The sense of awe and amazement aroused by the art of birch bark biting must have been a reaction as spontaneous in 1687 as it is today. From a letter detailing the contents of a box of indigenous exotica sent to France in that year, we can speculate that Jesuit Father Beschefer's inclusion of “Des écorces figurées avec les den[t]s” (Thwaites 1896–1901, 68:286) reflected his fascination with birch bark biting. Certainly Nicholas Smith was entranced and awed by the magic of this art form nearly 300 years later when he first observed Minnie Paul, a Malecite artist, illustrate her expertise at creating designs in the bark. Comparable reactions have been recorded more recently, during a demonstration by Angelique Merasty at the Winnipeg Art Gallery. Although the artist was biting “little things”, according to journalist Irene Hewitt (1980:20), “it was something to see the excitement and amazement on people's faces when she'd unfold her biting.” Despite these affirmative reactions, this indigenous Algonquian practice of transforming thin sheets of birch bark into translucent artworks by folding and biting them appears now to be becoming a lost art.

Indeed, it was demonstrations of birch bark biting such as these — one by a Malecite woman and another by a Waswanipi Cree woman — coupled with a personal collection of tangible examples, that stimulated our interest in further research. As the results of interviews were compiled, a pervading theme became apparent: each person interviewed claimed to be the “last one who could do it.” Curiosity was piqued further during an attempt to establish a cultural identity for a cylindrical birchbark container collected in the province of Quebec prior to 1841. Responding to photographs of this small container (12 cm high with a diameter of 16 cm; Saffron Walden Museum L.N.C.8022), a number of East Cree women in the James Bay region, while imparting negative or somewhat ambivalent recognition to the form, were adamant that the
repetitive pattern of the decorated exterior was an example of birch bark biting (Oberholtzer fieldnotes). Many of the older women were stimulated by the photograph of this container to reminisce about biting bark themselves, and about their parents or other elders creating designs in bark, some even after they had lost many of their teeth. Significantly, at the time of this fieldwork in 1991 only one Eastmain woman retained the ability to create designs in bark. That she was “the last one that can do it” was the same phrase echoed in 1993 by Margaret Johnson, an Eskasoni Micmac elder from Cape Breton.¹ Continuing research has revealed that two other Micmac women — including Johnson’s sister on another reserve — can also do it.

These isolated and relatively unknown women join three other contemporary birch bark artists — Angelique Merasty, Angie Levac, and Annabel Eyres — each of whom has been widely proclaimed as “the last one who can do it.” Publicity given to Merasty, a Cree from Denare Beach, Saskatchewan, perpetuates the singularity of her position in this art technique (Guest n.d.:2; Hewitt 1980:18; Lebrecht 1985:65). As Merasty has no daughter, it was felt that the art would die with her. However, Angie Levac, having apprenticed under Merasty, now exhibits her work in gallery settings (Coe 1986:112; Claxton and MacDonald 1992). And Annabel Eyres of Snow Lake, Manitoba, also concerned that the art was being lost, carries on this tradition on a commercial level, distributing her work primarily through mail-order marketing.

However, concerns that birch bark biting was becoming a lost art had been identified in several earlier ethnographic references. Certainly, one cannot deny the end of the Beothuk tradition with the demise of Nancy April (Shanawdithit), often considered to be the last of her tribe. Based on first hand accounts provided by a woman who resided in the same urban household as Shanawdithit, Beothuk historian James P. Howley recounts Nancy’s skill at birch bark biting and compares it with his personal observation of a Micmac practice (Howley 1915:175–6). In a similar vein, the mystique surrounding the uniqueness of the art form itself and the sparse number of practitioners is continued by the German traveller Georg Johann Kohl, who in his 1860 publication takes his

¹ Johnson recently received an honorary degree as recognition for actively preserving Micmac arts and culture.
readers on a detailed and seemingly arduous journey to an isolated and uninviting location in search of Angelique Marte, a “celebrated birch-bark biter” and one of the very “few [who] are really talented”. Once located, this “pagan artist”, with her one remaining tooth, produced “one artistic production after another [of] tooth carving” (Kohl 1860:412–3). By the 1930s, after Frances Densmore had made an extensive collection of Chippewa (Ojibwa) bitten work from this same area, she offered her opinion that “The birchtrees still stand on the hillsides but the native art of the Chippewa is gone forever” (Densmore 1941:681). And with some finality, Irene Jerome and Jacob Wanatee of the Lac Barriere Algonquin nation, lamented in 1989 that for their people, “This art is now obsolescent. Most older adults have full or partial dentures, and they say that they can’t bite bark with false teeth” (CMC interview, 1989).2

