Learning Processes and Knowledge Transfer in a Native Bush-Oriented Society: Implications For Schooling

François Larose
Saint-Lambert, Québec

Based on field research among Northwestern Québec Algonquin bands since 1983, some general elements of bush-oriented Algonquin technology and ideology are summarized in a discussion of relationships between material culture and learning. Play and locus of control are central considerations. A general description of "traditional" educational methods is followed by an attempt to describe systematically the inferences on Native informal learning structures, using elements of Bandura's (1986) social cognitive theory.

Historical and Geographical Concerns

Algonquin peoples have inhabited the eastern subarctic area for the last 7,000 years. Their national territory as defined by land claims covers about 400,000 square kilometres. This territory, equivalent to the pre-contact area utilized by their ancestors, expands from the eastern shore of Lake Superior to the Lac Saint-Jean hydrographic basin, and from the St. Lawrence river's north shore to the James Bay basin (Frenette, 1988). As shown in Figure 1, the boundaries of Algonquin territory have changed quite often since the 17th century. This territory has always been integrated within informal boundaries shared by at least three other Algonquian cultural groups: the Atikamekw, the Cree, and the Ojibway. (The eastern Ojibway were formerly called Mississaugas by anthropologists).

In fact, these denominational distinctions were adopted by some of these people only in the mid-1930s (e.g., Atikamekw), and in the case of James Bay Cree, by the mid-1960s. This process of differentiation was sometimes a reaction to anthropological practice, as with the Atikamekw, or came about as a result of specific acculturative experiences, as with the James Bay Cree.

Today a lot of elders are still trapping in jointly shared territories, whether or not they are officially registered as Mistassini Cree, Waswanipi Cree, Lac Simon Algonquin, or Opitciwan Atikamekw. All these people still identify themselves in common as Anishenabek or Innu, simply meaning "ordinary human beings."

For hundreds of years, Algonquian nations of the Northeastern subarctic area (James Bay Cree, Ojibway, Algonquins, Attikameks, Montagnais and Naskapi peoples) have shared a common technology, a common set of languages, a common type of environment, and a common way of life. Within the last 40 years they have all shared a common experience of massive, economically motivated acculturation to the "white" universe, resulting for most of them in their integration into the reservation environment. The settling process has been

characterized by the implementation of obligatory education in the mid-north and, at the same time, by the acceleration of the exploitation of natural resources (mining, lumbering and more recently, hydroelectric projects). In the mid-north, to the southern boundaries of the James Bay agreement area, lumbering activities have rendered traditional fur gathering activities all but impossible. There are still a certain number of professional trappers, generally people 40 years old or older, but the relative duration of annual productive activities continues to decrease, and the global value of production is dropping yearly. Today there are relatively few bush-oriented or bush-enculturated teenagers or young adults.

### *School, Social Behaviour and Traditional Enculturative Patterns*

Beginning in the mid-1970s, the political situation within the various Native nations, and some local concerns related to the economy and development, have created a generalized movement in favour of the Native takeover of local educational structures. These same concerns have also resulted in access to primary schools, and often secondary schools, right on the site of the reservation for most of Québec's Native bands.

Despite the fact that today most of Québec's mid-north reservations have local schools, and despite the fact that in these schools (especially at the kindergarten and elementary level), there is an increasing number of Native teachers, academic achievement is still quite low among Native children. The available data indicate that about 78% of the Native youngsters living in communities which are Native-speaking are dropping out before the end of secondary school (Larose, 1988a; Maisonneuve & Bédard-Hô, 1985). This is about twice the dropout rate for the rest of Québec.

Much has been written in recent years about a "Native learning style." For the authors of these works, school failure in Native contexts is "a direct function" of the lack of adaptation of school procedures to those inferred specific "learning styles." The causal model underlying the inference of such a "unique learning style" changes from one author to another. It includes global neurophysiological based models such as the "right-brained Indians" theory, which seems to be quite popular among some researchers (Bell Browne, 1990), even if these inferences are based on little or weak empirical evidence (Chrisjohn, Towson, & Peters, 1988).

