personal communication, 1996, Stea, personal communication, 1996)

Although the literal matching up of the story with geological events was not successful, an actual event of this nature most likely did happen. This event may then have been adapted and applied to the Minas Basin area as times and land formations changed. This type of adaptation of legends has already been discussed. For instance, the time period now referred to the Younger Dryas, was a period of substantial cooling that occurred approximately 10,800-10,400 B.P. causing the PaleoIndians occupying the Debert area to retreat from the region. Again ice sheets formed, and the world went into a minor glaciation. The sea levels may have fallen, and then risen again following the retreat

of the ice sheets. As ice sheets melted, numerous lakes were formed in the region. (Fader, personal communication, 1996)

This region has also been subjected to faulting activity throughout recent history. The Cobequid fault, running from Cumberland County almost to the Northumberland Strait, is a major suture. Adjustments along the fault could have caused lake drainage as the soft glacial sediments shoring the lakes were easily washed out. As Fader said, this event could have happened in a number of lakes along the Cobequid fault, inspiring such a legend to be told. (Fader, personal communication, 1995)

A number of other points have emerged, however, that indicate that the legend may embody sophisticated mapping by the Mi'kmaq of the entire area along the Fundy shore and into New Brunswick. First, in Lonecloud's story all the places named, with the exception of Saint John and Cape Breton, are of the same ancient rock formation stretching from Brier Island across the Minas Basin to Cape D'or. This ancient rock formation is rich in high-quality, lithic source materials—chalcedonies, agates and jaspers—used traditionally by the Mi'kmaq for making stone blades and tools.

Running parallel to the northern border of the Southern upland, and separated from it by the long, straight valley of Annapolis and Cornwallis rivers, is a high range of lava or “trap” rock, which has been known for three centuries as North mountain. Like a great palisade, enclosing the fertile valley, it reaches from cape Blomidon southwestward along the edge of the bay of Fundy for 120 miles to Brier Island. At its northeast end it is separated from the Cobequid range by Minas channel and the drowned Minas basin....

The last structural feature of North mountain to be considered is the semicircular hook at its eastern end, which encircles Scotsman Bay [Scots Bay], and separates Minas basin from the bay of Fundy. This hook is the result of warping or “dishing” of the trap-sheet, which, after running without marked change of dip for 120 miles suddenly curves northward around the nose of the dish-like fold, whose axis lies beneath the waters of Minas channel. From “the lookoff” above Canning around the bend of North mountain at Cape Blomidon, the crest-line steadily falls, and the trap belt narrows until it tapers to a point at cape Split. It emerges again only in a fragment at Cape d’Or across the channel. The triangular form of Minas basin and Cobequid bay reflects closely the eastward extension of this dish or fold, the axis of which passes eastward from cape Blomidon to Truro, where the soft red sandstones that underlie the trap are broadly exposed. That the structure is somewhat complicated is shown by additional outcrops of trap at Partridge Island, Five Islands [Moose Island is one of the Five Islands] and Bass River -- probably outlying patches of the same trap-sheet brought down by minor folding and faulting. (Goldthwaite, 1924:18&22)

There were a number of areas used by the Mi’kmaq up to the late, pre-historic times for quarrying lithic material—Partridge Island, Five Islands (including Moose Island) Spenser’s Island, and Scot’s Bay on the Blomidon Peninsula among them. High-grade igneous rock—chalcedony, agate, and jasper—that was used by the Mi’kmaq for the manufacturing of stone blades can be found at these sites. Jasper is also found at Ile Haute. The Fundy Shore is rich in these resources, and the Parrsboro area is a “rockhound’s” paradise. Chalcedonies are only found in this area of Nova Scotia. Cape D’or is also known for its native Copper, and was once part of the territory of the famed *sakimaw*, Membertou. Samuel Champlain reported that Membertou gave King Henri IV Cape D’or as a gift. (Whitehead, personal communication, 1996) [Ingonish Island on Cape

Breton is another known quarry site but it's predominant rock is silicious shale.]

(Keenlyside, personal communication, 1994; Deal, 1989:4)

A quarry site, dated to the Middle to Late Ceramic period @ 1540 B.P, in the Scots Bay area along the Blomidon peninsula, has been excavated by the archaeologist, Michael Deal. At this specific quarry site, rough "blanks" were manufactured by Mi'kmaq from the chalcedonies found in outcrops along the shore. These "blanks" would be brought back to encampments or distributed in trade, and later refined into tools and blades.

Deal's research into this quarry site, supplemented by archaeological and geological research into the whole Minas Basin area, has led him to hypothesize that two distinct lithic distribution routes existed throughout this area. (Refer to Map 1, inserted after p.215)

It is significant that Fundy shore chalcedony is rarely encountered east of the Shubenacadie River, (e.g. Nash 1986:29,39), while chalcedony from the Cape D'Or/Parrsboro area have been identified at the Paleoindian site at Debert (MacDonald 1968) and eastwards into Pictou County....

The Scots Bay sources are most easily accessed by water from the Minas Basin area, and the most abundant use of these chalcedonies is along the Minas Basin and up the Gaspereau River to the Gaspereau Lakes. The southward distribution of Fundy shore chalcedony seems to follow well known historic portage routes to the Atlantic, namely, via the Shubenacadie and Musquodoboit rivers in central Nova Scotia and via the Lequille and Mersey rivers in southwestern Nova Scotia. (see Deal et al. 1987). The source areas on Digby Neck have not yet been surveyed by archaeologists. They may have provided the chalcedonies for inhabitants of the southwestern coast and may also have moved along the Lequille-Mersey route via Bear River.

The areal distribution of this premier quality lithic material within western Nova Scotia may be a reflection of the late prehistoric socio-political organization in the region. In particular, it corresponds closely to one of the seven Micmac political districts... The western district known as *Kespoogwit*, stretched from Cape Sable, at the southwestern tip of the province, to the Shubenacadie and Musquodoboit rivers. (see Anderson 1919:45; Biard 1959:89; Speck 1922:93-105) (Deal, 1989:3-5)

Because of the large number of unfinished “blanks”, Deal goes on to explore the possibility of this site being a quarry site for an intraregional lithic exchange network controlled by the local band, versus a regional quarry site. He speculates that in the pre-contact era, summer excursions would be made to the sites on the Fundy shore to manufacture quarry blanks, and some finished tools. These would then be taken back to summer camping sites, such as Melanson on the Gaspereaux River, where they could be distributed or exchanged with other local bands within the district. Summer camping sites were an ideal place for exchanges to take place; summer was traditionally a time of year when larger encampments of Mi'kmaq were formed for purposes of socializing, marriages, and council meetings regarding peace and war. (Deal, 1989:4-5)

Deal opines that the lithic evidence found at this workshop site “can be viewed as the initial stages of a tightly integrated system that involves the selection, modification, distribution and consumption of lithic materials (Ericson 1984). (Deal, 1989:2) Another archaeologist, David Keenlyside, speculated that a large network of material exchange was present in the southern Maritimes from approximately 700-1200 A.D. These trade patterns most likely continued up to the period of European contact. Many sites,

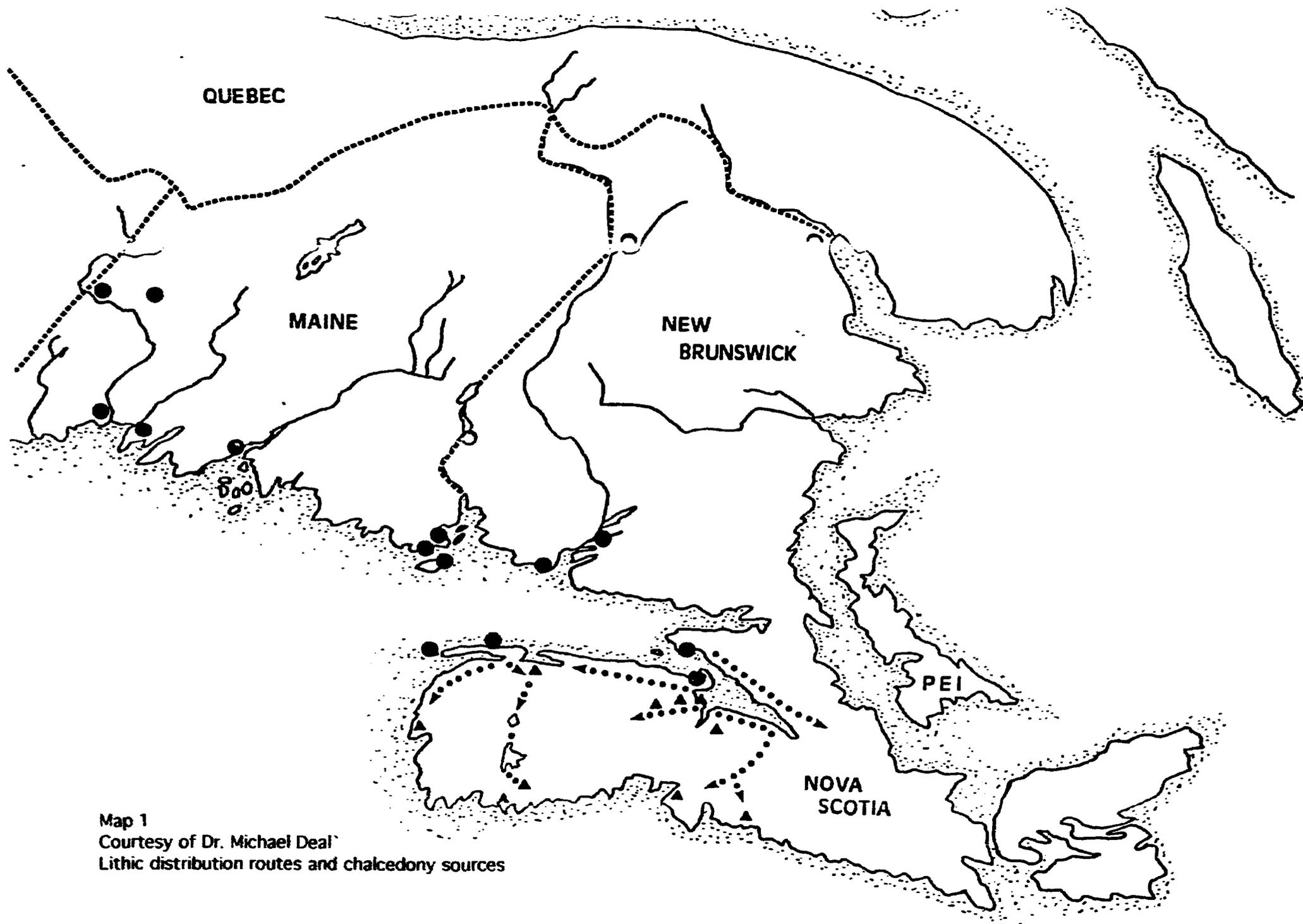
however, have been lost to extensive erosion along the shore. (Keenlyside, personal communication, 1994)

When these three sources—the legends, the geological history, and the archaeological mapping of quarry sites—are put side by side, it seems highly probable the legends recounted and informed people of excellent quarry sites, delineated distribution routes, and may have been territorial district markers. (Refer to Maps 1& 2 for comparison of sites mentioned in legends and by Deal.) In short, these legends were maps.

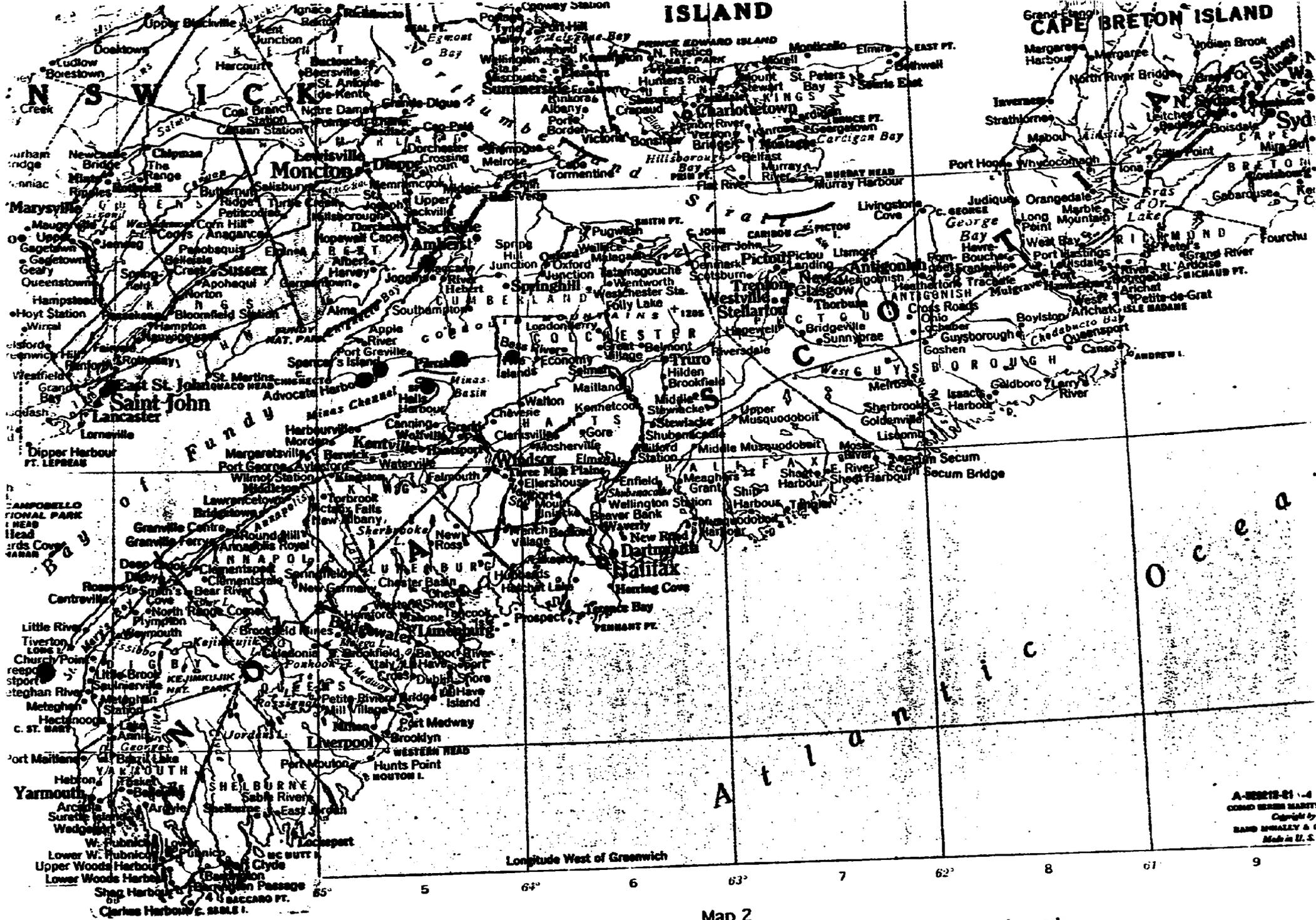
McGee pointed out that Eastern Algonquian people were highly skilled at knowing the landscape and mapping it precisely. The mapping skills of the Mi'kmaq were well documented.

The Indian has studied Geography...And most especially does the Micmac know about Nova Scotia and the places adjacent. Show him a map of these places, and explain to him that it is "a picture of the country," and although it may be the first time he has even seen a map, he can go round it, and point out the different places with the utmost care. He is acquainted with every spot. He is in the habit of making rude drawings of places for the direction of others. One party can thus inform another at what spot in the woods they are to be found. At the place where they turn off the main road, a piece of bark is left, with the contemplated route sketched upon it. The party following examine thye luskun as they term it, when they come up, and then follow on without any difficulty. (Rand, 1850:25)

Rand continues on to describe the Mi'kmaq sense of distance and direction. And "here" said the tawny guide, who was years ago directing a party in their travel from Nictaux to Liverpool in the winter, "here just half-way." When the road was afterwards measured it was found that the Indian was correct. (Rand, 1850:25)

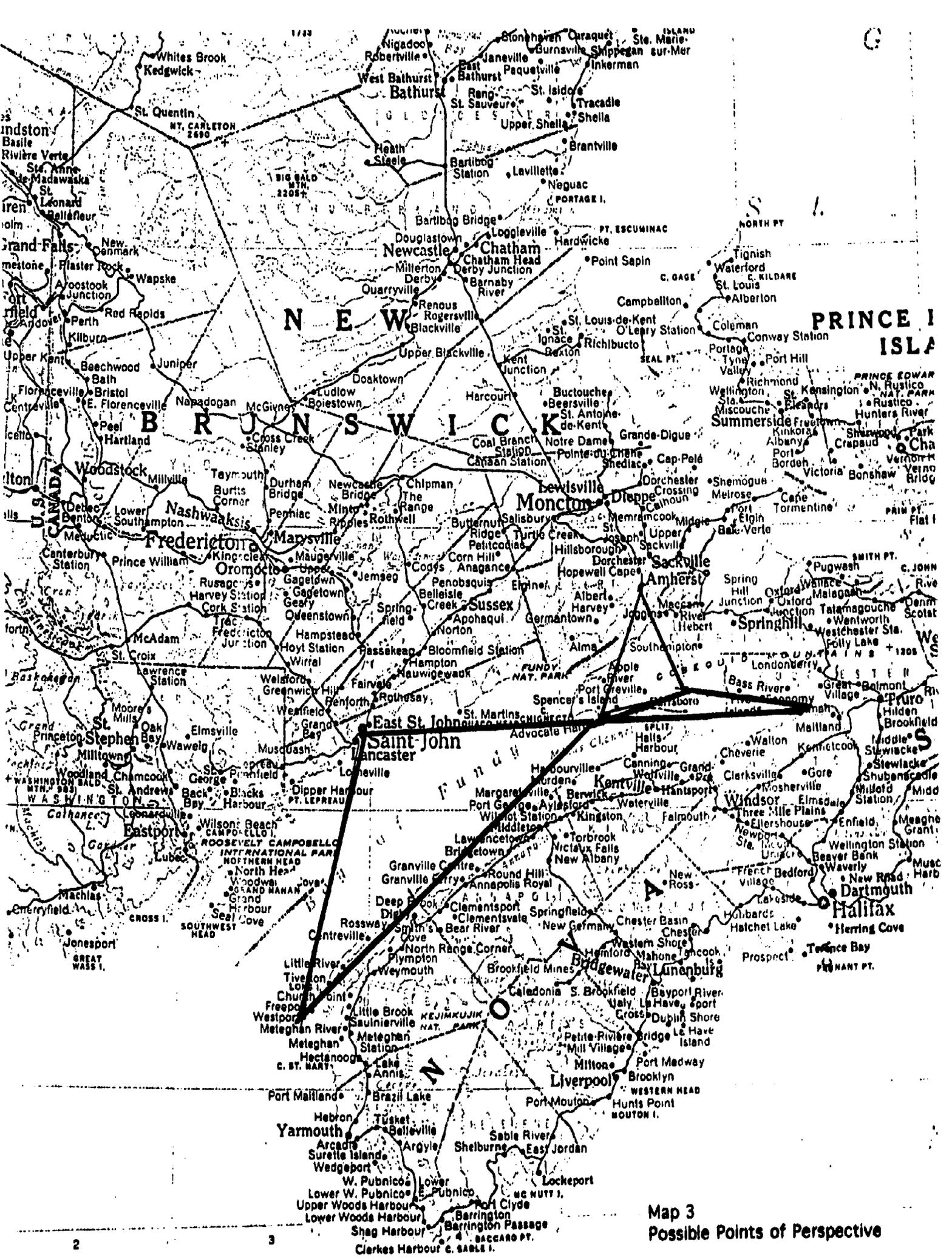


Map 1
Courtesy of Dr. Michael Deal
Lithic distribution routes and chalcedony sources



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Map 2
 Some locations mentioned in Kluskap legends



Le Clercq and Dièreville made similar observations, also noting the use of wampum, sticks and simple drawings to convey extensive information. In fact, it was this use of simple marks and drawings as mnemonic devices that lead Le Clercq to develop his system of hieroglyphics with which to teach the Mi'kmaq lessons in Christianity.