Among the different native groups birch bark biting is known variously as *alaleskwadi-ge* ‘cutting bark with the teeth’ by the Penobscot (Speck 1927:77),3 *ojibagonisigen* (from the verb *nin ojibian* ‘I make marks on it’) by one of Kohl’s Chippewa informants (Kohl 1860:413), *misindjigan* ‘tracing’ (Jerome and Wanatee, CMC interview, 1989), or *mizi’ni.katowa*’ ‘picture-biting’ by the Algonquin (Speck 1941:243), and *mici’ni.kat’we’win* ‘design biting’ by the Montagnais (Speck 1937:76). Non-native writers refer to the same process as “bitten work”, “bark transparencies”, “dental pictographs”, “tooth carving”, “chewing”, or as the Cree prefer, simply “bitings”. Despite this diversity of terms, they all refer to a single art form which uses thin layers of bark obtained from the paper birch, *Betula papyrifera*. Detailed steps for the selection of an appropriate tree with ideal bark and its ensuing preparation are presented as onerous and exacting tasks by contemporary artists. According to them, these preparatory tasks must be restricted to the spring months when the trees are thawing and the bark is soft and moist (Eyres n.d.; Guest n.d.; Lebrecht 1985:66; McLuhan 1983:6). Corroborative evidence for a spring-time pursuit is derived from several ethnographic references

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2 We would like to express our appreciation to Daniel Clement, Eastern Subarctic Ethnologist at the Canadian Museum of Civilization, for sharing this information derived from an interview with anthropologist Sue Roark-Calnek, Irene Jerome and Jacob Wanatee at the Canadian Museum of Civilization, 5 May 1989.

3 It should be noted that Speck’s linguistic terms are sometimes speculative and should be used with discretion.
that suggest birch bark biting was a diversion at the spring sugar camps (for example, Densmore 1941:679; Kohl 1860:412).\(^4\)

In striking contrast, however, the data gleaned from other ethno­graphic sources stress the year-round availability of birch bark, particularly from woodpiles stored indoors or out, and of frozen firewood which separates readily into layers and becomes more pliable when warmed (Butler and Hadlock 1957:48; Densmore 1928:391; Moody 1957:9). Smith observed that both the Malecite Minnie Paul and the Cree Mary Blacksmith simply peeled bark from a log beside the stove, when Paul demonstrated the art in winter, and Blacksmith did so in summer. Concurring with this, Algonquins Jerome and Wanatee stated, “You can use a thin birchbark piece any time of year, can peel layer off, fold and bite with the canine” (CMC interview, 1989). This ready access to materials throughout the year both reinforces certain concepts held about the arts and entertainment of nomadic hunting groups and refutes the limitations imposed by contemporary artists. As a consequence, comparison of the steps undertaken by Angelique and Bill Merasty, and continued by Angie Levac, with those of both contemporary and historic ethnographic accounts suggests that the emphasis on the labour-intensive preparation of material has become a marketing ploy designed to provide a greater commercial value to artwork that otherwise takes only minutes to produce (cf. Lebrecht 1985:67; Smith fieldnotes). However, it must be acknowledged that the unblemished, and at times larger, pieces of bark used by the commercial artists may in fact necessitate a more rigorous selection process.

Regardless of how the paper-thin layers of bark are obtained, the process of creating an image remains constant across time and space. In each instance, a sheet of bark is folded double in one direction, folded in half again, and then folded from corner to corner. More complex designs entail the unfolding and further refolding of the piece until there are anywhere from two to 24 layers.\(^5\) While held in this folded shape the bark is inserted between the teeth, and using either both hands and the

\(^4\) Here sugar camps refer to camps set up to process either maple or birch sap depending upon the geographical, and hence, environmental niche exploited.