Fortunately, in the last few years, some authors such as Pepper and Henry (1986) have pointed out that such a "unique, uniform and pan-Indian" so-called learning style is most evidently nonexistent. If there are any behavioural learning styles related to specific Native enculturative patterns, they vary at the individual and group level.

It is true that a small body of scientific data suggests that there might be differences in the interactional patterns valued at school. The differences observed have been related to teacher-student relationships and to the ways that teachers use time and space, depending upon their ethnic origin (Erickson, 1979; Erickson & Mohatt, 1982; Larose, 1983, 1984; Philips, 1972, 1983). The problem is that the available data are restricted and that no long-term follow-up studies have been done to verify the degree of stability in these behaviours.
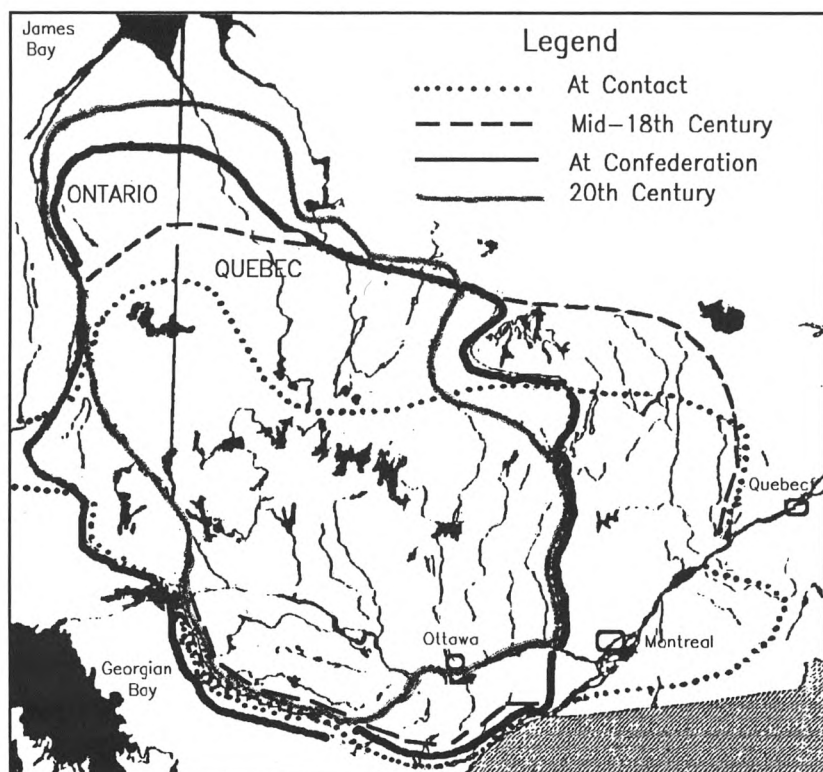
Figure 1.--*Boundaries of Algonquin Territory From Prehistory to the Present.*

The same kinds of remarks can be made with regard to specific "cognitive patterns" studied and observed in various Native settings during the late 1950s, through the 1960s, and until the mid-1970s. The field-independence pattern said to be related to specific visuospatial abilities and found among Inuits (Berry, 1966, 1967; Vernon, 1966) and among the peoples of some other subarctic nations (Berry, 1976) is almost certainly related to the needs of their economic survival as hunters and hunter-gatherers (McShane & Berry, 1988). Such specific abilities must have been developed and reinforced primarily through early child rearing practices.

For instance, almost all subarctic Algonquian peoples used the classic Native-style cradle board. As a matter of fact, the Abitibi-area Algonquins used to have two different types of cradle boards, one for the day and the outdoors, and one for the nighttime. During the first year of life, the child spent most of his or her time tightly wrapped in the cradle board, consequently limiting her or his motor behaviours. Yet children were generally set in a place where they would be close to people (parents, older children, and/or elders). In such a situation, the child received a high level of visual and auditory stimulation. The child had no opportunity to escape from these stimuli.