(Le Clercq, 1671/1968:136; Dièreville, in Hoffman, 1954:235)

...they have much ingenuity in drawing upon bark a kind of map which marks exactly all the rivers and streams of a country of which they wish to make a representation. They mark all the places thereon exactly and so well that they make use of them successfully, and an Indian who possesses one makes long voyages without going astray.... (LeClercq, 1691/1968:136)

The question of interest is how the Mi'kmaq mapped such large areas of the landscape and waterways. Perhaps as McGee suggested, there were a number of look off points from which a person could "eyeball" a certain perspective, similar to the way a surveyor fixes a point. A group of Mi'kmaq sharing these different perspectives, might then pool their information into a map to which a story, or story parts would be associated. (McGee, personal communication, 1996) (Refer to Map 3)

A second question for further exploration is whether the images in the legend mirror the sky as seen in the previous account of the Big Dipper. The Minas Basin itself roughly resembles the shape of a beaver, at least as much as the Bear constellation resembles a bear. Without the "dam" burst open, the beaver's head would be complete. This may be coincidental since the beaver features in many landscape creation myths, but this type of mirroring seems to be a feature of the Mi'kmaw legends. The dam of the

beaver is burst open at the area stretching across the bay, from Cape Blomidon to Spenser's Island. The tail of the beaver is in the Cobequid Basin where the beavers riled up the waters and made them muddy. Beavers use their tails for carrying mud.

Furthermore, since all the animals were said to have come from the stars, one wonders if the particular animals featured in this story not only provided visible landscape features as mnemonic devices, but possibly reflected stars or constellations that could be used for navigation. (This is speculation, and would need more research to ascertain.)

Another landmark is given at Cape Split where Kiuskap built the deadfall to capture the beavers. Rand documented the place name, *Plekteok*, which he glossed as "the columnar rocks at Cape Split; a handspike. Tradition has it that Kluskap used one of these handspikes to open up the passage at Cape Split and drain the Annapolis Valley." These columnar rocks can still be seen and are distinct landscape features as seen from across the Minas Basin.

The manufacturing of a stone blade is a fascinating study in and of itself, and could be tied into the Fourth Grade curriculum on rocks, minerals and crystal structures. The chalcedonies, jasper and agate, are all members of the quartz family. Quartz, and its subvarieties are actually minerals that contain the glass-like substance, silicon dioxide. The crystalline structure of quartz is such that when it is hit with yet another hard stone called a hammerstone, (e.g. quartzite, which is not a quartz) pieces flake off conchoidally.

Children looking at a finished stone knife blade or arrow head, can see these flaking marks.

This technique was called "percussion flaking."

Percussion flaking was a precise and dangerous technique in that stone shards could fly into the eye of the manufacturer. Precision was needed to hit the stone in precisely the right spot for the flaking to follow the crystalline structure to fashion the desired edge. The finished edge of a stone blade was so sharp it was used for butchering large animals. (Bonnichsen, videotape: n.d.; Ogilvie, personal communication, 1994; Whitehead, personal communication, 1994; Keenleyside, personal communication, 1994; Hodges, n.d.:98-104)

Although many different rocks contain silicon dioxide and are part of the quartz family, not all were good for stone tool manufacturing because of impurities or other minerals in the rock. Agate, jasper, and chalcedonies were particularly desirable for blades because of their cryptocrystalline structures that were particularly suitable to flaking and getting fine edges. These minerals are quite beautiful, with swirls of colour in chalcedony, or deep, waxy reddish colour as seen in jasper.

Legendarily at Blomidon is found "the eye of Kluskap." This is supposedly a beautiful amethyst formation. Amethyst is also of the quartz family. As mentioned in the legend recorded by Rand in the late 1800s, "Kluskap goes from Partridge Island to Cape Blomidon, where he decks his aged mother out in beautiful minerals."

This is a minimal sample of the extensive material that can be derived from one legend, as is true of all the legends. Additionally, a substance like quartz can be shown still in use today because of the same properties which attracted the Mi'kmaq. In the

Grade Four *Explorations in Science* series, for instance, a unit called “Rock On” teaches children about the properties of rocks and minerals. In a subunit on minerals it states:

Quartz is another common mineral found in the earth’s crust. Amethyst, rock crystal and tiger’s eye are all quartz. But quartz also shows up in electronic watches, sandpaper, and a variety of optical instruments. (Harcourt & Wortzman, 1992:156)

There were many rocks and minerals—limonite (yellow ochre), hematite (red ochre), rhyolite, sandstone, shale and slate (as seen throughout Kejimikujik where the petroglyphs are located) quartzite, iron pyrite, and manganese—used in traditional Mi’kmaw culture. Associated with each of these are a body of knowledge regarding their location, properties and use, as well as the technology needed to fashion them into tools and utensils, throughout Nova Scotia. Two have already been mentioned, but many could be found in each locality. Much of the Mi’kmaw terminology associated with these rocks and minerals, however, is difficult to find, as previously mentioned, since much of the stone technology was replaced with the introduction of iron into the Mi’kmaw culture by Europeans.

Again, a number of entry points for exploration could be derived from these stories. For instance, the presence of Giant Beavers, as previously mentioned, would be exciting for children, especially since children seem to feast on superlatives (the grossest, the biggest, the tiniest, the gooiest) in the younger grades. Also, as Whitehead points out, it is in the nature of beavers to change the landscape. They fell trees, and

mound earth, sticks and trees to make their dams. This may be why they are found in many creation myths regarding the formation of the landscape.

The stories selected for this chapter do not reflect the role of women in the legends, except for Rand's mention of Kluskap's Grandmother. They are focussed on the male sphere of activity—hunting and stone quarrying—in the sociological sense. Another story, regarding the making of the canoe by a woman, tells of a woman watching her husband day after day trudge back and forth around the lake to collect animals from his traps. It is a very human story, one many women might appreciate. The following is a brief synopsis.

In the story, the woman has three dreams that inform her about how to make a canoe, which she then tells her husband. He is at first untrusting, but soon sees the wisdom of the suggestion. She proceeds to show him how to build the canoe. Still untrusting, she had to persuade him to get into the canoe. She then paddles him across the lake, where she instructs him to step out and get his beavers, which he then should put in the middle of the canoe. This procedure was followed a number of times.

The story continues with the husband and wife travelling through different waterways, and portaging the canoe. They poled up stream until reaching a water fall. They then portaged the canoe to above the falls where they came to dead water where animals abounded. [Deadwater, as explained by Lonecloud "is not a lake but wider than a river and animals come down to drink."] At the head of this dead water, were very

wild rapids.” Above the rapids was beautiful lake and islands in the lake. The husband and wife made their home in a cove of this lake where there was an abundance of birds. “The birds loved her and she used to talk to them.” (Lonecloud, in Dennis, PANS MG 1, Vol. 2857, Notebook #1:151-159)

In another legend by Rand attributes the creation of the canoe to Kluskap who was inspired by the shape of a breast bone of a bird. Either or both of these legends could be used. (Rand, 1894/1971:291-293)

The first legend of the canoe tells of the importance of dreams and how these dreams related to the practical and physical world of survival. It also shows the role of observation in creation. The woman observes the travails of her husband trudging back and forth across the lake with beavers on his back. Her canoe is perfectly balanced and designed to accommodate the weight of the people and the heavy loads of beaver and other goods they would carry when they moved camp. The second shows how the microcosms mirrors the macrocosm in the breastbone mirroring the image of the canoe.

This particular legend would be an excellent way to discuss the many elements that were involved in the making of a canoe—and canoes have been consistently used throughout history by both Mi’kmaq and settlers who came to Nova Scotia. From numerous parts of trees (birchbark for the main body of the canoe, spruce roots and gum, cedar slats, beech gunwhales, maple for paddles) to rocks, different types of waters, to principles of mathematics, the building of the canoe would be another capsule

that could explode into a number of units. A unit in the Grade Six curriculum already includes a unit on the Mi'kmaq. In it is a description of the making of a canoe, along with the numerous uses of birchbark. (Leavitt, 1985:24-25) (I think of birchbark as the "plastic" of the Mi'kmaq because of its many, and varied, uses.)

CONCLUSION

The richness of these legends, both in imagery and the messages and information they convey, seems indisputable. Stories are a landscape a child can enter, participate in through his or her own experience, and take away with them. Much academia is based on absorption of unrelated, disconnected, decontextualized knowledge that the child has no "hook" into assimilating into his or her own experience. The use of stories in complementing and enhancing the teaching of the sciences, I believe would create both a context and a means for children to retain and apply, and bring alive their knowledge. It will also serve to teach Mi'kmaw culture and world view, something that can not be separated out from the use and study of the world in which we live.

In developing a science curriculum that incorporates Mi'kmaw knowledge and world view, including legends that teach about the natural world, the problem could arise of these stories becoming "quainticized" or relegated to the realm of fairytales. If such a curriculum were introduced into provincial schools, a close relationship should exist between the Mi'kmaw community and the teachers in the provincial schools. If done

properly, the knowledge will not simply become reportage, or a lesson "about the Mi'kmaq." Potentially, it could serve as a valuable method of learning, a broadening of the scientific discussion, and an assessment of one's own values and beliefs. Ideally, Mi'kmaq would come to the schools to tell these stories, since stories are culturally appropriate. Harkening back to McFeat's point which forms the nexus of teaching, "the content of culture not only must be learned—as everyone has recognized—but also so phrased as to be learnable." (McFeat, 1974:114)

It has been my intention in this discussion to point to the potency and legitimacy of storytelling as a means to transmit knowledge and ensure cultural continuity. Legends and storytelling are still relevant to Mi'kmaq today, despite a change in traditional formal structures in which they were told. Stories that are told today not only are important for cultural preservation, but to cultural continuity. Through legends and stories, a world of knowledge is unveiled that both conveys knowledge of the world and the various relationships at play in the universe, whatever form they may take. They were stories of the forces of creation and destruction, and how one journeyed through the world with proper and respectful conduct.

Stories and orations enforced values, and traditional beliefs. They were a communal activity, a time of mutual identity and sharing of knowledge that were drawn from and a common pool of wisdom developed over generations. They related directly to people's experience, providing a shared context into which one's own experience could

be included and weighed. Stories imparted important knowledge of the world, including "scientific" knowledge about cosmology, the land, and animal and plant life. And, stories allowed the past to re-emerge in the present.

Most succinctly put by a Passamaquoddy friend, storytelling was about goodness, and sharing and spreading that goodness. If you teach you share, share your goodness and heart, so that goodness will keep on going. When children are just given books of stories to read, they can not experience the heart of the storyteller, the sharing of this goodness together spread that goodness so that it keeps going. (Dana, personal interview, 1995)

DANCE

It is not common to hear science and dance discussed in association. The general tendency is to regard them as separate spheres. Not surprisingly, in Mi'kmaw culture they were inseparable in the sense that every level of experience, including the physical, was mirrored, embodied and honoured in the dances. The dance anthropologist, Alan Lomax, once stated that "dance is the most repetitious, redundant, and formally organized system of body communication in a culture." (Lomax, 1968:223) Mi'kmaw dances and dance gestures carried their own set of cultural symbols, replete with implicit meaning. The following discussion is intended to illustrate the importance of dance in Mi'kmaw culture in relating to and coming to know the world, and the effectiveness of it as a mode of learning, educating and communicating knowledge. Most everything in Mi'kmaw culture was at one time danced into being.

A pivotal point to this discussion arose during a recent conversation I had with the artistic director of the Leonard Bernstein Center for Education Through the Arts, Andrew Krichels. During our conversation, I casually mentioned that Mi'kmaw dance seemed to be a way to dance things into reality or existence. Krichels, a professional dancer for thirty years, was struck by this statement. Throughout his career as a dancer, he had thought of dance as a way to abstract the essence of reality. He found the reversing of the logic a profound way to contemplate dance. In fact, his own work with the Institute involves integrating the arts with all subjects taught in the elementary school curriculum in Nashville, Tennessee. A number of programs have been created which use dance as a method to assist in the learning of science. Krichels described his work as finding the common roots of science and dance, and bringing the two together in terms of the many principles common to both. In other words, dance is a means to understand and reinforce scientific learning. This type of learning was implicit in Mi'kmaw culture. (Krichels, personal communication, 1995)

In all my readings, attending pow-wows and in conversations with Mi'kmaw dancers and elders, dance was never depicted as an abstraction, but an entering further into the world, a joining with the rhythms of the drum, the earth, ancestors, and the other dancers. Vivian Basque, a Mi'kmaw dancer from Eskasoni, spoke of dancing as a way to keep in balance with nature or a way to connect oneself with nature.

People used dance to call out spirits. They used to be able to enter another world or different states of mind to seek answers and communicate with each other telekinetically [telepathically?]. There

was a time when medicine men would be able to travel into different levels of consciousness and have control over their powers....(Basque, personal communication, 1991)

Mi'kmaq have described dance to me as both a form of prayer, and a form of gift-giving. The word *alasukmaqney* means "a prayer in the form of a dance." Dance was a means to invoke power, and to embody or become the essence of animal, plant, enemy, or lover. It was used to seduce, cajole, and conquer. It was a way to celebrate, give thanks, honour another, tease and play, dispel grief, offer and share one's spirit, heal, trade goods, mark a rite of passage, and have fun. It was a means to convey information, affirm social values and structure, and tell a story. Dances, whether formal or informal suffused Mi'kmaw culture, and were inseparable from everyday life. It was a powerful and effective mode of communication, and through it, one came to know the world.

From looking at the language it can be seen that the Mi'kmaq had both formal dances and informal dances. *Nskawaqn* is a serious and ordered dance. Silas Rand referred to the *nskawaqn* as the "mystical dances." *Amalkay* means "any old way to dance, just move your body." There were distinct male and female dances and dance steps. A distinction is made between "dancing like an Indian", *l'nu'pesin*, and dancing like a white man, *aklastie'wtesin'*. There were also chief dancers. *Nuji amalkat*, or dancers recognized for their skill and power in the dance. (Francis, personal communication, 1991) Dance is both an expression of "self" ("you dance when you're happy, you dance when you're sad" said Vivian), and a means to unify people into a

circle of energy, or power. Radcliffe-Brown, in speaking of his experience among the Adaman Islanders, described dancing as, “a means of uniting individuals into a harmonious whole and at the same time making them actually and intensely experience their relation to that unity of which they are members.” Similarly, Richard Waterman describes dance as a “force for social cohesion, and as a means to achieve cultural continuity.” (Basque, personal communication, 1991; Radcliffe-Brown, 1964: 283; Waterman, in LeBlanc, 1995, handout)

Dance was also a way to keep one’s spirit from being overwhelmed or lost, or to control or channel it with one’s body. One account told of Mi’kmaq dancing when famine stricken; another danced to bring himself back from the grief he felt over the loss of his wife and child. Le Clercq gave an account of the dance and song done by the husband following the recital of a funeral oration for the man’s wife and child.

Our Koucdeaotii had no sooner received these public approvals, than he set himself to dancing his very best and to chanting some songs of war and the chase, in order to testify to the assembly that he had banished from his heart all the regret, grief, and sadness he had previously felt.
(Le Clercq, 1691/1968:187)

Dance and gesture were perhaps the first way foreigners saw and communicated with the Mi’kmaq. In 1534, Jacques Cartier wrote the following account while on the north shore of the Bay of Chaleur:

Upon one of the fleets reaching this point, there sprang out and landed a large number of India. who set up a great clamour and made frequent signs to us to come on shore, holding up to us some furs on sticks. But as we were only one boat we did not care to go so we rowed towards the other fleet which was on the water. And they [on shore] seeing we were

rowing away, made ready two of their largest canoes in order to follow us. These were joined by five more of those that were coming from the sea, and all came after our long-boat, dancing and showing many signs of joy, and of their desire to be friends, saying to us in their language: *Napou tou daman asurtat*, and other words we did not understand.... The next day [Tuesday, July 7] some of these Indians came in nine canoes to the point at the mouth of the cove. As soon as they saw us they began to run away, making signs to us that they had come to barter with us; and held up some furs of small value, with which they clothe themselves. We likewise made signs to them that we wished them no harm, and sent two men on shore, to offer them some knives and other iron goods, and a red cap to give to their chief. Seeing this, they sent on shore part of their people with some of their furs; and the two parties traded together. The savages showed a marvellously great pleasure in possessing and obtaining these iron wares and other commodities, dancing and going through many ceremonies, and throwing salt water over their heads with their hands. (Biggar, 1924:49-50, 52-53)

Interestingly, it is the gestures and dances that allowed for communication across cultures, not the words spoken to Cartier and his crew by the Mi'kmaq. These movements indicated to Cartier invitation, friendship, a desire to trade, and joy and pleasure once trade took place.

In my own research, I have documented approximately one hundred and twenty-five references to dance and gesture. No doubt there are more. Many of these dances were done for specific purposes or at specific times. Father Le Clercq wrote in the seventeenth century, "...and since they consider themselves all equal in life as in death, without distinction of the heads of the commonality of the nation, they rejoice all in common on the birth of their children, even to making feasts, public speeches, and all

kinds of rejoicings." Even in the "Land of Souls," the place where people's souls or spirits go following death (according to Le Clercq's account) there was dancing.

(Le Clercq, 1671/1968:88)

There are many definitions of dance, each emphasizing different functions or characteristics of it. Many of these define dance in terms of what it is not, again creating dualities: human versus animal (Hanna, 1979:37), non-utilitarian versus utilitarian (Royce, 1977:1&5), mythic versus scientific (Langer, 1983:38), and extraordinary movement versus ordinary movement (Hanna, 1970:37). Although the Mi'kmaq had their own set of dance movements unique to their culture, the essence of Mi'kmaw dance, like the language and the stories, was a means to mediate among the various forces at play in the world and bring them into a circle or relationship. Dances generally occurred within a circle or communal setting where everyone present partook of the dance experience, much like a feast. Dances were also exchanged between different cultural groups, making it a cross-cultural form of communication and a way to honour and give to others.