\(^5\) A simple version of the folding and refolding procedure is illustrated by Daniel S. Davidson (1928:149–152 and Figure 24).
tongue, or the tongue alone (depending upon region and informant), the bark is manipulated and turned in the mouth. With each rotation or change in direction impressions are made primarily along the fold lines. Fine indentations result from using the incisors and canines ("eye-teeth": CMC interview, 1989; Densmore 1928:391; Dewdney 1975:14), with coarser impressions made by the premolars (Densmore 1928:391) and molars (for illustration of molar use, see Dewdney 1975:15, Figure 12; Schoolcraft 1851–57, 6:630). For complex designs, particular care is taken to ensure that certain lines intersect at appropriate spots in order to have the bitten pattern contiguous from one thickness to the next when the bark is unfolded. By varying the strength of the biting pressure, shading and variation in texture can be produced. After three or four minutes of concentrated effort comes the magical moment when the small bit of bark is unfolded, held so that the sun or firelight suffuses the bark with a golden glow and shines through the minute indentations created by the teeth, revealing the design impressed into the bark. The designs created during this process of folding and biting are predominately symmetrical mirror images, either naturalistic (animal, insect and floral) or non-representational. As well, inclusion of repeated motifs as exemplified in Figure 5 attests to the possibility (but not the probability) that the covering on the bark container mentioned above could indeed be bitten work. This repertoire of images is balanced, however, with asymmetrical representational "pictures" of scenes, houses, people and animals (Schoolcraft 1851–57, 6:631; and illustrated by Figures 1–6). As trader Harry Moody noted:

George [Thomas of Cumberland House] was the only man I know who understood how to chew birchbark. He was so good at it he could chew in a picture of a man standing in a canoe. (Williams 1956; emphasis added)

A number of comparable examples of asymmetrical and representational designs attributed to Algonquin Madenine César (see for example Figures 3, 4) now form part of the Juliette Gaultier collection (CMC III-L-64) in

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6 Initial concern that Angelique Merasty's acquisition of dentures would hamper her dental expertise was allayed with her rapid adaptation to the altered feedback (Cinader 1985:8).

7 According to Juliette Gaultier's notes (CMC III-L-64M:13f), Two-Black-Beavers (Algonquin) also used her teeth to impress designs in ash-wood baskets.
the Canadian Museum of Civilization in Ottawa. Although appearing to have been bitten into flat (that is, not folded) pieces of bark, strong magnification reveals that each line of the pictorial design has actually been folded, bitten and then opened before the next line was produced.

That birch bark biting is an unusual art form cannot be denied. Its uniqueness and the fascination it arouses in both participants and observers are based partly on the stimulation of a number of senses in its production. Tactile not only in the actual handling of the bark but also in the oral sensations of manipulating it with teeth, tongue and lips (see footnote 6). Stimulation is heightened further by both the taste and smell of the material (cf. Schneider 1972:207). Visual response is aroused, of course, by the finished design.

Nor can it be denied that birch bark biting is truly an indigenous art form. Its spatial and temporal distribution throughout the boreal areas from the eastern Atlantic seaboard to the Plains and from at least the 17th century to the present support a native tradition free from non-native influence. Current lack of evidence from other groups, other than the Ob-Ugrians of western Siberia (Dewdney 1975:15), suggests that at the present time it is solely an Algonquian art form (cf. Flannery 1939:82, 185). However, given the distribution of the paper birch (*Betula papyrifera*) across Canada and into Alaska (Preston 1989:152), and analogous nomadic lifestyles in the western subarctic, the possibility of a wider practice may become apparent as research continues. In spite of this recorded distribution, and possibly based on the current status of the production of this art, several contemporary scholars have submitted more limited sources of origin. For example, Richard Conn of the Denver Art Museum (1979:71) writes that this “most unusual method of working in bark was devised by the Cree of Manitoba and Saskatchewan.” In a similar manner, ethnologists Pat and Robert Ritzenthaler (1970:66) state unequivocally that “Dental pictographs were an art form unique to the Chippewa” (see also Ritzenthaler 1978:749). Nevertheless, a compilation of written sources firmly establishes the practice amongst the Beothuk and Micmac (Howley 1915), Penobscot, Montagnais, Naskapi and Algonquin (Speck 1927), Ojibwa (Schoolcraft 1857, Kohl 1860, Densmore 1928, 1929, 1941), Western Cree (Moody 1956, 1957), Naskapi (Van Stone 1985:38, 126) and Tête de Boule (Davidson 1928).
Museum holdings such as the Canadian Museum of Civilization’s recent acquisition of 182 examples collected in the early 1940s by Canadian performer Juliette Gaultier also include Algonquin, Cree and Ojibwa (as do those of Robert Bell, Diamond Jenness and J. T. MacPherson). As well, our own fieldwork and enquiry have expanded this distribution even further with oral accounts from Malecite, Wabanaki, Passamaquody, western James Bay Cree (George Fulford, personal communication, 1994), and several East Cree groups.