The takinagan (cradle board) is a very practical and highly adapted tool for a bush-oriented society. It is a safe environment for child transportation. It serves as a swing when hung in a tree, and it protects the child. With the settling-down process, the utilization of the takinagan has progressively lost its importance. Some young parents still possess a takinagan and still use it, but not as systematically as before. Most of the young parents only know the daytime kind. In the meantime, changes in the economic basis of the society (e.g., restricted access to the bush; short, weekend-type trips for hunting and fishing; overcrowding of houses on some reservations) have had a direct influence on young adults' interactional behaviours and on child rearing practices.

The adults of today no longer use some formerly important sets of social and private behaviours, just as they seem to have forgotten how to make and use a lot of artifacts produced by their society. This change has occurred within fewer than 15 years—one generation—in certain cases, and it occurred even if the younger people have been in close contact with elders. Even the attempts at school-based transmission of technical knowledge and artifact production techniques have generally failed. Without a relationship to an economic base, that knowledge and those skills may be perceived by youngsters to be folklore.

Consequently, one should ask a few questions. Were there, in the bush-oriented societies of up to 15 years ago, any "Native learning styles," and how specific were these learning styles to Indian peoples? What happens to the stability of social behaviour when the socioeconomic basis of a society undergoes massive change and when these disintegrative effects of the enculturative patterns are accompanied by contact with a society that fosters and promotes individual variation? If one were to assume a universal bush-oriented learning model, what would its "universal cognitive structures" be? How might these sets of competencies be reinforced in the transfer to school curricula?

As prelude to considering these questions, let us try to explore the nature of bush-oriented learning on the basis of some local data, some audiotaped legends from Lac Simon.

Legends and Learning in an Informal Educational Setting
A categorization of the set of legends audiotaped at the Lac Simon reservation in the late 1970s can be accomplished by dividing them into three general subclasses or subjects.

The first subclass (the largest) is concerned with the origins of various animal species, and with some of the animals' behavioral characteristics. The second is related to supernatural beings, who sometimes play a direct role in explanations of Native history, and who sometimes play a role in the preservation of both ecological equilibrium and social or economical equilibrium between individuals. This latter type is a kind of supernatural creature known to all subarctic peoples (e.g., Windigo, Widigo, Wihtigo).

The third subclass (in fact only a few of these stories were available) is directly related to social behaviour. In three of the Lac Simon stories, for example, there is a direct concern for sexual behaviour and its effects on the security of the social unit. The three stories are concerned with women having

homosexual relationships, but the important element of the stories is not the sexual behaviour itself, but rather the impact of the behaviour on the productive unit. A story of a mother who leaves her children to join her female lover is one of very few available stories that recount a social need for severe punishment: in this case the offending women must die.

If, as it seems, legends play an important role as educational devices, or "didactic instruments," it would seem that they are most useful for two "subjects" (1) knowledge of animal physical and behavioural characteristics; and (2) early learning about "history and law." Law in this context means a set of social and behavioral rules that must be internalized by each individual in order to ensure a basic stability and security within the production units (isolated families or groups of relatives).

According to some studies (e.g., Darnell, 1979) it seems that listening to legends is a self-determined practice. It appears, then, that the locus of control on the learning process would be internal (from the learner's point of view). It also seems that elders are the main storytellers. Because elders and kids in bush-oriented groups tended to stay close to the base camp, many of the interactions between these individuals might be involved in the process of storytelling.

Games and Toys

In a recent paper presenting early findings of the Lac Simon traditional games and toy research program (Larose, 1988b), it is mentioned that there seem to be three general classes of games: (1) private (with material support, toys); (2) social (collective, tag-type games for instance); and (3) production-related.

Private games. Some of the private games, such as nabowan (the cup-and-ball game) were directly related to cognitive and psychomotor skill development. Parents actively encouraged their children to practice this game at a very young age. They also determined the rhythm of learning and the type of artefact to be used by the child. The cognitive skills (visuospatial) and the psychomotor ones were directly related to the prerequisite abilities for some productive skills learning.