In her essay, *The Magic Circle*, Suzanne Langer speaks about dance in terms of the notion of a "mythic consciousness" as distinct from "scientific consciousness." "Mythic consciousness" is the experience of reality that can not be scientifically measured or literally defined; symbol and reality are inseparable.

Paintings, sculpture, and literature...show us these Powers already fixed in visible and describable form....The first recognition of them is through the feeling of personal power and will in the human body and their first representation is through a bodily activity which abstracts the sense of

power from the practical experiences in which that sense is usually an obscure factor. This activity is known as "dancing." The dance creates an image of nameless and even bodiless Powers filling a complete, autonomous realm, a "world"...it is an envisagement of a world beyond the spot and the moment of one's animal existence, the first conception of life as a whole—continuous, superpersonal life, punctuated by birth and death, surrounded and fed by the rest of nature....To the "mythic consciousness" these creations are realities, not symbols; they are not felt to be created by the dance at all, but to be invoked, adjured, challenged, or placated, as the case may be. The symbol of the world, the balletic realm of forces, is the world, and dancing is the human spirit's participation in it. (Langer, 1983:38&39)

Although Langer makes some important points regarding the nature of dance, we again see the term "abstract" come into the definition—the abstracting of power from the practical experiences. Her use of "prescientific consciousness" is ambiguous, and seems to relegate this type of communication to a pre-modern, or "primitive" way of thinking. Jeffrey Lloyd disputes this notion of mentalities or consciousnesses, and discusses different cultural contexts of "communicative exchange." Furthermore, dance still occurs in Mi'kmaw culture during these "post-scientific" times. (Lloyd, on CBC *Ideas* program, 1996)

Anya Peterson Royce, in her book *The Anthropology of Dance*, describes dance as "the human body making patterns in time and space." Royce goes on to state that to distinguish dance from other movement activities, a more inclusive definition of dance is necessary. Therefore, she elaborates to define dance as "rhythmic movement done for some purpose transcending utility." (Royce, 1977:1,5).

The notion of what comprises utility raises questions. In my research, many of the movements described in historical accounts are intensifications or exaggerations of movements that were made in everyday life. Evidence of this can be seen in the various animal dances performed by the Mi'kmaq. These dances might be termed mimetic, yet this is somewhat simplistic when one considers the relationship between the animal and human world in traditional Mi'kmaw culture was fluid, with human and animals forms continually interchanging. Therefore, it would not be a matter of simply copying the movement of the animal but becoming or communicating with the animal. In other words, the invoking of power in a dance could be viewed as equally utilitarian as the actual killing of the animal.

A more specific and scientific definition of dance is offered by Judith Lynne Hanna in her book, *To Dance is Human*.

[Dance is]...human behaviour, composed from the dancer's perspective, of 1) purposeful, 2) intentionally rhythmical, and 3) culturally patterned sequences of 4) non-verbal body movements other than ordinary motor activities, the motion having inherent aesthetic value. (Hanna, 1979:19)

Hanna then defines the notion of "aesthetic" as "cultural ideas of appropriateness and competence which guide evaluation, accomplished by rapt attention and contemplation." (Hanna, 1979:19) In a more detailed explanation, Hanna outlines dance as a specifically human activity based on biological characteristics, but what dance means within each culture is a different question. As has been discussed throughout this thesis,

the psychic fluidity between animal and human realm would make Hanna's definition inappropriate.

Dance, like language, can be discussed specifically in terms of its component parts—its individual movements, rhythm, spatial patterning, use of gravity, intensity and stasis—and how those parts are pieced together into a dance. Each culture has its own body language. Dance can also be discussed in terms of the contexts in which it occurs, and the importance dance plays in transmitting information or communicating with one's world. The meaning of most dances in distinct cultures is difficult to separate from the context in which the specific information is being conveyed and danced into being. Context includes the culture in which it occurs, the space in which it takes place, the people who participate both as dancers and on-lookers, the time it is held, and the general purpose for which the dance is being done. These contexts change, as is the case with Mi'kmaw dance. The focus of this discussion will be primarily on the power of dance as a medium for expressing and transmitting cultural beliefs and knowledge, and the specific information that was transmitted that is relevant to the teaching of science.

Numerous examples could be given to show that the same principles that apply to storytelling apply to dance. Dance is multisensory, reflective, and contextual. It is generally interactive and communal, with a continual exchange occurring both between dancer and onlookers, and/or between dancer and the world of energy in its many forms. It reaffirms values, and transmits knowledge through known and patterned movements

and rhythms, while simultaneously allowing for individual interpretation. Dance can also be spontaneous.

Dance is unique because it is kinaesthetic—it relies on the body as the main instrument of expression. Yet, the power of dance is the ability to communicate through many channels simultaneously.

It is clear that dance utilizes a number of channels, the kinaesthetic, which is crucial to it alone of all the arts, and the visual, aural, tactile, and olfactory. Given the number and variety of channels, the potential of communication is quite strong. If all the channels are transmitting the same message, then the impact is multiplied by a factor of five. It is perhaps this capacity to assault all of one's senses simultaneously that makes dance such a potent, often threatening, vehicle of expression. Ambiguity and the transmission of conflicting messages are also possible in view of this multichannel nature of dance expression. (Royce, 1977:200)

The potential for ambiguity in the message Royce mentions is diminished when dance is done in a specific and familiar cultural setting, where the gestures and movements are understood. During dance workshops I have attended, I have come to realize how dance exposes the person dancing. You cannot hide behind your words, but display yourself in the way you move and the movements you choose to make. It could be surmised that dance as a communal activity, allows people to see who you are beyond words and concepts. It is yet another way to come to know one another, and to monitor a person's state of mind. Dance, as already mentioned, was a way to work with emotions, and to dispel or prevent being overwhelmed by forces that interfere with a person's ability to communicate and survive.

Aside from the sensory, as previously stated, dance was inspired by dreams. In traditional Mi'kmaw culture, one entered other realms of existence through dreams, chants and dances. Dreams to the Mi'kmaq were carefully regarded as omens, both good and bad. These dreams were often danced out.

Micmac dreams frequently contain much culture reference. A recurrent theme is the necessity to master an attacking person or animal; actually the dreamer believes he must conquer the witch or bouin, who has sent the dream; otherwise he will be defeated in a daytime encounter. Impressed by the strength of the Micmac belief in dreams, the early French missionaries led planned attacks on "the bonds that held (them) down in (their) wretchedness." But all they attempted to destroy was not misery. According to a 1607 report, those who had auspicious dreams rose in the middle of the night to hail the omen with song and dance. (Wallis & Wallis, 1955:138-139)

Because dance occurs within a larger context, Royce speaks in terms of "dance event." For example, Royce points out that "in Mixtec, the word 'yaa' means dance, game and music" and that "the same adjectives are often applied to dance and music." (Royce, 1977:9) In the Mi'kmaw culture, dances were accompanied by songs and chants, along with the beating of a birchbark drum or *jikmaq* (split ash splints, bound together at one end, and hit against one's knee or palm of the hand to make a sound). Often dances were part of a feast, and as previously stated, they were done for specific purposes. A trading dance would not be done at a funeral.

One of the most complete descriptions of a dance event was documented by Pierre Antoine Maillard in 1758. The particular event was held to honour the departure of a

visiting envoy. Once the food was prepared the host called the men of the village to the feast, excluding women, children and young men who had not yet made their first kill. The men then entered the wigwam of the host carrying their *oorakins* (birchbark dishes), were seated in accordance with levels of honour, and served the meat, accompanied by another *oorakin* filled with oil. Following the feast, the wives of the men entered to take away the bowls. The women then departed and a period of profound silence and pipe smoking ensued. Eventually, as if rising from a trance, the guest of honour rose, commenced a long oration several hours in duration in honour of the host, regaling the host's ancestors as far back as his great, great, great grandfather, and the prowess and skill of the host in the hunt. The speech, as always, was filled with eloquent metaphors. Finishing this speech of thanksgiving, a second, younger man arose to thank the master of the feast, but first commended the speech of the first orator. Following his speech of thanks, the younger man then began to dance the *neskawet*. *Neskawet*, according to Francis and Hewson, is a verb meaning to "sing with gestures and responses." (Refer to Song and chant section) It is a more formalized style of dancing.

Then quitting his place, and advancing in cadence, he takes the master of the treat by the hand, saying, "All the praises my tongue is about to utter, have thee for their object. All the steps I am going to take, as I dance lengthwise and breadthwise in thy cabin are to prove to thee the gaiety of my heart, and my gratitude. Courage my friends, keep time with your motions and voice to my song and dance. With this he begins, and proceeds in his *Netchkawet*, that is, advancing with his body strait erect, in measured steps, with his arms a-kimbo. Then he delivers his words, singing and trembling with his whole body, looking before and on each side of him with a steady countenance, sometimes

moving with a slow grave pace, and then again with a quick and brisk one. The syllables he articulates the most distinctly are, Ywhannah, Owanna, Haywanna, yo! ha! yo! ha! and when he makes a pause he looks full at the company, as much as to demand their chorus to the word Heh! which he pronounces with great emphasis. As he is singing and dancing they often repeat the word Heh! fetched up from the depth of their throat; and when he makes his pause, they cry aloud in chorus, Hah!

After this prelude, the person who had sung and danced recovers his breath and spirits a little, and begins his harangue in praise of the maker of the feast.... Then he takes them all by the hand and begins his dance again: and sometimes this first dance is carried to a pitch of madness. At the end of it he kisses his hand, by way of salute to all the company; after which he goes quietly to his place again. Then another gets up to acquit himself of the same duty, and so do successively all the others in the cabin, to the very last man. This ceremony of thanksgiving being over by the men, the girls and women come in, with the oldest at the head of them, who carries in her left hand a great piece of birch bark of the hardest, upon which she strikes as it were a drum; and to that dull sound which the bark returns, they all dance, spinning round on their heels, quivering, with one hand lifted, the other down: other notes they have none, but a guttural loud aspiration of the word Heh! Heh! as often as the old female savage strikes her bark-drum. As soon as she ceases striking, they set up a general cry, expressed by Yah! Then, if their dance is approved they begin it again.... (Maillard, 1758:12-15)

The women then dance to exhaustion but, before departing, the eldest extols the strength of women in yet another lengthy oration filled with metaphors and passionate descriptions of women's feats.

The description alone could be treated as a separate thesis. The multisensory experience seems evident. The visual cues are everywhere in the motifs painted on the clothing, the movements and expressions, and virtually the whole environment. The

smells of tobacco and fire smoke lingering in the air, the fir boughs spread on the ground, the birchbark covering the wigwam, the food recently eaten all permeate the environment. The sounds of the chants, the drum, the stomping of feet on the ground, the crackling of fire were all part of the context. The touch is experienced in the handshakes, the feel of the earth, the air, the heat from the fire, and the rise of bodily heat from the physical exertion. The taste of the tobacco, the smoke in the air, the breath and words rolling across the tongue are part of the dance. And the kinaesthetic.

The social order is evident in the seating, the order in which each one speaks and dances, and the entry of women, always with the eldest leading. Simultaneously, the egalitarian aspect is evident. Despite the order, everyone is given their turn to offer their dance and sing their praises and thanks to the host. No one represents the other – they all speak and dance their own being. Each person dances until they have exhausted themselves, displaying their strength. This is a time to show one's strength and wisdom, and have one's place within the social structure acknowledged. The dancers are encouraged and approved by those assembled. The honouring of the ancestors, the thanking of the host and the exchange between those assembled and the dancer(s) are all present.

The reflective nature of dance spoken of in the beginning of the chapter can also be seen. The dancer entreats those assembled to, "Keep time with my motion and voice to my song and dance." They are being entreated to "tune in" to his rhythm, his words, his

energy. The profound silences, and pipe-smoking, the arising from a trance-like state, are also a means of “tuning in”, and acknowledging the mutual space in which they all exist.

The use of repetition, hyperbole, the intensity of movement and the chants all heighten the awareness of the message and plant it more firmly in memory. The various poses and gestures act as mnemonic devices, storing the story, in a sense, in the body. The pauses, the approvals, the handshakes, the eye gaze, all are interactive communication between dancer and audience. Those assembled, in turn, give their approval to the dancer, and encourage him or them to continue. Neither the men or women continue their dance without this approval.

Furthermore, the rhythm or the dance, its pauses, its crescendoes, can also be seen. The intensity of the movement ranges from complete stillness to frenzied, intense dancing. Each part of the body including the use of eye gaze, is used to depict a message to those assembled and the ancestors. The women too, have their distinct dance, gestures and chants. They spin on their heels, raise one arm up, and one down, and exclaim a guttural “heh.”

As seen in the previous example, dance embodied the values inherent in the culture. Like everything else it was and is considered a form of gift giving and exchange. The Pine Needle dance is said by the Passamaquoddy to have been given to them by the Mi'kmaq. (Smith, unpublished manuscript, n.d.) [Wilfred Prosper of Eskasoni remembers the

pine needle dance in one form. He remembers as a child making the pine needle clusters dance by putting them upside down on top of a wash basin or box. Then, by tapping the surface of the basin or box, the clusters of needles would be made to “dance.”

(Prosper, personal communication, 1994)] Among the Passamaquoddy, it is a women’s dance.

Vaughen Doucette of Eskasoni was told that the Snake Dance (or Serpent Dance) was given to the Mohawk at the Great Council of 1749. In return, the Mohawk gave the Mi’kmaq the Thanksgiving chant, *I’ko*. (Doucette, personal communication, 1995)

Individuality and communality are also seen in dances. It was at once an expression and acknowledgement of one’s individual being and ancestry, and a sharing and exchange with one’s community. For instance, one Mi’kmaw elder said each person dances according to their spirit. She danced like a star, her son like a porcupine. Yet their dances were done with others in a circle. Dance competitions also embodied this quality. Joey Gould of the Afton Reserve described dance competitions that used to occur at St. Anne’s Day celebrations.

On Sunday evenings, there would be a Ko’jua competition to see who would “take the Ko’jua home. Dancers would get up on the stage and start competing to see who was the best dancer, and who could take the Ko’jua home to their reserve. Joey said: “As soon as I heard people hollering at the dancers, “It’s going to Eskasoni, It’s going to Membertou, It’s going to Nyanza—nobody would mention Wycocomagh—then that would give me a feeling to get up there...I’m going to beat them all. As soon as I started dancing my style, I could hear my people from my reserve and even from Eskasoni where I have relatives, they would start calling, “it’s going to Wycocomagh. It’s going to Wycocomagh.” You’á

dance the Ko'jua until you just tired out and can't dance anymore. I think that's the way you'd compete. You started and go out on stage until you can't dance anymore. (Joey Gould, videotape interview, 1991)

Again one sees the individual dancing for their reserve, yet simultaneously being acknowledged for their skill and endurance as a dancer. Dance competitions are commonly featured in legends. One puoin would dance against another to prove their power. Dance was used to invoke power, transform shapes and conquer enemies.

Like stories, dance contexts changed over time as new cultural influences were adopted. The Catholic church played a primary role in discouraging dance, particularly the shamanic and ritualistic ones having to do with healing, birth and death. However, like stories, certain cultural themes and values endured. *Pestie'wa'taqtimk*, or the "Naming Ceremony," was done by Mi'kmaq on designated days throughout the Christmas season to celebrate certain saints' names. This was a Christian ceremony most likely introduced by the missionaries, which celebrated the names of saints throughout the Christmas season. Marie Battiste said prior to centralization when Mi'kmaq lived in smaller settlements (centralization occurred in the 1940s and 1950s) people would go from house to house giving gifts to people who had the same name of a particular saint being celebrated that day, i.e. Louie (Louis), Newell (Noel), Anne, etc. After offering a gift to the householder whose name was being celebrated, the visiting group would enter the house and dance the Ko'jua, a celebration dance. This dance was an offering in exchange for the food the host would then provide. (Battiste, personal

communication, 1991) Similarly, at pow-wows held on a number of Mi'kmaw reserves throughout the Maritimes, the dancing is said to give energy to the drummers and vice-versa. At the end of every pow-wow is a gift giving ceremony in thanks to all the people who helped host the pow-wow.

“Scientific” Knowledge Embedded In Dance

The Serpent Dance is a Mi'kmaw dance that vividly exemplifies ways of connecting with and coming to know the world. I have only seen this dance twice: once at a pow-wow, led by a Mohawk dancer, and another partial rendition on a videotape of a Mi'kmaw cultural event. During the pow-wow dance, people, primarily children, lined up behind the lead dancer, placing their hands on one another's shoulders, or holding hands if they could not hang on. The dance step was like a heavy-footed, careful run, with a slight side to side motion. As the chanting began, the head dancer led the line in serpentine movement, winding back and forth until reaching the opposite side of the dance circle. Once on the opposite side, the beat slowed and the head dancer remained in the center of the circle of dancers as they spiralled or coiled inward around him. Once the coiling was complete, the tempo increased and the head dancer came out through the circle of dancers, and again began winding back and forth with the line in tow back to the other side, still anti-clockwise. Again the tempo slowed as a second coiling occurred. After the head man exited the second coiling, he again proceeded in a less winding

fashion around the circle, anti-clockwise, picking up the tempo a bit and finishing the dance when the drum and chanting ceased.

How far back this dance goes among the Mi'kmaq is difficult to say. As previously mentioned, Vaughn Doucette of Eskasoni was told that the Snake Dance (or Serpent Dance) was given to the Mohawk at the Great Council of 1749. (Doucette, personal communication, 1996). In another account, the dance was performed in 1860 by Maliseet for the Prince of Wales at Government House in St. John, New Brunswick. (Whitehead, personal communication, 1996) Versions of the Snake Song and Dance have been documented among the Penobscots by Frank Speck, William Mechling, and Walter J. Fewkes, around the turn of the twentieth century. Stansbury Hagar documented the *jujjuajik* [Hagar writes it *choogichoo yajik*], or the "Serpent Dance" as remembered by Newell Glode in 1895. Glode reported that very few members of his community remembered the dance, and that he himself had forgotten the song that accompanied the dance. At the time, Newell Glode was seventy-three years old. (Hagar 1835:37)

The word, *jujjuajik*, according to Margaret Johnson means "acting like a snake." She explained the word *jujij* refers to things that crawl on the ground, like snakes, lizards, or spiders. This is in keeping with Hagar who quotes Rand's definition for it being a general term for reptile. Hagar also mentions that, despite this definition, several Mi'kmaq assured him it designated the rattlesnake. John Hewson defined *jujij* as serpent and *jujjuajik* as "they do the serpent," but Francis was uncertain that this was

an accurate definition. Nicholas Smith cites Jack Solaman, a Maliseet from Tobique Point, as using the word “*al-la-de-gee-eh*” in a singing of the “Snake Song” in 1915. This word was translated by Peter Paul as “moves like a snake” even though the word does not literally contain the word “snake” in it. Rather, the word literally means that “it has the motion of a snake.” This translation seems similar to Margaret Johnson’s definition. The actual word for snake in Mi’kmaq is *mteskm*. (Johnson, personal communication, 1996; Hagar, 1895:37; Smith personal documentation, n.d.; Hewson, personal communication, 1996; Francis, personal communication, 1996)

The dance, as documented by Hagar, was done by both men and women who formed a circle around a chanter and lead dancer.