For the most part, birch bark biting has been considered by both natives and non-natives to be a pastime, a form of social entertainment enjoyed by families and groups, particularly when they gathered for special harvesting activities. Sitting around the fire, women would delight the young people with designs that so magically appeared when the bark was unfolded. Once the women had tired of displaying their expertise, they encouraged both boys and girls to experiment with their own designs resulting in tentative efforts and great merriment. Among the Penobscot, “the boys and girls passed their evenings in the village playing a game in which they divided into sides to see which party could produce the prettiest designs” (Speck 1927:77). Whether done by an expert or by a novice, the bark transparencies, once created and appreciated by the audience were thrown into the fire, to disappear as quickly as the design had first appeared. While regarded as an ephemeral art in terms of its material form and as an example of indigenous “art for art’s sake”, its true significance is viewed as a means of learning new skills, experimenting with designs, and most importantly, of absorbing new ideas and cultural values.

A twist to this entertainment value of birch bark biting was related to Ernestine Friedl in 1943 by a Minnesota Chippewa woman. According to this informant, her father would often play a game with his children during the winter months. Biting one of “certain stereotyped” designs in folded birch bark, he would ask the children “to use their imagination in interpreting the patterns, and would encourage them to tell stories on the basis of the figures thus imagined” (Friedl 1944:149–150). The creativity

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8 According to Gaultier (Clement and Martin 1993:79), the Algonquin also played a game making transparencies with a long leaf. This is comparable to evidence noted by Densmore for the Chippewa (1928:391).
exhibited here is countered somewhat by the use of the phrase “certain stereotyped patterns” which may in fact lend credence to one proposal of Frank Speck’s. In his discussion of Montagnais bitten patterns from the Lake St. John band, Speck includes meanings for illustrated patterns to demonstrate the guidance of the “soul-spirit” in their creation (cf. Speck 1937:78). Of the thirteen linear patterns shown, twelve are interpreted by these natives as trails, trees and tents, all with reference to hunting. The thirteenth design, identified as a moon (similar in form to Figure 6), may also refer to the hunting complex. However, consideration of these meanings in association with their abstract patterns suggests a form of divination similar in concept to reading the cracks and fissures of burnt animal scapulae (Tanner 1979:117–124). Can we then ask if this game that the father played with his children was in fact, a creative and entertaining means of instructing them in the reading of signs relevant to dreams and hunting? And are these intricate patterns a product of the soul-spirit or dream-visitor as Speck (1927:77) claims?

The introduction here of a man as practitioner and teacher opens up further layers of meaning to an otherwise ephemeral art long deemed an art practised solely by women. Undoubtedly the encouragement of children of both sexes to participate in the acquisition of the skills necessary to produce these dental pictographs plus the occasional mention of male artists, alludes to an underlying relevance. First, however, we would like to introduce the rather controversial issue surrounding the use of bitten bark designs as patterns in other decorative techniques. Both authors recently obtained conflicting oral testimony concerning this. While Margaret Johnson, an Eskasoni Micmac, disclosed that her mother cut out particular designs for quilting, and Daisy Cheezo, a Cree, maintains that she used this means “to make designs on something she was making”, a number of other women either made no comment or denied such a use. These two sides of the question echo the dispute as it appears in the earlier literature. For example, Davidson (1928:152; emphasis added) avers that for the Tête de Boule “the bitten pattern always serves as the guide [for moccasin vamps]” and Speck (1937:79) states emphatically that, at least for the Montagnais, “None of the bark decorators questioned seems to rely upon the bitten outlines for their major patterns.” In a later publication, Speck (1941:250), however,
credits Madenine César of the River Desert Algonquins with finding “a rich inspiration in designs” for the decoration of birchbark containers and as patterns worked in silk, yarn or beadwork. In this latter instance, César basted the trimmed bitten figures onto the item to be decorated and then stitched the beads to this pattern. So, too, can we make correlations between a number of designs bitten into birch bark and those painted on some of the early Cree and Naskapi caribou coats.

One interpretation of this conflicting evidence draws upon both an assumed underlying reticence about revealing sensitive or personally relevant information and the reference to male practitioners. After all, what better method could a man use in the transference of his otherwise ineffable dream images to a form which his wife could use as a guide when translating these images into the decorative elements on bags and clothing, especially painted coats? Recognition of the wife’s (or another woman’s) role in expressing her husband’s dream revelations in a culturally-patterned tangible form as part of his obligations to his dream-visitor has been discussed at length elsewhere (Brasser 1974; Brown and Brightman 1988; Flannery and Chambers 1985; Oberholtzer 1990, 1991; Walters 1989). However, following a discussion involving the copying of designs from bark transparencies to woven bead bands (Densmore 1929:184), Frances Densmore (1941:680) makes a direct reference that, “A man might have the symbol of his dream woven in his headband, such as a star or a rainbow.” And at least one example of a woman using a man’s designs — although not specifically denoted as being associated with dreams — comes from Eastmain. According to Florrie Mark-Stewart, all her moccasin designs were obtained from her father’s bitings (Oberholtzer 1991 fieldnotes). Such an incorporation of designs provides a connecting link from the dreamer to his wife (or daughter) and implies a natural reluctance to consider male biting as merely a form of entertainment.