Social games. The social games might be related to two specific purposes: (1) hunting skills and knowledge of some big game behaviours (i.e., moose and deer), through cognitive projection and identification with the prey's strategies; and (2) social rules and the affective equilibrium of the children.

Production-oriented games. The third category, production-oriented games, was a collection of activities presented by the elders as play activities but that were directly and not symbolically related to production skills. This includes activities such as snowshoe making, cooking, catching small fish by hand, building shelters, and so on. For some activities, the control over the learning process, the timing of the activity and its duration were totally under the adults' control. In this last case, the two purposes of these activities are clearly identified: (1) integration of the child in the local micro-economy as soon as possible; and (2) learning of basic psycho-motor skills.

Material Culture

As well as the data collected that relate directly to games and toys, much data have been collected that relate to material culture and artifact production techniques. These data can be related to videotaped data collected earlier (1983-84). The data might also be compared to general descriptions made by many anthropologists in northwestern and northeastern Québec since the beginning of the century.

The main artifacts related to production and to the transportation of goods and peoples were: (1) shelters; (2) canoes (and related devices such as paddles); (3) skin drying frames; (4) nets and floats; (5) sledges; (6) snowshoes; and (7) baskets (birchbark in the north). All these might be locally produced and repaired using a minimum number of tools—an axe and a crooked knife. Some of these require the use of animal skins. These artifacts might also be divided into two subcategories: (1) wood and bark; and (2) wood and skin. Each subcategory is related to a specific group of cognitive and motor skills. Once the basic skills are mastered, they can be quite easily transferred to one or another activity within the subcategory. Figure 2 associates specific things in material culture associated with specific techniques and tools.

Productive Skills Learning

Much has been said about the importance of observation in Native learning strategies. In effect one might say that modelling processes are quite important in the learning of roles and techniques. A very important distinction is to be made with respect to this aspect of learning, and it has to do with the crucial consideration of the locus of control of an activity in connection with the learning process (Dyal, 1984): the question is whether the modelling processes are determined by the learner (i.e., she or he is the one deciding on the learning sequences). There has been a shift in locus of control, away from the individual learner and toward the "expert."

In fact, if we reconsider the previous data in the light of Bandura's social learning theory (Bandura, 1986; Larose, 1982) we can say that the learning processes within the bush-oriented Native societies are classifiable on the basis of three modes (1) trial and error (S-R-C type); (2) direct modelling; and (3) abstract modelling (vicarious learning).

Children were quite rapidly trained in these three learning modes. For instance, learning through storytelling (legends and facts experienced by skilled hunters) might be considered as a vicarious modelling educational mode. By listening and remembering hunting stories, for instance, the child and later the young hunter was integrating a set of descriptive sequences of appropriate behaviours. She or he was then able to generate cognitive rules (general concepts) that might be reorganized in specific situations, and would then be able to generate adequate sets of behaviours in order to deal with novel situations.
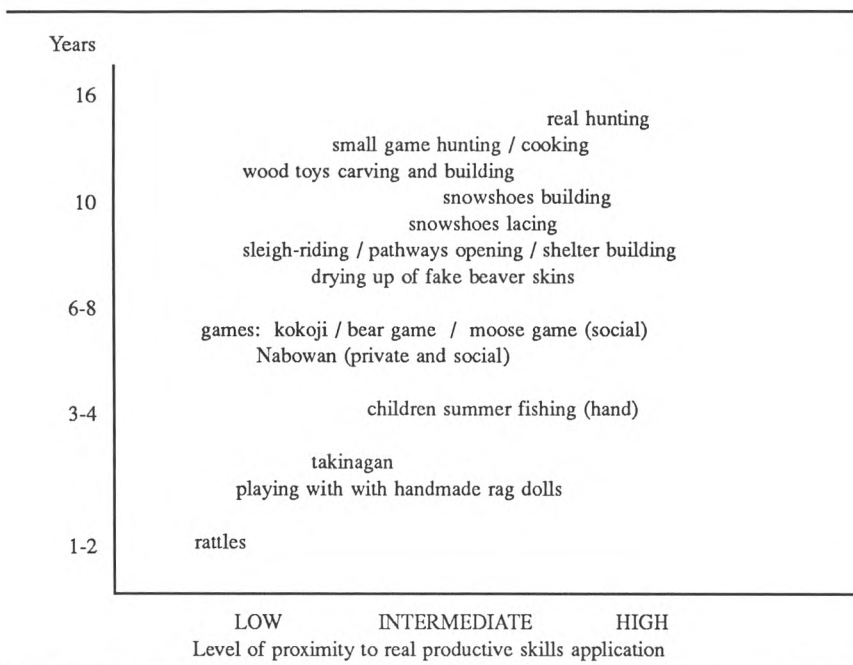
Observational learning (direct modelling) was useful in learning which required low skill and ability levels, such as small game hunting or shelter building. It was appropriate for learning done with peers or siblings. Trial-and-