The circle of dancers moved first to the right three times around the head man. The dancers then turned their backs to the head man and repeated the revolution three times; next the two sets turned their backs to one another and again moved thrice around the circle, finally, in the same position, they reversed the direction of the motion and move backward around the circle three times. This figure was thus completed in four positions and twelve revolutions, and, according to Newell Glode, signifies the rattlesnake waking from his winter sleep.

The head man now left the circle through the space made for him, simulating a serpent coming from its hole; he led the dancers around the field, making many snake-like twistings and turnings. In one hand he held a horn filled with shot or small pebbles; with this he rattled the time for the step and the song of the other dancers. After they had advanced some distance the last dancer remained stationary and the others moved around the leader in a constantly narrowing circle until all were closely coiled around him. The head man then reversed the direction of the motion and the dancers came out of the circle in line as before. This represented the coiling and uncoiling of the rattlesnake. (Hagar 1835:37)

Hagar's description continues on to describe the line twisting and turning around the field, coiling and uncoiling around the head man. This was done three times in order that "the rattlesnake can shed its skin." Finally, the head man leads the dancers back toward the centre, whereby the dancers dropped away "at regular intervals" leaving only the headman alone to end the chanting and dancing.

Hagar also reports that "the Micmacs assert that the traditional object of the dance was to obtain the poison of the serpent for medicinal use, and that at one time long ago their ancestors used to dance it so much that nearly all of them were turned to serpents." Another legend speaks of a community turning to toads from ceaseless dancing. In other words, the dancer invoked the spirit of the snake or toad so much, that it overpowered their own human form. It was supposedly danced to coincide with

exuviation, or the moulting of the skin, and was also done at the election of a chief. This may have been done to empower the new chief or give him strong medicine for protection. (Hagar, 1895:38)

Additionally, Hagar alludes to the dance being associated with the Pleiades, known, as he says, in the Mayan culture as the "rattle asterism," and states that "by the Micmacs own interpretation of the dance that it refers to the seasons..." (Hagar, 1895:38) Frank Speck notes that among the Penobscot, Newell Lion had heard that "the dance anciently represented the movements of a serpent (constellation) in the sky. But he could give no further connection with it." (Speck, 1976:284)

In a separate account written a year later, Hagar loosely infers that the dance was done in conjunction with the collecting of a medicinal plant called "*meteteskeley*," translated as "the rattling plant." According to Hagar, "its three leaves strike each other constantly with a sound like that of the rattlesnake." Hagar's informants stated that the plant "resembles a wild turnip.

It stands about knee high, with leaves about eight inches long, like those of the poplar. Its root is the size of one's fist, and the stalk is surrounded by numerous brownish yellowish balls as large as buckshot. Others describe the plant as being much smaller. (Hagar, 1896a:175-176)

Jerry Lonecloud calls *meteteskeley* the "most mighty of medicines." John Hewson defined it as "heard knocking against something," but Bernie Francis questions whether the word "heard" should be included in the definition and thinks it just means the "tapping thing." According to Margaret Johnson *metetesky* means "rattling," and the whole word connotes something that rattles. Whatever the appropriate definition, all agree that it makes a noise of some sort—rattling, knocking, or tapping." (Lonecloud, in Dennis, MGI Vol. 2867, Notebook #1:25; Margaret Johnson, personal communication, 1996; Hewson, personal communication, 1996; Francis, personal communication, 1996)

In Hagar's second account, he reports of the appropriate ritual for collecting the plant by an individual.

To find the plant, one must first hear the bird called *cooasonech* ("dwelling in old logs") singing in an *intervale* in the forest, otherwise the plant is invisible. This bird is brown and very small, but is *chose* chief of all birds because he is quickest and can hide in the smallest holes. He is sometimes called *booin*, "the magician," from his aptitude for quick disappearance and his ability to fly through fire without being injured.

When he sings, one should follow him at once, although...he often leads one on and on through the forest depths, leaving him lost and forlorn. But the fortunate one will at last hear the rattling of leaves of the magic plant as he approaches it, and then the plant itself will soon be seen. He must now gather thirty sticks and lay them in a pile near the plant. Next he must induce a girl, the more beautiful the better, to accompany him to the plant. Under circumstances of the greatest temptation, both must have no wish save to obtain the medicine or the plant will disappear. Now the plant is inhabited by the spirit of the rattlesnake, which comes forth as they near the plant, and circles around it. The man must pick up the serpent, which will then disappear without harming him. These tests of perseverance, self-control, and courage are all I have heard, but there may be others. The plant must be divided in four portions, of which three may be taken, but one must be left standing. The three parts are scraped and steeped and a portion worn about the person. Some say that, divided in seven parts, this medicine will cure seven diseases, but the great majority believe that it will cure any disease and gratify any wish. It is held to be especially potent as a love-compeller. No woman can resist it... (Hagar, 1896a:175-176)

Hagar finally mentions that "The rattlesnake which accompanies the plant brings it at once into touch with the mysteries in all parts of the globe. The same species is associated by the Micmacs with a dance which they used to perform only at night. This dance was mystical in a marked degree and was connected with the Pleiades."

(Hagar, 1896a:176)

The Serpent Dance may have nothing to do with the rattlesnake, as Hagar infers, and was not necessarily adopted from the southwest where rattlesnakes are found, as scholars have surmised. There are no rattlesnakes in the Maritimes. The Timber rattlesnake (*Crotalus horridus*) can be found in Southern Ontario, and the Massasaugas

Rattlesnake (*Sistrurus catenatus*) live in Southern and Western Ontario. The Timber rattler and the Copperhead (*Agkistrodon contortrix*) do reach as far as Southern Maine, but little research on the rattlesnake has been done in Maine. According to John Gilhen of the Nova Scotia Museum, people in early days mistook Garter Snakes (*Thamnophis sirtalis*) for rattlesnakes because of checkerboard pattern on their backs that resemble rattlesnakes. The Garter Snakes also display the aggressiveness of a rattler because they coil and snap at you in defense. However, the Garter snake has no rattle and is voiceless. (Gilhen, personal communication, 1996)

The moulting of snakes takes place once a year, and is associated with their growth. This moulting can occur either in the autumn, prior to hibernation, or the first thing in spring, after they come out of hibernation. When snakes moult depends on the range of temperature the species function within. Temperature essentially governs the actions of reptiles, determining when they emerge from hibernation when they feed when they nest and when their eggs to hatch. The Maritime Garter Snake exuviates in the spring. (Gilhen, personal communication, 1996)

It is possible the dance diffused to the Maritime from other areas, was “given” to the Mi’kmaq by another people, or, less likely, done in honour of the Maritime Garter Snake or some other snake(s) whose shedding of skin marked the changing of seasons. More likely, the dance is in reference to the *jipitjka'm*, or horned serpent prevalent in Mi’kmaw legends. Parsons also surmises that the Serpent Dance, as reported by Hagar, is in reference to the *jipitjka'm*, and not the rattlesnake. (Parsons, 1925:60)

It is my speculation that the *jipijka'm* was the keeper or spirit of medicine. The association of serpents and medicine is seen in numerous cultures throughout the world. The *jipijka'm* is a powerful symbol in Mi'kmaw legends. It lives beneath the earth or water, and its horns, one red and one yellow, were used for personal power particularly by *puoinaq*.

In their snake shapes, they travel about under the earth, swimming through the layers of rock; the ground trembles as they pass. Sometimes they come up to the Earth World, and carve great ruts in the land as they move across it. They live as humans in the World Beneath the Water. Sleeping, they can seem mountains. All *jipijka'm* have one red horn, one yellow horn; these horns are Power objects, and stories about their use are known westward all the way across Northern North America and through the centuries, back into Northern Asia. (Whitehead, 1988:4)

Jipij, Margaret Johnson defined as like a crocodile, or a big *jujik* that lives in swamps. Isabelle Googoo Morris told Parsons that *jipijka'm* "live in big swamps rooting in trees....Every *chibeshkam'* [*jipijka'm*] has a big red or yellow horn. This horn has magical application and such a horn was part of the outfit of a witch (*bu'owin* [*puoin*]). (Parsons, 1925:60) Hagar describes it as "a horned dragon, sometimes no larger than a worm, sometimes larger than the largest serpent....He inhabits lakes, and is still sometimes seen." (Hagar, 1896: 170) Perhaps, as well, its serpentine aspect was connected with the physical snake as a marker of seasonal change. This, in turn, might provide an indicator for the proper time to pick medicine.

In a sense, there are three levels of meaning, all inseparable. On the external level, the rattling of the horn, filled with pebbles, mimicked or reflected the rattling or tapping

sound of the plant. The chant that accompanied the dance, Margaret Johnson suggested, may have mimicked the beat of the rattling leaves or stalk—*metetesk, metetesk, metetesk*—onomatopoeically. This plant, in turn would be powerful medicine for the people, if properly respected. On another level, the dance and chant most likely was part of becoming, awakening, honouring, and possibly testing the energy of the *jipijka'm*, the essence of the medicinal plant. The plant itself most likely mirrored the features of the *jipijka'm* in both appearance and the sound it made. The sound and the rhythm of the dance embodied the essence or nature of the *jipijka'm*, which inseparable from the medicine. The third level of the dance may have had to do with “turning over” the seasons, as also seen in legends, and connected in some way with the stars.

The first level has already been discussed in terms of the appearance, sound and potency of *meteteskewey* as a medicine used by the Mi'kmaq. The second, or inner level, has to do with the nature or essence of the medicine in the form of the *jipijka'm*. The nature of *jipijka'maq* is like medicine in that medicine can poison or cure someone depending on proper use. This, in turn, is similar to the power attributed to *puoinaq* [powerful and often feared medicinemen/shamans] who, in legends, often had *jipijka'maq* as allies. *Puoinaq* were known to exercise both healing and destructive powers. Most likely, the two horns of the *jipijka'm* represent red and yellow ochre, both minerals collected for paint, and used as power substances. Red ochre in particular was thought to

have powerful magical properties and was used as a medicine. (Mechling, 1958:242) This may have been true of yellow ochre as well.

The power of the *jipijka'm* horn is illustrated in the story "The History of Usitebulajoo" (Wsitiplaju). In the story, a group of hunters come upon Wsitiplaju and his sister camping in their territory. Uncertain what to do with the strangers, they consult the village elders. The council of elders advises that the hunters visit the strangers in hopes of rooting the horn of a *jipijka'm* into Wsitiplaju's hair. This accomplished, the horn will adhere to his head, and then grow and entwine around a tree, ultimately entrapping and disempowering Wsitiplaju. The hunters succeed in their mission, and Usitebulajoo becomes imprisoned by the horn. The boy is only freed, after other failed attempts by his sister to saw through the horn, by the application of red ochre to the horn. The red ochre immediately dissolves the power of the horn. (Rand, 1874, 1971: 53-58)

The story, "A Man Became a Tcipitckaam" (*Jipijka'm*) told by John Newell of Pictou Landing, illustrates the connection of the *jipijka'm* with medicine further.

Two brothers were hunting. They saw a trench. "What is that?" one of them asked. It had been made by a Tcipitckaam. One of the men lay down in it. He became larger and larger and stronger. The other could not get him out of the cavity. He followed it down into the water. He came back and narrated a big story: Tcipitckaam is a female. The man went to the bottom of the lake, and there found a wigwam. He went in. There he saw an old man, a woman, and a girl. A boy came in. "This is my son," said the woman. "Your brother-in-law came in only a few minutes ago," the woman said to her son. "All right."

The people from whom these two brothers came were Micmac. Among them was a medicineman. The medicineman said, "If he sleeps with her under the same blanket, we cannot bring him back. If he does not do so,

we can.” The medicineman went out, dug a trench, put water in it, and placed medicine upon this water. He climbed a tree and trimmed off the branches. Soon he saw two big dragons approaching. The dragons made a big noise. One came to the tree where the medicineman was, curled around and around it, and thrust up his head in the middle of the coil. The medicineman said to the returned brother, “All right. That is your brother.” He was now a big Tcipitckaam, and the brother could not go near him. With a wooden knife the medicineman cut off the creature’s head, and removed the entire body of the man. His wife was beside herself with joy. She jumped and danced, and shouted. The medicineman gave the man medicine which caused him to vomit. The brother said: When I tried to converse with him, he made a noise like a Tcipitckaam—he could not speak properly.” If he had stayed there another day, it would not have been possible for him to come back. This is true. We know it because the old Indians have handed it on to us. (Wallis & Wallis, 1955:345-346)

Most likely this is a description of a man who was poisoned by taking the “left” or wrong medicine. Speculating further, it may have to do with picking a female plant versus the male, since, in this case, the *jipijka'm* is female. In so doing, he becomes unconscious, and goes to the underworld, the dwelling place of the *jipijka'm*. His revival is brought about by the shaman administering an antidotal medicine. Through the proper procedures, the shaman is able to call the *jipijka'm* to the upper world (back to consciousness), and liberate the man’s body from her clutches. Poisoning can cause comas, convulsions and delirium, and affect a person’s respiratory and circulatory system. The man’s inability to speak properly, may have been due to the effects of the poison constricting his muscles, causing him to speak like a *jipijka'm*. (Dickey, ed., 1986:95)

The third level has to do with the dance being performed to mark or effect the changing of the seasons. There are two particular legends which talk about the turning over of seasons, both in connection with medicines. The first is "Djenu and Kitpusiagana" [Jenu and Kitpusiaqnaw] told by Peter Ginnish of Burnt Church, New Brunswick.

Djenu was the strongest man in the world. When he became angry, he grew. He is under the ground, alive, to this day. Djenu lies as he was buried. Kitpusiagana was another strong man, not dead, who is buried in the ground. One who goes where he is buried obtains medicine. Twelve men go every three months and turn him from one side to the other, from his face onto his back, and then onto his face again. Everything grows above him. When you pull something that is growing above him, you obtain good medicine. A limb of a tree or a bush which grows there will cure anything. He is buried in the east, Djenu still further to the east. They fought, and many people died because of the noise they made. I do not know on what month or day he is turned. (Wallis & Wallis, 1954:343)

Similar to the Serpent Dance, there are three revolutions done in each direction, four times, possibly for the three months of each of the four seasons. As seen in the this dance and the Serpent Dance, the dancers first face one another, then face outwards, similar to Kitpusiaqnaw being turned from his face onto his back, and then onto his face again. Again we see that good medicine can be procured by properly turning Kitpusiaqnaw over at the appropriate times. Jenu, as mentioned in the previous chapter, is said to have a heart of ice, and a scream that can kill. Possibly Jenu is connected with storms, easterly winds, or cold weather, that prevents medicines from growing so that people can not be healed. Or, possibly Jenu is the poisonous potential of the plant.

The second story is of Kulpujot ["rolled over by handspikes" (Rand, 1894:234)].

[Kulpujot is]...an old man who dwells in solitude broken only by occasional visitors....He is without bones, and his corpulence is so great that he lies upon the ground in one position, unable to move. Twice a year, in spring and Autumn, he is turned over by visitors armed with handspikes, hence his name. Kulpujot, in this story lives far to the south. "When he lies facing the north, his warm breath produces those balmy southern zephyrs which bring with them the song of birds, the perfume of flowers, and the wealth of summer vegetation. When he is turned towards the south, the birds and flowers follow, and the icy northern winds resume their sway. (Hagar in Hoffman, 1954:248-249)

Kulpujot supposedly could grant any wish desired to those who turned him over.

One of seven men who venture to visit him asked to live with him and serve him water and tend his fire forever. The man had his wished literally granted and was subsequently turned into a cedar tree. (Hagar in Hoffman, 1954:248-249) Again, the cedar has medicinal uses, as well as being able to live in swampy, watery areas. Nevertheless, the turning of the seasons, seems to correlate with collecting medicines.

Other descriptions of medicine dances add to the understanding of the Mi'kmaq relationship to the gathering of medicine. Jerry Lonecloud gave two descriptions of dances having to do with medicine.

Bad spirit gives you disease. Indians believed greatly in prevention. Indians make medicine and go through ceremony with the medicine to drive(?) out the evil spirit before they take it, so the evil spirit can't leave any sting upon the body. Sick or well the medicine is taken two times a year; spring and fall, everyone took it. Medicine was made in secret. They danced around it. Ceremony the evil spirit doesn't like is performed and he can't get in them. (Lonecloud, in Dennis, PANS M.G. 1, Vol. 2867, Notebook #1:129)

When medicine is gathered in summer and winter, it is put aside. Dance takes place in winter. Medicine man gets up a dance to thank Kluskap for the privilege of having medicine put away for the season and ask for his cure with the medicine. Medicine man leads off the dance until he is exhausted, then he pronounces all medicine gathered good. Last sometimes seven hours. If he can dance a certain length of time, medicine is good. If not, bad. (Lonecloud, in Dennis, PANS M.G. 1:Vol. 2867:1:97)

Joel Denny of Eskasoni also described the giving out of medicine to the people by the medicine man. Again this involved a medicine song and a dance whereby the people danced up to the medicineman, received their medicine, and then returned to their place after dancing a more vigorous version of the dance. (Denny, personal audiotape, 1993)

Much more information could be collected, if deemed appropriate by the Mi'kmaq, or adapted, to teach children about plants and their properties. This particular example was provided to teach about one dance, and its association, once again, with the entire universe. (I have not included the possible association with the Pleiades because more research is needed.) This dance is yet another teaching of respect for the powers at play, some of which can kill you, such as picking the wrong medicine. It also teaches of the seasons, the directions, the stars, the nature of reptiles, the bird that leads one to the medicine, and values of respect and care needed in collecting plants. Offerings to the four directions were made in the dance, acknowledging the gift of the medicine. Properly approached the medicine will be good and strengthen the people. From the study of one dance, or one plant, a whole web of relationships and information about the world comes into being.

Conclusion

The Serpent dance was chosen because it exemplifies the wealth of knowledge embedded within it, as well as methods currently being used to teach science in some schools. As discussed, dance both teaches about the world, and embodies the teaching in the body of the dancers, making it personal and meaningful. The Leonard Bernstein Center for Education Through the Arts has developed a number of programs that integrate dance into the teaching of the sciences for elementary grade school children. Andrew Krichels described some of these programs. One of them was called "Seeds of Change" and was a study of the development of America. The first unit was a study of corn and maize in the western Native American culture for which the children studied seeds and their growth into maize and corn. Groups developed dance to express of life, the planting of corn, the growing of it, and the celebration of it. Principles of light, space, time and energy relevant to dance, were also relevant to the growing of corn. It was a way for the children to ground their knowledge and internalize it and then communicate it.