A further consideration of these designs is their characteristic symmetrical formation. Both Leslie Spier (1915) and Jacques Rousseau (1956) continue to promulgate the idea proffered by Davidson (1928:152) that it was these bitten patterns that served as “the basic feature of the double-curve motif so prevalent among the Algonquian-speaking groups.” At virtually the same time Speck also reached a similar conclusion that
birch bark designs so closely resembled the double-curve figures “that if the latter have not been actually derived from them they may be safely regarded as historically related to them” (Speck 1927:77). Taking this concept to a deeper layer, Spier and Rousseau demonstrate that the underlying principle of Algonquian art is bilateral symmetry, so well-exemplified by the birch bark bitings.

The most critical element of bitten work is, however, as the physical rendering of a mental template — what we might phrase in this age of computer technology as making a hard copy of the inner workings of the mind! Although phrased in a number of ways, this concept has been recorded in several instances: “Blind imagination alone directs the movements to produce outlines” (Speck 1941:251); “a peculiarity was that the pattern was clear in the mind of the worker before she made the first fold. She said that she knew how the finished work would look before she began to work — there was no experiment in it” (Densmore 1941:679); “blind designing with the teeth” (Speck 1941:269); designs are created “without guidance with her eyes or from a pattern” (Douglas 1941:7); “Angelique never traces a pattern or has anything to guide her work. The pattern is in her mind; she sees it all the time she is working” (Hewitt 1980:19); “She draws it in her mind, and then she makes it” (Guest n.d.). Similarly, albeit in a different medium, Gracie Orr, the Cree beadworker, never begins her work until she has completely worked the pattern out in her head (Preston, personal communication, 1994). These examples all explicate what Robin Ridington terms an “artifice” or stratagem used by northern forest hunters. As Ridington (1983:57) insists:

According to their own cultural categories, northern forest hunters have recognized their adaptive strategy as fundamentally cognitive. To be a successful hunter, one had to possess knowledge rather than be the owner of any particular material possession. Material possessions might be lost, but knowledge would stay with a person throughout his or her life.

As it was far easier to transport knowledge than material objects from place to place, the advantage of a technology that is “carried in the mind and coded in oral tradition... is highly cost efficient” (Ridington 1983:57). We can therefore conclude that the socialization presented as “entertainment” in birch bark biting constitutes an extremely important
aspect of the encoding and recalling of information in the adaptation of the Algonquians to their hunting subsistence.

Densmore, somewhat intuitively, recognized the loss of this skill as an important feature contributing to the demise of birch bark biting. In her 1941 article, she recorded that “Some women of middle age undertook to make transparencies, as they had seen the older women fold and bite the bark, but they lacked the mental concept and their work was not art... The old, clear thinking had gone, and nothing can take its place” (Densmore 1941:679; emphasis in the original). For contemporary natives, the older way of life, with its dependence on self-sufficiency and survival based on hunting, trapping and fishing in the bush, has virtually ended. Concomitantly, the increased reliance on the high sugar and simple carbohydrate diet of Euro-Canadians correlates with increased dental caries and premature tooth loss. All of this contributes to the demise of this truly indigenous art with its many-layered meaning. Now only the commercial market continues to document this cognitive skill.

ADDENDUM

Since presenting this paper (as well as another version to a different audience), a number of people have contributed first-hand knowledge about the art. Of these, one noteworthy example came from a retired non-native school teacher who had taught in a senior elementary school in the region where Densmore had conducted her research. During a workshop designed to provide information and methods for teaching about the local natives, the teachers in her school were given a demonstration of birch bark biting. This demonstration was done by a non-native using paper and a piece of carbon paper folded and bitten, and then opened up to reveal the carbon designs!

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Figure 1: Ojibwa. CMC III-G-507.

Figure 2: Algonquin. CMC III-X-550.
Figure 3: Signed by Madenine César. CMC III-X-559.

Figure 4: Algonquin. CMC III-G-562.
Figure 5: Algonquin. CMC III-X-671.

Figure 6: Ojibwa. CMC III-G-115.
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