error based learning was essentially useful for the development of basic psychomotor skills.

Artefacts	Parts	Technique	Tools
Takinagan	face protection board itself feet support	wood boiling, folding, planing	boiler crooked knife
	baby's container strap thread	cutting cutting off fat	knife, skin, scraper (might be a moose bone)
Canoe	structure	wood boiling folding planing	axe crooked knife boiler
	covering	drying & setting in place	birch bark resin
Paddles	structure	cutting & planing	axe crooked knife
Sledge	structure	wood boiling, cutting, folding & planing	boiler, axe, crooked knife
Bow & Arrows	bow (frame)	wood boiling, folding, planing	boiler, crooked knife
	arrow	cutting & planing	crooked knife or knife
Rope		fibre twisting	wood fibre
Snowshoes	structure	wood boiling, folding, planing	boiler, axe, crooked knife
	foot base	cutting, cutting fat off	knife, skin scraper
Skin Dryer (beaver & big game)	structure	cutting & planing	Axe, crooked knife
	straps, threads	cutting, cutting fat off	knife, scraper
Skin Dryer (small game)	structure	cutting & planing	axe, crooked knife
Floats (fishing nets)	structure	cutting & planing	axe, crooked knife

Figure 2.—*Artifacts and Related Tools or Resources*

Years

16	
	real hunting
	small game hunting / cooking
	wood toys carving and building
10	snowshoes building
	snowshoes lacing
	sleigh-riding / pathways opening / shelter building
	drying up of fake beaver skins
6-8	
	games: kokoji / bear game / moose game (social)
	Nabowan (private and social)
3-4	children summer fishing (hand)
	takinagan
	playing with with handmade rag dolls
1-2	rattles

LOW   INTERMEDIATE   HIGH
Level of proximity to real productive skills application

Figure 3.—*Games and Level of Proximity to Real Production Activities.*

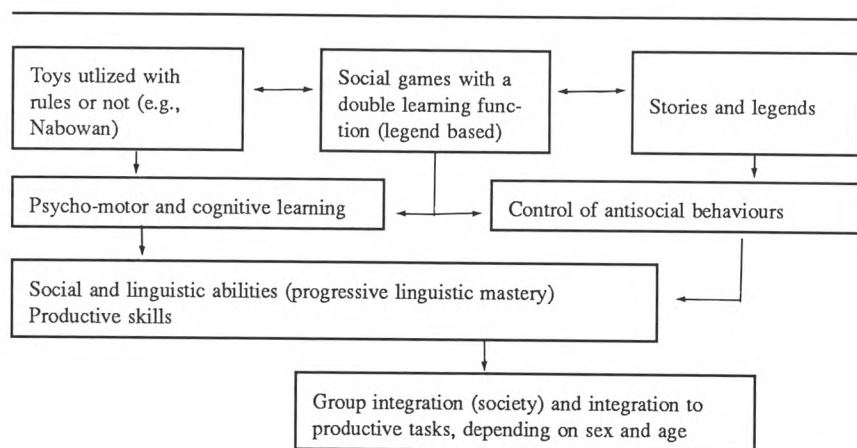These elements are integrated in graphic form in Figure 3.