Other units used dance to learn about crystals (crystals are studied in units in the fourth and sixth grade science curriculum). The children danced the different stages of the crystal growth, creating movement that expressed the different qualities and growth stages of the crystals. Children danced solo, with partners, and in groups, mirroring the stages of crystal growth. Similarly, in a study of water ecosystems, the children looked at the many different types of water, i.e. lakes, rivers, and oceans. They discussed how

temperature and depth affect the movement of water. These movements they had the children dance. They danced the numerous water movements. Similar lessons have been done to teach about atomic particles, free radicals, the solar system, the stages of a butterfly, and body parts. According to one of the teachers, Margaret Officer, the children were uncomfortable moving their bodies at first. As they progressed through the grades these children were found to be much more comfortable with their bodies than children in other classes who had not participated in the program.

Beth Sutton, who has developed the Enki approach to learning, also uses movement in the teaching of language, math, and all the subjects. In one workshop I attended with her at the Shambhala Elementary School in Halifax, she showed how she taught the multiplication tables using children's hand games. These became increasingly difficult as the children progressed through the grades. This type of movement incorporated into learning also shows her, as the teacher, if children had dyslexia, or motor disabilities, and other problems often undetected in the regular classroom. It also helps children to coordinate their minds with their bodies.

Similarly, Michael Caduto and Joseph Bruchac, two science educators who teach with Native legends, integrate dance into their science lessons. In one lesson based on a Seneca story called "The Thanks to the Trees" they have the children perform a Round Dance.

[The Round Dance is performed]...to celebrate the unity of all things, to give thanks for all the gifts we receive from Earth, to connect with a small

community of people and all people to honour the circles and cycles of life essential for living in balance. (Caduto and Bruchac, 1994:50)

In the Native science program I developed for the Department of Energy, Mines and Resources, dance was also included, as was a gift-giving ceremony.

The pervasiveness of dance in Mi'kmaw culture again illustrates how everything was related. Plants were seen as part of a totality, as a gift, as having their own energy which took the form of a plant. The ecology of the plant—the bird associated with it, the environment in which it grows, the seasons, the possible association with the stars, and finally the use to the people—are all expressed in the dance. Movement itself has been shown to be a powerful form of communication and education. The knowledge about the plants was comprehensive, and the means of coming to learn about it are not dissimilar to progressive educational methods being promoted today.

SONGS and CHANTS

It has been said since ancient times that the nature of reality is much closer to music than to a machine. (Capra, in Berendt, 1983:xii)

The Micmac learned songs from birds....They learned especially from the wild turkey and the sea gull. "Ka ka ka kwi't," sings the wild turkey to herald a storm. Gulls which fly around together and herald a storm or a high wind for the following day furnished inspiration to the Micmac composer. The gull sings "Ka'ni! Ka'ni! Ka'niak! Ka'niak!" three times, then flies away. One old Indian listened to the gull until it had finished its song. Thus he learned its song, and said to the others: "If you people care to dance to it, dance. If not, then merely listen to me." He then took a stick and beat time. But as he sang he wanted to put some words to the tune. He was thinking about a woman who was hunting for something, and accordingly he sang about this. (John Newell, in Wallis & Wallis, 1955:119)

Everything that has been discussed in the previous chapters is in this one description. This account exemplifies learning as holistic, reflective, multi-sensory, contextual, personal and communal. As well, another potential science lesson emerges. Listening to the sounds of the birds heralding a storm, a song is created mirroring or reflecting the call and rhythm of the birds, who, in turn, are mirroring the weather. The birds give the man their song. The singer then invites those around him to dance, or listen, depending on their inclination. He then gives them the song. These sounds are brought into the human realm of experience further by associating them with a woman hunting for something. According to Lonecloud, it was woman who brought the birds to earth from the stars. Weather, birds, man, song, rhythm, dance, story, and woman hunting are all brought into one song.

Joachim Berendt, a student of physics and a renowned jazz musician, asserts that sciences have neglected the world of sound. He asks, "Why is it that science has failed to emphasize the role of sound in the world?" Science, in Berendt's opinion, has overemphasized the visual to the detriment of the other senses. (Berendt, 1991:9) "Seeing is believing" is a common phrase in western culture. Berendt's book, *The World is Sound. Nadu Brahma*, describes, in both musical and scientific terms, how everything in the world is sound down to the vibration of molecules. Berendt notes that animals are so subtly tuned to one another's rhythms, which are based on vibrations, they are able to move in synchronization. This is why schools of fish swim together, or flocks of birds

fly together. He points out that Johannes Kepler, the discoverer of the elliptical orbits of the planets, was more fascinated with the harmonics of the universe than by his discovery of the movement of planets. One of Kepler's major works, *De Harmonice Mundi*, was on universal harmonics, or the music he charted in the universe. World-renowned composer, Peter Lieberson based a piano concerto (performed by the Boston Symphony Orchestra in 1981) on the song of a bird. The bird song was a motive repeated throughout the concerto. (Berendt, 1991:60, 77; Lieberson, personal communication, 1996)

At the root of all power and motion, there is music and rhythm, the play of patterned frequencies against the matrix of time. More than 2,500 years ago, the philosopher Pythagoras told his followers that a stone is frozen music, an intuition fully validated by modern science; we now know that every particle in the physical universe takes its characteristics from the pitch and pattern of overtones of its particular frequencies, its singing. And the same thing is true of all radiation, all forces great and small, all information. Before we make music, music makes us....The way music works is also the way the world of objects and events works....The deep structure of music is the same deep structure of everything else. (George Leonard, in Berendt, 1991:89-90)

There are many songs in the Mi'kmaw culture which mirror the sounds, rhythms and features of nature, both with words and onomatopoeically. There is a snake song, a wind song, a pine-needle song, an eagle song, a loon song, a toad song and many others. Songs are the language of the world; everything has a song, and everything was sung. For the Mi'kmaq, they were a corpus of knowledge, both in the song texts and the musical structure, that was passed from generation to generation. Vaughen Doucette, a traditionalist drummer and chanter from Eskasoni explained:

When you are teaching songs you're teaching not just the song, but a lot of etiquette, talking about power and how to channel power. There's a lot of spin off from that regarding your place in the world. Not just teaching a song, but the do's or don'ts. You have to make preparations, invite spirits to come, and the song is a prayer for all the people who need help. A lot of social issues are dealt with the whole time. (Doucette, personal communication, 1996)

In the previous chapters reference was made about the power of breath, thought, utterance and song. Word, according to Isabelle Knockwood, is your spirit. Breath, in many cultures, was and is associated with life force, inseparable from the life energy that infuses all of creation. Word and sound are a way to channel energy and shape reality and a way to "tune in" as seen in cultures throughout the world. The Aboriginal Songlines of Australia have already been mentioned as an example of the world being sung into being, not just once, but continuously, reaffirming or reconnecting a person with the ever-shifting process of creation. Songs, and song parts are literally associated with the features of the land. Again, many layers, from the most profound sense of creation to the obvious and practical utterance of speech come into play.

Music and songs of specific cultures express(ed) fundamental world view, both in their musical structure and in the song texts. Each culture has its own rhythms, and shaping of sound that reflect its particular cultural message. Among the Gros Ventre, Orin Hatton demonstrates how a war expedition song is a paradigm of their creation myth. The song embodies two of the Gros Ventres main values: mastery and resourcefulness, but both within the context of humility and respect for the creative

forces of the world. To reiterate, “Singing invests creative works with formality and respect, and represents and intensification of speech and crying.” (Hatton, 1990:52)

Hoffman’s comments on legends collected by Elsie Clews Parsons seem to support Hatton’s view.

The Micmac concept of reincarnation is preserved for us in an important collection of Micmac folktales collected by Elsie Clews Parsons. Two of these tales deal with a being named *Waisis Ketdu'muwaji Chi'num* [*Waisisk Ketu'muaji ji'nm*] (animals bring back man) living a long distance from the Micmac in the land of the Supernaturals (and in one of the tales at least seeming to represent Kluskap.) The first account tells that some adventurers...came to a wigwam with two doors. They wanted to stay overnight. “No, we can’t keep you overnight,” the man said, “We are busy overnight.”—“What are you doing?” the man said.—“Overnight we are singing. The bones of the animals you have in the woods, I am singing for them to get their life back.” He puts out the fire, he sings. He takes a moose bone. The moose jumps out. Caribou, mink, all come back to life. This man *Waisis ketdu'muwaji chi'num* (animals bring back man) makes them all alive again. (Parsons, in Hoffman, 1955:372-373)

Parsons recorded a second tale, “Brings Back Animals”, told to her in 1925 by Isabelle Googoo Morris, as heard from Bessie Kremo Morris of Sydney. The following is just one portion of the story.

...The man in the wigwam began to beat on bark and to sing. He said, “I am singing of the animals, all the animals (waisi’s) to come alive, to come back to life, from all these parts, wings, heads, feet, that have been thrown away.” He sang: *negane'sung'ul besikwia g'ul* [*nekanisunku'l pesikwiaku'l*]—what belongs to my feet I am losing, i.e. moccasins. He stopped singing at daybreak. In the morning he said to the visitors, “That is my work every night. I don’t like to see people waste any part of the animals. They should save everything, they should save eel skins and other parts....They went down to the shore. He said, “Do you want to see

the fish come?" He took out a shell whistle. The bottom was very clear. They could see all kinds of fish. "These are my fish," he said. "They come from all those parts people throw away on the shore. I sing for them and they come back. (Parsons, 1925:72-73)

The lesson of wastefulness and respect for environment is an obvious message in the stories, one that is being promoted in the current provincial science curriculum. In traditional Mi'kmaw culture almost every part of an animal, plant, or fish was put to use. William Mechling noted that Mi'kmaq believed "one of the most frequent causes of misfortune was the wasteful slaughter of game." (Mechiling, 1958:198) The story also conveys a quality of gentleness and caring, and a quality of exertion, working hard all night, to make sure the animals come back. There is also the reminder that the bones (bones were animate) of animals and fish should be placed in the appropriate places so that these animals would return in their physical forms. On the most inner level of meaning, it affirms the connection between one's own life and that of the animals. In Parson's recording, the man blows into his shell whistle, using it as the physical medium to call back the fish with breath. Song, one's own breath, is connected with the life of animals.

This quality of connectedness, of reflecting, of singing to the world, is not just in relation to animals. Frank Speck's account of a group of Penobscot men canoeing across the Penobscot Bay illustrates the joining of chant with the rhythm of the waves.

The magic power of song syllables was thought to have a quieting influence upon the forces causing rough water, and also to strengthen the canoe men. A number of years ago an informant (Charlie Daylight

Mitchell) was crossing from Deer Island to Eagle Island in Penobscot Bay during a heavy sea. He was in a small canoe in the company of an old man who chanted the following song [in text] all the way across. The singer tempered his voice to follow the pitching of the canoe as it mounted wave after wave. He said that the boat rode the waves much more easily while the old man was singing. (Speck 1940:167)

Similarly, Nicholas Smith stated that Penobscot men developed “cadence songs” to accompany the rhythmical routines of walking and paddling. The song leader could easily vary the pace of the song to meet the needs of the travellers by changing the tempo.

(Smith, n.d: unpublished manuscript)

The monosyllables sung or chanted by Mi'kmaq and transcribed by early chroniclers—ho, hé, ha, houen, etc. were commonly termed nonsense or meaningless syllables by these chroniclers (e.g. Speck & Wallis). Although these syllables can not be given definitions, they were far from meaningless. Hatton's work among the Gros Ventre, and my own experience with eastern cultures, particularly those of Tibet and Japan, shows us that these monosyllabic chants were perhaps the most esoteric level of sound and music. They are encapsulations of the essence of life, and the way a person communicated directly with the world. As Vaughn Doucette expressed it, “chanting is more spiritual, singing can be spiritual, but done with words. Chanting with emotion is spiritual.” (Doucette, personal communication, 1996) Song syllables are perhaps the most fundamental level of “tuning into” the sounds, vibrations and rhythms of the world as seen in the Penobscot cadence songs.

The Gros Ventres believe singing degenerated when songs were composed and used for "trivial things." (Cooper 1957:79) Birds and other creatures are conceived as having kept the power and dignity of their singing intact. An important aspect of the quest for supernatural power is retrieving the power of the moment of creation from the creatures that attended and celebrated the reformation of earth." (Hatton, 1990:53)

An account of learning songs from owls might be viewed in this light. [Owls, as I learned from a 6:00 a.m. phone call from a friend on the Indianbrook reserve, portended death if they appeared in the early morning. This phone call came on my way off to the airport.]

Many songs were learned from owls. One can almost understand their language. They speak words distinctly, "wi ya'," (long drawn out) is said by the owl, plainly, when he has finished his song. After this the owl leaves and another takes his place, and sings "wuk'wa ha, wuk'wa ha." After he has finished he goes off to one side, sits by himself, and gives a "hu'a" (rising inflection on first syllable, falling inflection on the second). Then a "wa'hi! Wa hi!" and at each syllable nods his head. A Micmac learned a song from the owl. He was camping in the woods. The owl smelled the fire and came close to it. After a while he heard someone singing "Ru! Ru! Ru! Ru! Ru! Ru! Ru! Hua'wa! Hua'wa!" finishing with "Hi'a! Hi'a!, Hi'a!" Soon another owl sang, and then another. The owl commenced with high notes, in a very sweet voice, and ended with 'hu'a!," a deep guttural. It sounded as though he was choking. After this, three or four stand in chorus, the refrain of one answering the syllables of the other. The man said, "I have his song now, and will sing it here after as a ne'skawet (greeting song.) (Wallis Wallis, 1955:119)

Aside from being another potential science lesson, this song mirrors the more formal Mi'kmaw chants and dances done in greeting and praise, and for other important events. *Neskawet*, according to Francis and Hewson, is a verb meaning to "sing with gestures and

responses.” It means when someone is either singing or singing and dancing you will hear the group responding with “*ahe, ahe.*” Francis, in an earlier conversation also defined *neskawet* (verb) as a more serious and ordered dancing, done for a particular occasion such as the election of a new chief. *Neskawintu* (verb) is “someone who sings and perhaps dances.” *Nskawuqn*, meaning a “Mi’kmaq song, this song,” is simply the noun form of *neskawet* and *neskawintu*. These three are the same words, with *neskawet* and *neskawintu* as verbs, and *nskawuqn* is the noun form. (In Pacifique’s Grammar n.d.: 253&256, Hewson, personal communication: 1996, Francis, personal communication, 1991)

Wilfred Prosper said *nskawuqn* tells a tale. When asked what it told a tale about he replied:

I don’t really know cause there’s no words to it. [Wilfred sings /’ko] What’s that mean? It means nothing. But just the way its performed, I guess that means something....Why do they say that they put on a dance for the chief...after he was selected in 1919? And after it was all over they went into the wigwam and they put on this feast dance. So, what they did meant something to fit the occasion. Certainly not the words. The gestures, maybe....If it was done for a marriage ceremony, it was done differently. Not much different, it’s probably the same song, but they probably did something a little different. (Prosper, personal communication, 1993)

The references to *nskawuqn* (usually referred to in its verb form, *neskawet*, by chroniclers of the Mi’kmaq) in historical texts indicate its performance was done within formal contexts. Parsons’ account refers to *neskawet* as a “war medicine dance.” Annie Battiste, an elder from Chapel Island, also discussed it as “war dancing.” (Annie Battiste, personal communication, 1991) Rand defines it as “mystic dance.”

At the proper time a chief comes out of a camp, sings a singular tune, dances a singular step and is responded to by a singular grunt from the assembled crowd. They assert that during the ceremony the body of the dancer is impervious to a musket ball. (Rand, 1850:xxxii)

In Maillard's account, a *nskawaqn* was done honouring the host of a feast given for a visiting envoy.

The syllables he articulates the most distinctly are, *Ywhannah, Qwanna, Haywanna, yo! ha! ho! ha!* and when he makes a pause he looks full at the company, as much as to demand their chorus to the word *Heh!* which he pronounces with great emphasis. As he is singing and dancing they often repeat the word *Heh!* Fetched up from the depth of their throat; and when he makes his pause, they cry aloud in chorus, *Hah!* (Maillard, 1758:13)

Margaret Johnson once demonstrated the chant and dance done by the members of the Grand Council during St. Anne's Day on Chapel Island in the 1920s. This dance, also documented by Parsons in 1926, was done to the Welcome Chant *I'ko*. Each chief or captain would get up in turn and chant while doing particular dance steps—hands held behind their back, body inclined forward. They would dance around the circle of chiefs and captains, anti-sunwise according to Parsons. At the point in the song where he chanted “*neh*” the dancer would be in front of another chief and accent their movement in greeting. At the end of each round, those assembled would shout “*eh*.” (Johnson, personal communication, 1995; Parsons, 1920:469-470)

The inference might be made that if *neskewet* is singing a song accompanied by gestures in a more formal or ordered style, then the owl song was also considered in a more elevated category of song than other songs, i.e. songs sung for fun, for dances or

everyday news. This would support Hatton's contention that birds and other animals kept the dignity and power of singing intact. This would also suggest a formal code of conduct in relating to birds and other animate beings. Birds were seen as messengers, envoys in a sense of the ancestors. The eagle, for instance, is said to carry the prayers of the people to the ancestors.

From the scientific stand point, "Experts have shown that the laws of bird music correspond to those of human music."

Some birds—very much like humans—make "modern concert music"; in their music the "deviations" are frequent, as in the song of the blackbird, the "quintessential composer" among birds. The blackbird, writes [Rudolf] Haase, "sings highly complex melodies that are almost atonal. In this connection it is significant that certain notations of the blackbird's song from the nineteenth century display a degree of complexity that was reached in human music only much later, as, for example, in the opera *Salome* by Richard Strauss." (Berendt, 1991:88-89)

A number of comments by early chroniclers deride the sound of Mi'kmaw chanting. "Innocent Indian racket" was the phrase used by Le Clercq. (Le Clercq, 1691/1968:293) Most likely the atonal quality of the natural sounds of the world did not suit his ear. Lieberman's bird-inspired motif for his concerto was atonal.

Aside from mirroring sounds and communicating information, the form the song is given is also important. One of the main aspects of the *nskawaqn* is that it is responded to, not just sung out. It requires proper conduct, particular gestures, and rhythm to convey the appropriate message or invoke the appropriate energy. It is a mode of communicating and learning

Alan Merriam, ethnomusicologist and cultural anthropologist, discourses on how music embodies cultural beliefs, aesthetics and values, and is a form of socialization and education.

The confusion for most Westerners lies in the distinction between education and schooling; the lack of formal institutions in no way suggests that education, in its broadest sense, is absent.... Learning music is part of the socialization process...(Merriam, 1964:146)

Merriam asserts that the song text is a means to understanding human behaviour.

The song texts are language behaviour versus music sound. The relationship of language to music is obviously different from ordinary speech. Song texts conveyed information, the sounds of the world, and were and are a reflection of language behaviour in terms of how words and syllables were shaped to fit musical structure. (Merriam, 1964:184, 187-188)

Language clearly affects music in that speech melody sets up certain patterns of sound which must be followed at least to some extent in music, if the music-text fusion is to be understood by the listener. Bright comments that "languages display regular patterns of high-pitched and low-pitched syllables, loud and soft syllables, long and short syllables, and different languages give different emphases to these factors. Since patterns involving these elements of pitch, dynamics, and duration are also among the basic elements of music, it is at least a reasonable hypothesis that there may be some cultures in which features of spoken languages have played a part in conditioning the musical patterns of song.... Music also influences language in that musical requirements demand alterations in the patterns of normal speech. Thus language behaviour in song is a special kind of verbalization which sometimes requires special language in which it is couched. (Merriam, 1964:187-188)

An extensive body of knowledge was conveyed in song texts. Songs were sung to communicate everyday information, they were sung for a particular purpose, and they

were a specific form of social interaction. Aside from *nskawuqn*, there were other types of song. *Ktupekiuqn* means “song,” and in contemporary Mi’kmaq culture, can refer to any song, i.e. a country-western song on the radio. *Ketu'muet* is the word for “someone who sings a chant.” and it is usually done for someone who wants to dance or is dancing.

(Francis, personal communication, 1996)

Frank Speck, who recorded songs and dances of the Penobscot, described the following types of songs.

[There are] dance songs chanted in unison by leader and dancers, sung alternately in syllables by the leader and chorus of dancers like antiphonies, and those sung only by one or two-man orchestra in which the dancers do not join. Dance songs consist chiefly of meaningless syllables, one group or bar of which is uttered by the leader, while the alternating group serves as a response rising from the chorus of dancers.... Besides compositions of this type there are songs for special occasions, such as burial, marriage, canoeing, gaming and others, as well as simply humorous or obscene songs for pastime occasions, and lullabies. There was also an important class of myth-songs to which whole stories will be given under their appropriate headings... Some of the old women are said to have had many of these song myths, but I am not sure whether all myths could be so sung, or whether certain ones only were set to music. In this song the musical theme is repeated over until the story comes to an end. (Speck, 1940:165 & 166)

Charles Leland, who collected legends from the Passamaquoddy of Campobello, New Brunswick, the Mi’kmaq of New Brunswick, and the Penobscot of Maine, also suggests the possibility that there were myth songs.

The old people [in this case, Passamaquoddy] declared that they had heard from their progenitors that all these stories were once sung; that they themselves remembered when many of them were poems. This was fully proved by discovering manifest traces of poetry in many, and finally by

receiving a long Micmac tale which has been sung by an Indian...as the Indians tell me, all these tales were once poems, handed down from generation to generation, and always sung. (Leland, 1881: iii & 12)

Whether myth-songs existed in Mi'kmaw culture is unknown to me, but Leland's account suggests they did. Possibly they were a form of *nskawuqn*. Looking at documented events, such as the one written by Maillard in the previous chapter, it seems likely. In Maillard's lengthy account, the long orations were accompanied by dance and chanting. Dances were always accompanied by songs chants, or music, and songs were an integral part of storytelling and orations. These three were often inseparable.

The song texts themselves were and are extensive. There were songs for trade, love, divorce, meeting someone, hunting, medicine, honour, war, choosing a chief, welcoming, divorce, death, celebration, naming a child, humour, feasting, lullabies and for almost any occasion. Wilfred Prosper said some of the songs were disparaging songs. "They have something against somebody. If you want to put on a certain wish to somebody." He also mentioned eloping songs. (Prosper, personal communication, 1993) Songs could also be spontaneous, sung from the heart, as the Mi'kmaq chanter and drummer Joel Denny says. Everything, in a sense, was sung into being. (Denny, audiocassette, n.d.)

In 1851, W.E. Cormack recorded a list of songs sung by the Beothuk of Newfoundland. These were told to him by Shawnawdithit, the last surviving Beothuk. I think of this list as her death song.

Men singing to Ash-wa-meet [I think this is a type of fish], with Eagles feathers and deer ears in cap...The Beothics have a great many songs.

Subjects,—are of whiteman, Darkness, Deer, Birds, Boats, Of the other Indians, Bears, Boots, Hatchet, Shirt, Indian Gosset, Stealing man's boat, Shells, Pots, Whiteman's houses, Stages, Guns, fire stones, wood or sticks, Birch rind, Whiteman's jacket, Beads, Buttons, Dishes, men dead, Whiteman's head, Ponds, Marshes, Mountains, Water, Brooks, Ice, Snow, Seals, Fishes &c Salmon, Hats, Eggs, &c. In the song two or three wigwams sometimes join. (In Howley, 1915/1980:230)

This list not only shows the extent to which information was embodied in song, it also indicates what type of information was important to sing. They were singing their lives and the world around them. These songs, in turn, were shared with the community, and then became part of a corpus of knowledge passed down to subsequent generations.

According to Merriam, songs and chants were stable not static, able to incorporate change, i.e. the white man's houses seen in the Beothuk songs. The creation of song texts were "...subject to public acceptance and rejection, and therefore part of a broad learning process which contributes, in turn, to the process of stability and cultural change." (Merriam, 1964:162)

This public approval has already been illustrated in the discussion on *nskawaqn*. And in Maillard's account of a feast in the previous section on dance in which approval was necessary for dances and chants to be repeated by both men and women. Within familiar, accepted forms, new information could be sung and communicated.

After this the bridegroom thanked them [the assembled guests] promising as much as, and more than, his ancestors; then the assembly gave again the same cry. Then the bridegroom set about dancing; he chanted war songs which he composed on the spot and which exalted his courage and his

worth, the number of animals he had killed, and everything that he aspired to do. (Denys, 1672/1968:409)

Le Clercq also indicates a difference between the chanting styles of women and men, at least in some contexts. As with many of the accounts, the specific dance is not given, but perhaps it is a snake dance.

Men force from their stomachs certain tones of ho, ho, ho, ha, ha, hé, hé, ho, ho, ha, he, he which pass for airs alike charming and melodious among our Gaspesians.

(The women) ...do not force from the bottoms of their stomachs, as do the men, those hues and cries of how, how, of ha, ha, of hé, hé; but their only sound is made with their lips, and a certain hissing like a sound. (Le Clercq, 1691/1968:292-294)

Sarah Denny, a respected Mi'kmaw elder and chanter currently living in Eskasoni, said that in her youth, women were not chanters, only men were. The women would sing and chant in their homes to teach their children. At that time, (1930s?) she said, the priests told the people that it was wrong to sing and dance, and it began to die out. In an effort to preserve the chants and songs of her culture, Sarah obtained permission from the Grand Council to begin collecting, preserving, and singing the chants and songs.

When you go to a Grand Council, they're chiefs, and you ask them to do what you want to do. Well, if you're good enough to chant for them and show them what you know, they'll really let you go ahead and do it and see what you could do with what you're doing—if you do your best anyway. So you get a permission to do it, then you're all ready to do it. (Denny Interview, on CKDU: Spring, 1990)

Sarah Denny began visiting elders to learn the chants, and now, with her children and others, sings publicly teaching about their culture. She described these chants as “gifts given by elders.” (Denny Interview, on CKDU: Spring, 1990)

Merriam also noted groups of songs that were for social commentary, particularly about behaviour that was deemed inappropriate. As Wilfred Prosper noted, songs could be disparaging. In his example, he spoke of a song about eloping. (Prosper, personal communication, 1993) Prior to Catholicism, marriages involved exchange between the two families. The son would live for a pre-determined time in the household of in-laws-to-be, usually one to two years. If all went well, the couple would marry. Francis once recited a divorce song.

It is her doing that we became married and now she mopes around.
It is her doing that we became married and now she cries, cries, cries
(Francis, personal communication: 1991)

Song was a way to bring public notice to a problem or a matter, and was a form of social control, not dissimilar from gossip. (Merriam, 1964:197)

Like dance, songs were also a way for the community to monitor a person's emotional state, and for a person to give voice to their emotions. Le Clercq relates that a man or woman might tend toward severe melancholy or suicide in the event that they had been shamed, or lost a spouse, friend or relative. In one account, he describes the melancholy of Gaspesian women.

Nothing, however, has been effective up to the present in checking the mania of our Gaspesian women, of whom a number would miserably end their lives, if, at the time when their melancholy and despair becomes

known through the sad and gloomy songs which they sing, and which they make resound through the woods in a wholly delorous manner, some one did, not follow them everywhere in order to prevent and to anticipate the sad effects of their rage and their fury. It is however, surprising to see that this melancholy and despair become dissipated almost in a moment, and that these people, however afflicted they seem, instantly check their tears, stop their sighs, and recover their usual tranquility, protesting to all those who accompany them, that they have no more bitterness in their hearts.

(Le Clercq 1691/1968:248-249)

Again, as seen in the earlier reference to the man who lost his wife and child, dance and song were a way to bring back one's spirit from being overwhelmed by sadness and grief. In another account, Le Clercq notes the use of song and dance when Mi'kmaq were experiencing famine. (Le Clercq, 1691/1968:186)

The music itself was a patterning and shaping of sound and space. Orin Hatton's work among the Gros Ventre's illustrates the different patterned phases of a song each with their own rhythm, intensity, and recognizable message. Hatton created a model of Gros Ventre song which correlated phases of the song—announcement, thought, closure—with rhythms and intensities. Such utterances as “Youh, hou, hou,” or “e:!!”, for instance, would signalize closure. In Mi'kmaq, the word (sound?) *aw:u* is glossed “sigh, final exclamation of a song.” (Hewson/Francis, in Pacifique's Grammar, n.d.:227)

Diéreville, on the other hand, had a different description of the closure of a song.

A certain vocal note like this: Houen, houen, houen, if one can express it, marks the cadence, and they pause from time to time to give utterance to the terrifying yells with which the dances always end. (Diéreville, in Hoffman, 1955: 689)

Song was a way to channel energy and use it appropriately. Hatton notes the importance of mentally captivating people with song.

In sacred songs the all-important thing was the ability to put the proper feeling into the singing, 'to get the hearers' to concentrate ears, eyes, mind and heart, whereas the singer who had only a good voice reached only the ears of the hearers. (Cooper, in Hatton, 1990:53)

This "complicity", as Hatton refers to it, between listener and singer, concentrated the collective thoughts on one end. In a sense, the singer captured the audience by the power of his performance, and increased the collective power of the song.

(Hatton, 1990:54-55)

Margaret Laurent, in her work with Penobscot song and dance, claims that it was important that no word or syllable be spoken out of place.

So important was it that it be properly performed and the ritual song accompanying it be correctly rendered that any error in either dance or song was considered to invalidate the whole ceremony and it had to be performed over again. Otherwise, as they said, "the path would not be straight. (Laurent, 1963:8)

This observation is similar to Lonecloud 's description of the monitoring by the elders of a storyteller, again insuring accuracy and appropriateness. (Refer to storytelling section)

This capturing of others with song extended to other animals and conscious beings. In one legend, Kluskap charms a whale into carrying him across the water by singing. Interestingly, scientists have discovered whales have a sophisticated network of sounds and songs. This allows them to communicate underwater over distances of hundreds of

miles. One half hour of whale sounds has been shown to have an "information density" equivalent to the information contained in the *Odyssey*. In fact, scientists have found the ocean itself to be filled with sound-- "whistling, grunting, rattling, ..." (Berendt, 1991:76-77)

In another legend Ki'kwa'ju (wolverine), while being carried high into the sky by an eagle, sings a song to effectuate his wish for the eagle to take him even higher. These are common themes. (Rand, 1894/1971:287; Wallis & Wallis, 1954:428)

Lonecloud described a song competition to "capture" the heart of a woman for a wife.

The young Indian goes to the camp & sings songs. They were great singers. Another young Indian would come with his songs next night until the 7th one comes. On the 7th night she selects the one who will be her man. Then she is asked which of the singers she liked best. She says which she liked & that is her man. Some have love song, some warrior song, some bird songs, etc. & Hunting songs etc. The Chief Medicine Man brings her choice & it is pronounced then what time the marriage will be.... Warrior song--warrior dance, Great Spirit Song--Wild birds. Love song--what he will do when she gets in his canoe and paddles away. If she takes a liking to that then he's her man. When she selects her man she sings back and then its all over, and is pronounced by the Chief Medicine Man when the great marriage feast will take place. (Lonecloud in Dennis, PANS MG I Notebook #2:77)

Other song competitions occurred as a test for power.

An informant in 1911-12 stated that frequently war canoe parties tested one another's magic by song. While one side danced and sang their magic song, the other responded with ha! ha! And they in turn danced and sang while the others made response. They might be of equal power, if one was mightier than the other, the weaker side would be prevented from continuing the response of ha! ha! ha! Tales contain various instances of the magic power of song. (Wallis & Wallis, 1955:214)

Not only could songs and chants create, enchant, or overpower, they could make a person invulnerable or could destroy. A number of such destructive songs and “whoops” were documented by Wilson Wallis:

A fight began. They had a peculiar way of whooping. Such a whoop gives you a creepy feeling, and kills some people. It could be heard a hundred miles. No one now knows just how that whooping was done. It was low and long drawn out, rising and falling, and had an uncanny effect. Sabiesagamac, the chief over all (he died about eighty-five years ago), whooped. The young men heard the whooping, and said, “I suppose he is chasing the Bilwedj away. (Wallis and Wallis, 1955:466)

Another tells of a female *puoin* revenging the death of her child by the English.

...Fifteen or twenty shots were fired at her. She fell down flat, behind the stone, then suddenly jumped up, gave a whoop, and killed all of the fifty. They ordered out another hundred soldiers, and after she had whooped, she killed all of them. (Wallis & Wallis, 1955:471)

It may be that this war whoop is similar to the blood-curdling cry of the Jenu depicted in a number of legends—a cry which could kill and from a being who had a heart of ice. (Refer to the storytelling chapter) As seen in Wallis’ account of “Duneil’s Encounter with the French and English”, Duneil is impervious to bullets. He becomes invulnerable through his song. This is similar to Rand’s account of the *nskawaqn*. (Wallis & Wallis, 1955:461)

People were and are known to find their personal songs, particularly through visions or dreams. Nicholas Smith notes that among the Penobscots “during the change from

boyhood to man a youth found his song which was usually given to him in a dream.”

(Smith, unpublished manuscript, n.d.: 6) In Mi'kmaw culture, a boy supposedly became a man with the killing of his first moose. This rite of passage was celebrated with songs, feasts, and dances. Perhaps this was also a time for the boy/man to find his new song of manhood. In current Mi'kmaw culture, traditionalists sometimes receive songs while on fasts. *The Mi'kmaw Honour Song*, sung at almost every occasion, came to its composer through a vision.

Songs are thoughts, sung out with the breath when people are moved by great forces and ordinary speech no longer suffices. Man is moved just like the ice floe sailing here and there in the current. His thoughts are driven by a flowing force when he feels joy, when he feels fear, when he feels sorrow. Thoughts can wash over him like a flood, making his breath come in gasps & his heart throb. Something like an abatement in the weather will keep him thawed up. And then it will happen that we, who always think we are small, will feel still smaller. And we will fear to use words. But it will happen that the words we need will come of themselves. When the words we want to use shoot up of themselves--- we get a new song. (Orpingalik in *The Georgia Review*, 1995: 831-832)

In a sense, sound is the magic that brings things into creation and gives them music. It is sound that gives form to creation through the rhythms and vibrations that bring matter into a relationship. Songs, in a sense, capture and shape the invisible energy that is behind the physical form we see, touch, taste and smell. This ordinary magic has been studied by physicists, and other scientists, and has been taught to children in terms of scientific concepts. However, the immediate connection between music and science, song and creation, is usually not made on a personal and meaningful level, although many

provocative experiments and activities are done in the classroom. Berendt strives to make this connection in his work.

Perhaps you remember the demonstration of “Chaldni’s figures,” with which schoolteachers used to awe their pupils. Sand grains and dust particles loosely spread out on a glass plate quickly take on the most beautiful and symmetrical forms when a violin bow is drawn over the edge of the plate. It always seemed as though the sound “called” the particles “to order.” As youngsters, we could not do much with this phenomenon. Now, however, we know that what happened there is happening everywhere. The sound that gives order and beauty to the world is everywhere. Confronted with its power and might, the “particles” of the universe, the planets and stars, are only particles of dust that the sound “calls” to order and to beauty. It calls stars and elementary particles, crystals and leaf shapes, plants and the bodies of human beings and animals (and their sexuality). The architectural forms and geological structure of the interior of the earth, the elements and their periodic table, the spin of the particles, the structure of the atoms and the molecules and nucleic acids and many other things that we haven’t yet discovered...Sound calls the world. The world calls in sound. The world is sound. (Berendt, 1991:91)

In *Explorations in Science: Level Four*, a whole unit entitled “Sound Effects” is dedicated to the exploration of sound. In this unit, children conduct a wide array of experiments regarding pitch, vibration, the differences in sounds made by various objects, concentrating and expanding sounds, how sound travels, and many other features of sound. A great deal of emphasis is placed on listening to different sounds, making different sounds with various materials (such as elastic bands, bells, tuning forks, water) and the effects of sound vibrations such as making salt dance. After these listening activities (in one case the activity was to read about the use of the voice), the children are

encouraged to write down the sounds in their own awareness. (Harcourt & Wortzman, 1992:88-97) What is noticeably lacking is the children singing sound. In other words, sound does not become personal or internalized. They are not encouraged to feel the effects of sound within their bodies and then relate that to the sounds and rhythms of the world.

Additionally, almost all the activities are with man-made objects, with little having to do with the world of animals, birds, or other living things of the earth. Plastic, hangers, rubber tubes, wax paper, kazoos, theme music from movies, coins, and a tuning fork are some of the materials listed. Water and salt are the only substance that are directly from the earth. These activities are fun, interesting, and relevant experiments to do, but it is worth noting that the outside world is generally left outside except for a couple of exceptions. The children, in short, are left to connect their indoor knowledge to the outside world. (Harcourt & Wortzman, 1992:88-97)

The songs and chants of the Mi'kmaq discussed in this chapter are examples of mirroring the sounds and rhythms of the world. Furthermore, they are a way of respecting these sounds and rhythms as messengers, and as acts of creation and destruction. Song, both for the information in its content and for mirroring the sounds of the world, could be used in the teaching of sciences. In many of the songs discussed, the sounds and rhythms of the world are reflections of the world itself. In the sea gull's song, children are taught about sea gulls sensing the change in atmosphere and

responding with a specific call that the Mi'kmaq could use as an indicator for the weather. In the song of the owl, we see owls communicating with one another. This song then became a model for how people could communicate with one another. Even the stars have a song which scientists have begun to record, and was documented by Johannes Kepler throughout his lifetime.