In a bush-oriented society, formal structures of transmission of knowledge such as school are inappropriate. The setting has none of the elements required for such a formal structure: stable long-term settlement, and specification and specialization of areas of knowledge, or the designation of specialists (individuals who would master a technique and retransmit a complex set of rules).

Yet a minimal sharing of a certain level of abilities is necessary. Considered in connection with the idea of locus of control of activities, in the context of the bush-oriented society, the distinctions between playing, learning, and working just do not make sense.

Without dichotomous concepts of game and work, learning and play, productive tasks might be considered as games, and play activities have their direct and indirect productive aspects. The concept of game and the concept of learning are only different at the level of the locus of control of the task. Children play when they decide the activity; they learn or they work (depending on their age) when the activity is determined by adults.

In our model, playing and learning are both based on the utilization of the same three basic learning modes. Yet bush-oriented society emphasizes modelling and abstract modelling rather than trial and error. The reason is quite simple. Trial and error is appropriate in a risk-controlled environment. In a bush environment, trial and error would be a dangerous, laborious and potentially harmful method of learning. One just has to think of a child learning by trial and error how to determine the quality of the ice on a lake in winter.

| Toys utlized with rules or not (e.g., Nabowan) | ←→ | Social games with a double learning function (legend based) | ←→ | Stories and legends |

| Psycho-motor and cognitive learning | ← → | Control of antisocial behaviours |

| Social and linguistic abilities (progressive linguistic mastery) Productive skills | ← |

| Group integration (society) and integration to productive tasks, depending on sex and age |

Figure 4.—*Schematization of the Socialization Process and Individual Integration Including Play Activities*

Figure 4 suggests a model for the role of storytelling and game playing in the socialization process within a bush-oriented society. This figure emphasizes the interaction of the various learning strat
egies used.

Conclusion

During the last few years, many attempts have been made to reintegrate storytelling and the learning of traditional techniques within the school curriculum. On the basis of personal experience and on the basis of observation of a formal school board's integration of "Native technology," there is no evidence that this attempt results in a mastery of cognitive or motor competencies by the students. Storytelling inside the classroom has quite often been considered as a boring "job" by elders. The context is wrong.

The classroom environment is alien to the way storytelling was practised in the past. Traditional technical knowledge when taught as part of school subjects is often perceived as folklore. In the best-case scenario, this teaching is useful to achieve some of the objectives in the affective domain, such as enhancement of national pride—instilling pride in belonging to a Native nation—and reinforcement of the student's identity.

Most of Native technical knowledge cannot be taught in a classroom. You cannot learn to trap a beaver in a classroom. Cognitive and behavioural skills mastered by professional trappers require long-term learning in the bush. It takes years to produce a specialized trapper who knows the kinds of resources that are available throughout the various parts of his hunting territory.

On the other hand, what seems to emerge from the study of bush-oriented socialization systems of just a few years ago is that these people used highly conceptual learning modes. Emphasis was put on the development of cognitive

skills related to generalizability. Locus of control in the learning sequences was determined by the relation to production and was then varied according to the nature of the subject to be learned and the level of complexity of the tasks.

In a standard classroom setting, or in curriculum planning, we tend to overcompartmentalize subject matter, and further to overcompartmentalize the content within subjects. Learners are unable to establish a relationship, for instance, between what they learn in mathematics and in geography. Even when some teachers use direct modelling in their teaching, they generally restrict the behaviour to the reproduction of sequences and do not foster the generation of rules.

Therefore, if we can even speak of a "Native learning style" related (at least in part) to bush-oriented socialization, it is not via the content generated by a no-longer-viable economic system that we can hope to reach the learners. Rather, modification of teacher behaviour and change in the organization of the curriculum might improve the quality and the quantity of academic skills mastered by Indian students. In this sense, clarifying the relationship between subjects and among classroom content might be an important first step.

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