These songs could also lead into further investigation, depending on the grade level, to learn about the birds, their behaviour, and their ecological niches. For instance, the children could find out which owl was being spoken of in the story. There are a number that reside in Canada: the barred owl, the screech owl, the barn owl, and so forth. Each of these in turn have their own ecological niches, flight patterns, song patterns, food preferences, and so forth. Some owls are loners. Interestingly, the owl's flight is noiseless. (Bram & Dickey, eds., 1986:34) There are also many stories about owls, especially among the Mi'kmaq which teach about the nature of the owl. One of the exploration questions asks, "Do you think some animals have better hearing than humans do?" (Harcourt & Wortzman, 1992:93) The owl is one such creature that has an extraordinary capacity for hearing. "The long-eared and short-eared owls of America, Europe, and Asia, *Otus asio* and *O. scipitrinus*, have peculiarly developed ears that open upward on oneside and downward on the other." (Bram & Dickey, eds., 1986:34) Birds are also connected to the stars, as seen in the Song of the Stars in the chapter on dance. Yet another avenue of study could branch off.

Children could mirror the sounds in nature, and the patterns and rhythms of the world. Language could be tied into the lesson. Students could make their own compositions, songs and dances. This activity could then be extended to working with the many materials in our world to show how song is in everything and a means of communication. Each child, no matter what culture, could shape and teach these experiences in their own way.

Similarly, mathematical concepts could be introduced in rhythmic and patterning studies. Children could begin to see the mathematical patterns in the musical patterns, and how these patterns are reflected in the forms we see in the world.

If all the notes of an octave are graphically displayed with their particular angles (the same octave operation...Johannes Kepler used in his famous work *De Harmonice Mundi*), the result will be the shape of a primal leaf. Which simply means that the interval of the octave, and with it the very possibility of playing a perceiving music, bears within itself the shape of a leaf...that a plant is capable of executing within its blossom a precise division into three parts as well as into five parts...here the shape of the third, there in that of a fifth, which—just as in music, structure the shape of the leaf as intervals. (Kayser, in Berendt, 1991:90)

This type of mirroring the rhythms and patterns, just as a leaf reflects the rhythms and patterns in its structure, was being done by the Mi'kmaq through story, song and dance.

Furthermore, it is suggested that the teacher involve the students in a discussion “on how people improve their hearing if they focus on the sounds around them and spend time remembering what various things sound like.” (Harcourt & Wortzman, 1992:93) Here is a

cue to consider the sensitivity the Mi'kmaq had to hearing the sounds of the world, and tuning into the basic rhythms. Not only did they remember, they passed these sounds on to the present day through songs and chants. It is another way sound travels. Children could then be encouraged to listen to their world in a similar fashion and explore their relationship to the world through sound.

Additionally, other examples of scientists and musicians drawing inspiration from nature could be introduced. Some examples of this have already been given, but many more exist. There are Mi'kmaq chanters and singers. One friend of mine has done a number of special school programs for children. These are valuable because he talks about modern day life for Mi'kmaq, as well as introduces the children to traditional drumming, dancing and chanting.

Children, in essence, could learn the songs of the universe, while at the same time finding their own song. This could then be related to the world of man-made materials and international communication networks that grew out these first sounds of the world. Listening to sound and rhythm, in other words, is important in knowing the world.

Conclusion

Two aspects of song have been discussed in this chapter. The first has to do with song as an effective mode of education used by the Mi'kmaq throughout time. The second has to do with the information that was communicated through song and chant about the world. Songs were both formal and spontaneous, and sung for almost any

occasion. Not only did they mirror the sounds and rhythms of the world, but they allowed for another way to communicate. They were/are creative, and were commonly given as gifts.

As my own daughter explained to me, song allows you to transcend boundaries imposed by ordinary speech. It can be refitted and shaped in innumerable forms, giving rise to endless forms of expression. It can be understood by anyone. Song reflected one's heart, it empowered, and it was used as a way to honour and give to another. It was also used to conquer. It allowed for a style of communication among people of a community, but it was a way for humans to listen to and learn about animals, birds, and other living beings of the world.. Song is a universal language.

CONCLUSION

CONCLUSION

This thesis began with the proposal that a science curriculum for the elementary grades (not to the exclusion of higher grades) could be and should be developed that reflects Mi'kmaw knowledge and beliefs. One of the most fundamental purposes of this thesis was to convey the richness of knowledge embedded in the Mi'kmaw culture, and that this knowledge should be part of a scientific and educational dialogue.

It is essential that the Mi'kmaq lead this process and share in its implementation. It is also crucial that the history be continuous and include contemporary Mi'kmaw culture, including the language. I have focussed on early Mi'kmaw history for the purpose of looking at the roots of knowledge and education within the culture, and to raise questions as opposed to provide answers. The issues discussed in this thesis are contemporary issues and apply to contemporary society. They are for the Mi'kmaq to address and answer at their discretion.

A number of questions have been raised throughout this thesis that illustrate the various levels in need of research for such a curriculum to be developed for use in provincial schools. The first level has to do with fundamental differences in how cultures perceive the world. The assumptions inherent in western science have been reviewed, and examples have been provided of how these converge with or diverge from the world view of a number of Native cultures, including the Mi'kmaq. I have also attempted to show that the practical use of resources is inseparable from world view. The inseparability of these affects how knowledge is received, transmitted and applied.

In general, research conducted to date by both Native and non-Native educators has indicated that in a number of Native cultures, methods of gathering data, assessing data, and applying information differ from the western scientific approach. The division of the world into objective and subjective realities, which westerners take for granted, seems to be absent in Native cultures researched to date. Rather, the world is viewed as a continuum of energy in various forms and relationships.

Among many Native cultures, information is gathered in a holistic fashion that assesses a wide range of variables, including the volition, or individual will, of animals, birds, fish and other beings. This approach incorporates data that might be termed aberrant or idiosyncratic by western scientists because the data are outside verifiable laws and theories. Similarly, single observations are as important as multiple observations, and individuals within traditional Native cultures pool their information for assessment. Everything, in a sense, carries a message that is weighed for its importance, including information that may come from dreams or intuitive insights.

This inclusive and integrated approach provides people with a wealth of knowledge from which they can draw and apply to specific situations. Research suggests that traditional Native people viewed, and continue to view, the world in terms of potentialities or possibilities within shifting patterns of truths versus a world of probabilities and predictions based on general, testable theories. As seen in the chapter

on Mi'kmaw language, even the concept of a Creator was viewed as a process, not a static, unchanging being.

Furthermore, how Native children learn has been discussed in terms of recent studies undertaken by both Native and Non-Native researchers. As shown through linguistics studies, different perceptions of the world are at play. Pinxten, for example, illustrated that the Navajo displayed a different mathematical capability than non-Native children. Different semantic categories and scientific concepts were shown to exist between different cultures, as seen in both the Maori and Mi'kmaw cultures. Among Pueblo children, research indicates that observation is the primary mode of learning. Allen's work looks at "wait time" and Hampton's work explores the concept of reflectiveness. Stairs, in her research among the Inuit, showed a tendency for Inuit children to observe and absorb information and apply it when an appropriate situation arises. These children tended not to verbalize abstract concepts presented in the classroom until an appropriate context arose to which they could apply these concepts. This tendency has caused some teachers to assume some children do not understand.

Hampton suggested that the concepts presented by non-Native educators seem self-evident and obvious to many Native people—they are implicit and assumed. For many Native people, it is more important to make connections that are more personally meaningful, creative and applicable. Furthermore, cooperation, versus competition in the classroom seemed to be preferred by children of the Kickapoo Nation.

The constructivist approach to learning science has been explored in terms of its relevancy to teaching Mi'kmaw children. Although its fundamental premise seems to indicate the potential for educators to accommodate different orientations to the world, there are still subtle cues and underlying assumptions that need further investigation. Snively's work contained hints of the potential for a dialogue to occur between Native belief systems and western science, but also showed it is a delicate process that requires time and openness to other world views. A deeper understanding of language, value systems, cultural beliefs and social contexts is required to truly have two systems stand side by side in dialogue. Furthermore, there are numerous subtle cues that many educators are not aware exist. An example of this within the current science curriculum of Nova Scotia was given in the use of pictures and the absence of material on Native culture within the sciences. Many others exist that have not been included in this thesis.

Battiste's work on different cultural forms of literacy, and the characteristics of an oral culture, also points to different styles and uses of language and writing systems. The findings of Havelock and Bruner indicate that narrative and logico-scientific ways of thinking have different purposes and outcomes that are not necessarily compatible. Both the work of Jeffrey Bloom and Jeffrey Lloyd demonstrate the need for greater awareness of cultural contexts and systems of communicative exchange. In his research, Lloyd illustrated two completely different and viable scientific traditions arising from two distinct socio-cultural contexts.

The Mi'kmaw language was presented as the key to looking into different ways of conceiving of and perceiving the world. The Mi'kmaw language suggests that the world was and is experienced as an intricate system of dynamic relationships. Everything was thought of in association with other things, fluid and in process. In traditional Mi'kmaw culture, apparent phenomena that might be termed an object in the English language might be experienced as a conscious, willful being.

Different semantic categories are seen to exist in perceiving the phenomenal world. The research conducted to date has shown the language to be highly descriptive, indicating the use, characteristic or function of various resources. Similarly, extensive terminology regarding parts of trees, plants, the body, and numerous other phenomena suggests a difference in perception, aesthetics, and use, as seen in the terminology for grains of wood. Additionally, stories, songs and dances are associated with much of the phenomena perceived in the world. What is considered important for children to learn, and what conceptual framework is being used to educate children are questions educators should consider.

The Mi'kmaw language also has designations for animate and inanimate categories. How much these reflect semantic categories is still being debated among linguists and scholars, but Mi'kmaw legends indicate a world filled with animate beings with whom one could relate. Features of the landscape, animals, stars, were one's relations, and

were addressed and related to accordingly. To maintain these relationships, required awareness and proper conduct.

Another characteristic of the use of the Mi'kmaw language is the ability to compress multiple levels of meaning into one word or phrase. This same quality is seen in the stories, songs and dances in which multiple layers exist enfolding and unfolding one another. The physical mirrors the cosmological; the cosmological mirrors the literal and physical. They are inseparable.

The Mi'kmaq wove their history and culture into the landscape, waterways, and skies of the Atlantic provinces and parts of Québec over thousands of years. Legends and stories are associated with the landscape, it's creation, resources and the events that occurred within it. Stories, songs and dances contained extensive information while maintaining a universal perspective on the total process of creation. From the singing of one song, the dancing of one dance, or the telling of one legend, the whole world unfolds into a vast web of knowledge. The legends could also be maps of the land, water and constellations, and act as mnemonic devices to remember important information.

Story, song and dance also provided people with metaphors for proper behaviour and the consequences of inappropriate action. Furthermore, they confirmed the social structure and fundamental values essential to the continuity of the culture. These types of transmission have been discussed for both the knowledge about the world they convey, as well as the effectiveness as a mode of transmission of knowledge. Stories,

songs and dances could provide meaningful context often missing in modern pedagogy.

Principles of Mi'kmaw education were also addressed. In Mi'kmaw culture learning seemed to be both personal, emphasizing personal autonomy, and communal. Individual strength, mastery and expression were encouraged, while at the same time serving and benefiting the community. Sharing, reciprocity or gift exchange, and forgiveness were values seen throughout both the structure and content of all levels of cultural expression. The extended family was, and is still, the most important social unit in Mi'kmaw culture, giving children a wider range of options in living arrangements and educational opportunities. In traditional Mi'kmaw culture, this sense of family and relatedness extended to the world around them.

Learning was also contextual, occurring in settings to which one's knowledge was immediately applicable. It was reflective, in the sense of listening, dancing, singing and being "in tune" with the natural rhythms and sounds of the world. All the sense faculties were utilized both for information gathering, and for expressing one knowledge. In this way, traditional modes of learning are holistic.

The stories, songs and dances reflect these principles. They are a continual reaffirmation of one's relationship to that totality, and a means of integrating different fields of knowledge. Two examples have been given of "modern," non-Native educational methods—the Enki approach and the Leonard Bernstein Centre for Arts in Education—that employ these types of learning. Story, song, dance and other artistic

expressions are integrated into the entire curriculum. They are used as a means for children to find their own rhythm, embody the fundamental principles and knowledge being taught, and share it with others. They are effective ways for children in elementary grades to enhance their understanding of the sciences. Native educators, however, are beginning to develop their own pedagogy, as seen in the Maori of New Zealand and the Mi'kmaq themselves.

Any number of entry points could be taken to explore the Mi'kmaw relationship to the world and their extensive knowledge of the resources—plants, trees, water, stars, animals, fish, and innumerable other aspects of the phenomenal world. The language is filled with descriptiveness regarding any number of plants, trees, animals, stars, birds and fish. The language should be incorporated into any curriculum for the vast body of knowledge embedded within it, the different world view it expresses, and to assist in its preservation.

The fundamental challenge to educators who wish to develop an alternative science curriculum for Mi'kmaw children is to recognize and draw on Mi'kmaw heritage and show its relevance to contemporary concerns. Such an effort requires creating a dialogue between the adherents of the western scientific approach in education and educators and representatives within the Mi'kmaw community. It is the challenge of taking the richness of the Mi'kmaw knowledge system without compromising the integrity of that knowledge and world view. It requires that science be taught in such a way as to present

a total picture that encompasses different perceptions, assumptions and values.

Further, in the words of Tom McFeat, "it must be so phrased as to be learnable."

(McFeat, 1974:114) In so doing, an opening or bridge can be offered to children to build on their own traditions and experiences of the world, and enter into a dialogue from which they have been excluded from conventional education for centuries.

This approach can best be summed up in a word offered by Bernie Francis in response to a request for an appropriate name for a family resource program I was designing for the Native Council of Nova Scotia. After describing the intent of the program (to assist off reserve Aboriginal families with young children) Francis offered the word *Panawti'kek*. The following is a synopsis of Francis' explanation, which I included in the final program proposal, and which, in my opinion, provided the heart of the whole project:

Awti'kek means "pathmaker," or the maker of a path, creating a path for a brighter future for Aboriginal children. *Pan* expands the concept further to mean "creating an opening" for people to find the path. In other words beyond creating a path for children, it is important to create an opening or means for them to find the path. Once this opening is created, people can then choose whether they will follow the path. (Sable, CHIP report, 1994:Preface)

Creating this opening is the key to inviting children onto a path of learning, sharing and enriching.—not just Aboriginal children, but children of all cultures can be invited onto a path of mutual exploration. Education is essentially a path, not a goal. If a goal exists, it should be to create the opening to the path.

Creating this path requires caution, as Vine Deloria has pointed out.

A recent and entirely welcome development in higher education has been the expansion of some traditional fields of scientific inquiry to include the knowledge possessed by tribal peoples about the world they lived in. This change falls under the general rubric of "ethnoscience," and includes archaeoastronomy, geomorphology, ethnobotany, and the miscellaneous studies of taxonomy and other methods of classification used by tribal peoples.... But considerably more work needs to be done to ensure that the whole scope of native knowledge is understood and approached from the proper perspective. As this movement gathers momentum and becomes an important part of higher education, we should take a careful look at the manner in which the western scientific community receives tribal knowledge and become particularly alert to the framework it uses in interpreting and understanding this body of information. (Deloria, 1992:12)

Deloria's warning should be well heeded. Having attended a conference at which cultural appropriation was one of the topics of discussion, it should not be assumed that simply telling Mi'kmaw stories or talking about their history is sufficient for understanding world view. Stories themselves are part of a culture; they have specific contexts and they are ever-changing. The point is to use the material appropriately to teach the multiple levels of meaning and context. Determining appropriate use of cultural knowledge is currently a topic of discussion among Mi'kmaw educators and definitions of appropriateness should be guided by the Mi'kmaw. The crux of creating curriculum in provincial schools would be to work continuously and in close conjunction with Mi'kmaq to see what is appropriate to teach, and how it can best be taught.

In this way, science can become a cross-cultural discipline, and Mi'kmaw children, and children of all cultures can begin to find their place within education. They can both

celebrate their own traditional roots, and bring their knowledge into a dialogue that will help shape the present and future. The benefits will accrue to all children and teachers regardless of their primary culture

REFERENCES CITED

REFERENCES CITED

- Allen, Nancy
1995 "Voices From the Bridge"--- Kickapoo Indian Students and Science Education: A Worldview Comparison. Ph.D. Dissertation, University of Texas
- Andrews, Thomas D.
1990 *Yamoria's Arrows: Stories, Place-Names and the Land in Dene Oral Tradition*. N.P. National Historic Parks and Sites, Northern Initiatives, Canadian Parks Service, Environment Canada, Yellowknife, NWT
- Aubin, George F.
1975 *A Proto-Algonquian Dictionary*. National Museum of Man Mercury Series, Canadian Ethnology Series No. 29. Ottawa: National Museums of Canada
- Barman, Jean, Yvonne Hébert and Don McCaskill
1987 *Indian Education in Canada: Volume 2: The Challenge*. Vancouver: University of British Columbia Press
- Battiste, Marie Anne.
1983 *An Historical Investigation of The Social and Cultural Consequences of Micmac Literacy*. Ph.D, Thesis, Stanford University, School of Education
- Battiste, Marie and Jean Barman, eds.
1995 *First Nations Education in Canada: The Circle Unfolds*. Vancouver: University of British Columbia Press
- Berendt, Joachim-Ernst
1983 *The World is Sound: Nada Brahma: Music and the Landscape of Consciousness*. Rochester, Vermont: Destiny Books
- Biard, Pierre
1616 *Relation of New France, of Its Lands, Nature of the Country, and of Its Inhabitants*. Lyons: The Society of Jesus
- Biggar, H.P.
1924 *The Voyages of Jacques Cartier*. Publications of the Public Archives of Canada, No. 11, Ottawa: F.A. Acland
- Blevins, Win
1995 *Stone Song: A Novel of the Life of Crazy Horse*. New York: Tom Doherty Associates, Inc.

- Bloch, Marietta and Ralph Ingleton**
1994 Teaching About Trees. Booklet Three: The Young Decision-Maker (Ages 11-13) National Community Tree Foundation and Prentice-Hall Canada Inc.
- Bloom, Jeffrey W.**
1990 Contexts of Meaning: Young Children's Understanding of Biological Phenomena. In *International Journal of Science Education* 12(5):549-561

1992 *Contexts of Meaning and Conceptual Change*. In *Philosophy of Science, Cognitive Psychology, and Educational Theory and Practice*. Richard A. Duschl and Richard J. Hamilton, eds. Purchase, N.Y.: State University of New York Press
- Bruner, Jerome**
1986 *Actual Minds, Possible Worlds*. Cambridge, Massachusetts and London: Harvard University Press
- Caduto, Michael J. And Joseph Bruchac**
1994 *Keepers of Life: Discovering Plants Through Native Stories and Earth Activities for Children*. Saskatoon: Fifth House Publishers
- Campbell, Gooley Herridge et al.**
1992 *Explorations in Science: Level Four*. Don Mills, Ontario, Reading, Massachusetts, Menlo Park, California, New York, Wokingham, England, Amsterdam, Bonn, Sydney, Tokyo, Madrid, San Juan: Addison-Wesley Publishers
- Canadian Broadcasting Corporation**
1988 *Literacy: The Medium and the Message*. Transcript from the program, *Ideas*. Montreal: The Canadian Broadcasting Corporation, Feb 1, 8, 1988
- Canadian Environmental Assessment Research Council**
1991 *Traditional Ecological Knowledge and Environmental Impact Assessment. Background Paper*. Unpublished manuscript
- Chatwin, Bruce**
1987 *The Songlines*. New York: Elisabeth Sifton Books - Viking
- Cassidy, Ivan**
1983 *Nova Scotia: All About Us*. Scarborough, Ontario: Nelson Canada

- Cooke, Denis and Barbara Purkis
1990 Innovations in Science. Holt, Rinehart and Winston of Canada, Limited
- Cox, Harvey
1969 The Feast of Fools: A Theological Essay on Festivity and Fantasy. New York: Harper and Row Publishers
- Deal, Michael
1989 The Distribution and Prehistoric Exploitation of Scots Bay Chalcedonies. Paper prepared for the Twenty-Second Annual Meeting of the Canadian Archaeological Association, Fredericton, New Brunswick, May 10-13, 1989
- Deloria, Vine Jr.
1992 *Ethnoscience and Indian Realities*. In Winds of Change. Summer, 1992: 12-18
- Dene Cultural Institute
1991 Traditional Ecological Knowledge and Environmental Impact Assessment. Unpublished manuscript prepared for the Canadian Environmental Assessment Research Council, April, 1991
- Dennis, Clarissa Archibald
1923 Journals of Clarissa Archibald Dennis. Public Archives of Nova Scotia, MG1, Vol. 2867: Notebooks 1 & 2
- Denys, Nicholas.
1968 Descriptions & Natural History of the Coasts of North America (Acadia). New York: Greenwood Press, Publishers. (originally published as Champlain Society Publication II)
- Department of Education
1993 Public School Programs: 1993-1995. Department of Education, Halifax, Nova Scotia
- Department of Education and Culture
1995 The Education Act: Chapter I of the Acts of 1995-96. Halifax: Department of Education and Culture

Dickason, Olive Patricia

- 1976 *Louisbourg and the Indians: A Study in Imperial Race Relations, 1713-1760.*
In *History and Archaeology*. Ottawa: Parks Canada and Department of
Indian and Northern Affairs

Dickey, Norma H.

- 1986 *Funk and Wagnalls New Encyclopedia*. Funk and Wagnalls, Inc. Vols. 20 &
21

Driver, Rosalind and Beverly Bell

- 1986 *Students' Thinking and the Learning of Science: A Constructivist View*. In
SSR, March, 1986: 445-456

Driver, Rosalind, Edith Guesne, Andrée Tiberghien

- 1985 *Children's Ideas in Science*. Milton Keynes, England & Philadelphia, PA.:
Open University Press

Goldberg, Natalie

- 1986 *Writing Down the Bones: Freeing the Writer Within*. Boston & London:
Shambhala Publications

Goldthwaite, J.W.

- 1921 *Physiography of Nova Scotia*. Geological Survey, Canada, Department of
Mines. Memoir 10 (122) Geological Series

Gould, Marjorie

- 1996 *Mi'kmaq Education in Nova Scotia: Hope for the Future*. In *Mi'kmaw*
Kina'masuti Education special publication. February, 1996

Hadingham, Janet and Evan

- 1990 *The Land of Frozen Trash*. In *Explore: A Book of Science: Student*
Resource Book 4: 96-98. Don Mills, Ontario, Reading, Massachusetts:
Addison-Wesley Publishers Limited

Hagar, Stansbury

- 1895 *Micmac Customs and Traditions*. In *American Anthropologist*, 8:31-41

- 1896 *Micmac Magic and Medicine*. In *Journal of American Folklore*, 9:170-177

- Hallowell, A. Irving
1976 *Ojibwa Ontology, Behavior and World View*. In Contributions to Anthropology: selected Papers of A. Irving Hallowell. Chicago & London: University of Chicago Press
- Hanna, Judith Lynne
1989 *To Dance is Human: A Theory of Nonverbal Communication*. Chicago: The University of Chicago
- Hatton, Orin T.
1990 *Power and Performance in Gros Ventre War Expedition Songs*. Canadian Ethnology Service, Mercury Series Paper 114. Canadian Museum of Civilization.
- Hayward, Jeremy W., and Francisco J. Varela.
1992 *Gentle Bridges.: Conversations with the Dalai Lama on the Sciences of the Mind*. Boston & London: Shambhala Publications, Inc.
- Hewson, John and Bernard Francis
1990 *The Micmac Grammar of Father Pacifique*. Memoir 7 Algonquian and Iroquoian Linguistics, Winnipeg, Manitoba
- Hocking, Anthony
1978 *Nova Scotia*. In The Canada Series. Toronto, Montreal etc.: McGraw-Hill Ryerson Limited
- Hodges, Henry
n.d. *Artifacts: An Introduction to Early Materials (photocopy)* Kingston, Ontario: Ronald P. Frye
- Hoffman, Bernard Gilbert
1954 *The Historical Ethnography of the Micmac of the Sixteenth and Seventeenth Centuries*. Ph.D. Thesis. University of California, Department of Anthropology
- Howley, James P.
1915/1980 *The Beothucks or Red Indians: The Aboriginal Inhabitants of Newfoundland*. Toronto: Coles Publishing Company Limited

- Knockwood, Isabelle
1993 *Out of the Depths: The Experiences of Mi'kmaw Children at the Indian Residential School at Shubenacadie, Nova Scotia.* Lockeport, Nova Scotia: Roseway Publishing
- Kyle, William C. and James A. Shymansky
1988 *Improving Student's Science Conceptions.* Paper presented to the National Science Teacher Association, Charleston, South Carolina, 1988.
- Kuhn, Thomas S.
1962 & 1970 *The Structure of Scientific Revolutions.* Chicago: The University of Chicago Press
- Langer, Suzanne K.
1983 *The Magic Circle.* In *What is Dance: Readings in Theory and Criticism.* Oxford: The Oxford University Press.
- Laurent, Margaret E.
1963 *Indian Music and Dance.* In *Micellaneous Papers No. 2.* New Hampshire Archeological Society, Inc. May 1, 1963
- Leavitt, Robert M.
1985 *The Micmacs.* Fitzhenry & Whiteside Limited
- Le Blanc, Barbara
1995 *Dance: A Collage of Definitions.* Handout for lecture given at Saint Mary's University, Spring, 1995
- Le Clercq, Father Chrestien
1910/1968 *New Relation of Gaspesia With the Customs and Religion of the Gaspesian Indians.* William F. Ganong, ed. and trans. Toronto: The Champlain Society, New York: Greenwood Press , Publishers
- Leland, Charles
1884 *The Algonquin Legends of New England or Myths, Folk Lore of the Micmac, Passamaquoddy, and Penobscot Tribes.* Boston: Houghton, Mifflin and Company. Reissued by Singing Tree Press, Detroit Michigan, 1968

- Lescarbot, Marc
1968 History of New France, Volume 3. W.L. Grant, translator. New York: Greenwood Press, Publishers. Originally published as Champlain Society Publication XI, 1914.
- Levi Strauss, Claude
1967 *The Story of Asdiwal*. In *The Structural Study of Myth and Totemism*. Edmund Leach, ed. London: Tavistock Publications
- Lomax, Alan
1968 Folk Song Style and Culture. Washington, D.C. American Association for the Advancement of Science. Publication 88
- Maillard, Abbé Antoine Simon Pierre
1758 An Account of the Customs and Manners of the Micmakis and Maricheets Savage Nations, Now Dependent on the Government of Cape-Breton. From an original French manuscript letter, never published. London: Printed for S. Hooper and A. Morley at Gay's Head, near Beaufort Buildings in the Strand
- Marshall, Merdena
n.d. Values, Customs and Traditions of the Mi'kmaq Nation. Unpublished manuscript
- McKinley, Elizabeth, Pauline McPherson and Beverly Bell
1992 Language, Culture and Science Education. In *Journal of Science Education*. Vol. 14 (5):579-595
- McFeat, Tom
1974 Small Group Cultures. New York, Toronto, Oxford, Sydney: Pergamon Press, Inc.
- McGee, Harold Franklin
n.d. The Windigo Down-East Or The Taming of the Windigo. In *Proceedings of the Second Congress, Canadian Ethnology Society, Vol. 1*. Ottawa: National Museum of Man Mercury Series, Ethnology Paper No. 28
- McGee, Harold F.
1977 *The Case for Micmac Demes*. In *Congres Des Algonquinistes: Actes Du Huitiemp*, 107-114. William Cowan, ed. Ottawa: Carleton University

- McNierney, Michael
1995 $E=mc^2$ So What? In *The Old Farmer's 1995 Almanac*, Robert B. Thomas ed. No. CCIII: 110-113
- Mechling, William H.
1958 Photocopy of Monograph, not titled: In *Anthropologica*: 7: 1-160,
- Merriam, Alan P.
1964 *The Anthropology of Music*. Northwestern University Press.
- Morrison, Ann
1991 *Voces Cantantes in Vestro: History of Research on Music among the Wabenaki*. In *Papers of the Twenty-Second Algonquian Conference*, William Cowan, ed. Ottawa: Carleton University
- National Center for Improving Science Education
1990(?) *Getting Started: A Blueprint for Elementary School Science Education*. The Network, Inc. and The Biological Sciences Curriculum Study
- Orpingalik
1995 Personal Statement. In, *The Georgia Review*. Athens Georgia: The University of Georgia. Winter, 1995:829
- Parker, Mike .
1995 *Where Moose and Trout Abound*. Halifax: Nimbus Publishing Ltd.
- Parsons, Elsie Clews
1925 *Micmac Folklore*. In *Journal of American Folklore*, Vol. 38:55-133
- 1926 *Micmac Notes. St. Ann's Mission on Chapel Island, Bras D'or Lakes, Cape Breton Island*. In *Journal of American Folklore*, Vol. 39: 460-485
- Public Archives of Nova Scotia
1761 John Sherbrook letter. R.G. 1 files. No document number. Public Archives of Nova Scotia
- Radcliffe-Brown, A.R.
1964 *Adaman Islanders*. Glencoe: Free Press

Rand, Rev. Silas Tertius

1888 Dictionary of the Language of the Micmac Indians who Reside in Nova Scotia, New Brunswick, Prince Edward Island, Cape Breton and Newfoundland. Halifax: Nova Scotia Printing House

1891/1971 *Legends of the Micmacs*. New York and London: Longmans, Green, and Co. & New York: Johnson Reprint Corporation.

Rand, Rev. Silas

1850 A Short Statement of Facts Relating to The History, Manners, Customs, Language, and Literature of the Micmac Tribe of Indians in Nova Scotia and P.E. Island. Halifax: James

Royce, Anya Peterson

1977 The Anthropology of Dance. Bloomington & London: University of Indiana Press

Sable, Trudy

1992 Traditional Sources Study. Report prepared for Canadian Parks Service, Atlantic Region Office, Halifax, 1991

1993 Maritime Native Perspectives on Earth Science Educational Initiatives and Issues. Report prepared for the Department of Energy, Mines and Resources, Canada, Maritimes Regional Branch

1994 Child Help Initiative Project. Grant proposal prepared for the Native Council of Nova Scotia, Truro

Scmidt, David and Murdena Marshall

1995 Mi'kmaq Hieroglyphic Prayers: Readings in North America's First Indigenous Script. Halifax: Nimbus Publishing

Shambhala Elementary School

1995 Program brochure. The Shambhala Elementary School, Halifax, Nova Scotia

Smith, Nicholas

n.d. Unpublished manuscript on Penobscot Songs and Dances.

Smith, Theresa S.

1995 The Island of the Anishnaabeg: Thunderers and Water Monsters in the Traditional Ojibwe Life-World. Moscow, Idaho: University of Idaho Press

- Snively, Gloria
1990 Traditional Native Beliefs, Cultural Values, and Science Instruction. In *Canadian Journal of Education*. 17(11):44-59
- Speck, Frank
1985 *A Northern Algonquian Source Book* Edward S. Rogers, ed. New York and London,: Garland Publishing inc.
- 1976 *Penobscot Man: The Life History of a Forest Tribe in Maine*. New York: Octagon Books
- Standing Committee on Aboriginal Affairs
1990 "You Took My Talk:" Aboriginal Literacy and Empowerment. Fourth Report of the Standing Committee on Aboriginal Affairs, December, 1990
- Thompson, Paul
1978 *The Voice of the Past: Oral History*. Oxford and New York: Oxford University Press.
- Wallis, Wilson D. and Ruth Sawtell Wallis
1955 *The Micmac Indians of Eastern Canada*. Minneapolis: University of Minnesota Press
- Watters, Ethan
1995 (Photocopy, title lost) In *The New York Times Sunday Magazine*. September 17, 1995: 44-47
- Wernert, Susan J., ed.
1982 *North American Wildlife: An Illustrated Guide to 2,000 Plants and Animals*. Pleasantville, New York, Montreal: The Reader's Digest Association, Inc.
- Whitehead, Ruth Holmes
1982 *Micmac Quillwork: Micmac Indian Techniques of Porcupine Quill Decoration: 1600-1950*
- 1988 *Stories from the Six Worlds: Micmac Legends*. Halifax: Nimbus Publishing Limited
- 1991 *The Old Man Told Us: Excerpts from Micmac History, 1500-1950*. Halifax: Nimbus Publishing Limited

Whorf, Benjamin Lee

- 1956 *An American Indian Model of the Universe*. In *Language, Thought and Reality, Selected Papers of Benjamin Lee Whorf*: 57-64, Cambridge, Mass: M.I.T. Press

Wildlife Education, Ltd.

- n.d. *Bears*. In *Zoobooks*. San Diego, California: Wildlife Education, Ltd

Wright, Robert

- 1992 *Science God and Man*. In *Time Magazine*. December 28, 1992: 35-41

You, Yeongmahn

- n.d. *What Can We Learn from Chaos Theory? An Alternative Approach to Instructional Systems Design*. In *ETR&D* 41(3):17-32

MEDIAREFERENCES

Audiotaped Interviews

- Vivian Basque: Halifax, Nova Scotia, August 2, 1990
- Annie Battiste, Eskasoni, Nova Scotia, January 6, 1992
- Marie Battiste, Eskasoni, Nova Scotia, January 6, 1992
- Irving Dana, Halifax, Nova Scotia, November 1, 1995
- Joel Denny, *Mi'kmaq and Abenaki Chants*, personal recording, n.d.
- Bernie Francis
January 5, 1992; August 22, 1992; July 23, 1994; July 27, 1995 ; August 30, 1995;
March 14, 1996
- Sakej Henderson, Eskasoni, Nova Scotia, January 5, 1992
- Dr. Margaret Johnson and Wilfred Prosper
Eskasoni Reserve, Nova Scotia, December 9 & 11, 1995
- Dr. Margaret Johnson, Chapel Island Reserve, Nova Scotia, July 26, 1995

- Joe Knockwood, Union of New Brunswick Indians, December 16, 1991

Videotapes

- Doug Smith and Bernie Francis: Videotape Discussion on the Mi'kmaw Language. September, 30, 1994, Ramada Inn, Dartmouth, Nova Scotia.
- Rob Bonnichsen: Stone Flaking techniques. n.d. Loaned by the Nova Scotia Museum of Natural History
- Joey Gould, Afton Reserve, December 19, 1990
- Eskasoni Pow-wow, 1994. Videotaped by Trudy Sable

Radio

- Sarah Denny, *On Rock Meets Bone*, CKDU n.d.
- Canadian Broadcasting Company, *Ideas Program*: "Modes of Thought", January 31, 1996

E-Mail Correspondence

- Bernie Francis: October 10, 1995; December 4, 1995; December 29, 1995; January 1, 1996; January 10, 1996; January 19, 1996; January 21, 1996; February 26, 1996
- John Hewson
Department of Linguistics, Memorial University of Newfoundland, St. John's
October 31, 1995; November 7, 1995; November 28, 1995; December 5, 1995;
December 7, 1995; December 14, 1995; December 19, 1995; December 20, 1995;
December 22, 1995; December 31, 1995; January 3, 1995; January 10, 1996;
January 13, 1996; January 15, 1996; January 16, 1996; January 18, 1996; January 25,
1996; January 29, 1996; February 1, 1996; March 19, 1996

PERSONAL COMMUNICATION

- Vaughen and Shirley Doucette, Eskasoni Reserve, Nova Scotia, December, 1995; January, 1996
- Andrew Krichels,
Artistic Director, Leonard Bernstein Institute for Arts in Education, December 12, 1995
- Harold McGee
Professor of Anthropology, Saint Mary's University
Ongoing conversations: 1990-1996
- Beth Sutton, Founder of the Enki educational approach to education., Fall, 1995
- Ruth Holmes Whitehead, Assistant Curator, Nova Scotia Museum of Natural History
Ongoing discussions, 1992-1996

Phone Interviews

- Ralph Stea, Geologist, Natural Resources, Canada, February, 1996
- Gordon Fader, Geologist at the Bedford Institute of Oceanography, February, 1996
- Bob Grantham, Geologist, Nova Scotia Museum of Natural History, February, 1996
- Bob Ogilvie, Curator of Special Places, Nova Scotia Museum of Natural History, 1994
- John Gilhen, Assistant Curator, Nova Scotia Museum of Natural History, February, 1996
- Peter Lieberson, Halifax, Nova Scotia, March 28, 1996
- John Shaw, geologist, Dalhousie University, Halifax

Lectures

- Bernie Francis
Lecture to the Indigenous Bar Association, Dalhousie University.
- Eleanor Johnson
Lecture on Mi'kmaw Oral Tradition. Gorsebrook Research Institute, Saint Mary's University, Halifax, November 11, 1994
- Murdena Marshall
Lecture on Mi'kmaw traditional childrearing practices at Native Council of Nova Scotia, Child Help Initiative Program conference, September 1995
- Harold McGee
Class lectures, Native People of the Atlantic Provinces. Saint Mary's University, Halifax, September-April, 1990-1991



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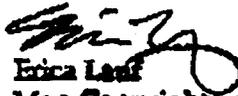
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Subject: Re: copyright permission
To: G_SABLE@HUSKY1.STMARYS.CA

Dear Trudy,

On Thu, 25 Apr 1996 G_SABLE@HUSKY1.STMARYS.CA wrote:

Dear Michael,

>I recently spoke to you about the incorporation of one of your
>maps into my M.A. thesis, which you consented to. However, Saint Mary's
>University requires that I receive written consent from you even though I
>credited you on the map and in the text. The map I used was Fig. 7 from
>your paper "The Distribution and Prehistoric Exploitation of Scots Bay>
>Chalcedonies" presented to the 22nd Annual meeting of the Canadian
>Archaeological Association, May, 1989. (This is your map of the
>distribution routes and chacedony outcrops) Could you send me a quick
>E-mail consenting to its use so I can avoid any snags with submitting
>this.

Certainly, you have my permission to reproduce the map from my 1989
CAA paper. I am glad that you found it useful.

Mike Deal