Aboriginal Language-Learning in Cyberspace: A Typology of Language-Related Web Sites and Their Potential Uses

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This article presents an overview of the literature on language diversity, linguistic human rights, and language renewal; examines some representative Web sites dedicated to Aboriginal languages,[1] and explores possible uses of the Internet in language renewal and maintenance. Two such possible uses are: (a) as a vast and flexible resource center where structured lessons, grammars, lexicons, fonts, and other resources can be developed, shared, and added to; and (b) as a means of meaningful communication in Aboriginal languages through e-mail, conferences, and/or Web sites to share ideas and information, co-author stories and other texts, and so forth.

Introduction:

In a recent article Battiste (1999) highlighted the need to "redress ... the damage and losses of indigenous peoples of their language, culture and properties, and enabl[e] Indigenous communities to sustain their knowledge in their future" (p. 26). Kirkness (1999) also calls for immediate action to revitalize Aboriginal languages. Establishing language rights and revitalizing languages are huge tasks that require, as Kirkness outlines, a multifaceted approach including government recognition and elaboration of policy, training of language teachers, curriculum development, and support funding of various kinds. This article suggests that the Internet may be a useful resource among others for learning and maintaining languages and curriculum development.

The Internet offers the potential for Aboriginal educators (teachers, curriculum specialists, and administrators) and students to use Aboriginal languages in a variety of educational and cultural contexts. It can provide a means of support, a forum for telling personal stories, and a way of making contact and sharing ideas and resources. This potential seems to have especially important implications for geographically dispersed communities across Canada where other means of communication are not always readily available. It may also be useful for those who have left their Native communities and have few chances to use their Aboriginal languages. However, if this potential is to be realized Aboriginal languages must become much more visible on the Internet than they are at present.

Many educators of Métis, Inuit, and First Nations backgrounds see the use of Aboriginal languages as a crucial component of culture and identity. Unfortunately, because they do not share a common Aboriginal language, and many do not speak one at all, English is almost invariably the lingua franca of discussions on the Internet. (The term *Aboriginal languages* is used here to refer to the modern versions of languages spoken in North America before the arrival of Europeans.) Thus extensive Internet use may enable networking in important ways, yet contribute to

the further deterioration of Aboriginal languages. At the same time, the Internet seems to offer at least the potential for meaningful interaction in Aboriginal languages. Such interaction might contribute to their renewal or maintenance. A clearer understanding of actual and potential uses of the Internet in this regard may be helpful to teachers, curriculum specialists, and others concerned with Aboriginal language development and enhancement.

This article attempts to respond to some of the concerns outlined above. In the first section I present an overview of the literature on language diversity, linguistic human rights, language renewal, and reversing language shift. In the second section I highlight research on language learning and the Internet and examine some of the numerous Web sites dedicated to Aboriginal languages. In the third section I discuss potential roles for the Internet in the issues discussed in the first section and pedagogical implications.

Overview of the Literature on Minority Languages and Education
In a national review of First Nations Education (1988), the Assembly of First Nations emphasized an urgent need to address language development, including training teachers and preparing curricula and resources. In a study of Aboriginal educators on the Internet (Yeoman, 1999), I found that many expressed a passionate commitment to renewing, maintaining, or enhancing Aboriginal languages, believing them to be central to the maintenance of Aboriginal cultures. However, conflicting views have been found among Aboriginal people by other researchers, with some sharing this commitment and others "torn or ambivalent about the value of Aboriginal language maintenance programs" (Burnaby, 1996). Indeed, Aboriginal educators in many situations find themselves torn between trying to prepare students to survive and flourish in a global society while nourishing a strong sense of Aboriginal community and identity (Battiste & Barman, 1995; Kirkness & Barman, 1992; McLaughlin, 1993).

In the literature on the role(s) of language in postcolonial societies, writers from other parts of the world are also divided on this issue. Ngugi (1995), for example, has argued that the use of the native language (in this case Gikuyu and other Kenyan languages) in all contexts and the rejection of the language of colonization is essential to the decolonization process. He writes, "The bullet was the means of physical subjugation. Language was the means of spiritual subjugation ... Language was not a mere string of words. It had a suggestive power well beyond the immediate and lexical meaning" (p. 287). Others have argued that English can be appropriated and subverted by formerly colonized peoples to express a radically different history and experience (Achebe, 1995; Brathwaite, 1995). Brathwaite, for example, suggests that, in the English speaking Caribbean,

It may be in English: but often it is in an English which is like a howl, or a shout or a machine gun or the wind or a wave. It is also like the blues. And sometimes it is English and African at the same time. (p. 311)

Still others consider the English language as simply a neutral lingua franca (Kachru, 1995). Obviously these are diverse and complex situations. Nevertheless, despite these divided views of the role of language in society, it is clear that knowledge of an Indigenous language can be of enormous cultural, spiritual, and

political importance for many people (Battiste, 1999) and that bilingualism in general can have many practical advantages such as higher academic achievement and greater employability (Fishman, 1989; Stairs, 1990).

Because of geographic dispersal and limited budgets, it is common for Aboriginal language educators to have limited opportunities to network with each other to share ideas, resources, and support (Burnaby, 1996). It is possible that this is a factor in the decline of Aboriginal languages and that, conversely, more such opportunities might contribute to strengthening programs and curricula. The Internet offers the possibility of this kind of networking as well as a means of developing and storing curricula and reference materials and maintaining and enhancing Aboriginal language use among students. Todd (1996) emphasizes that Aboriginal world views and life must find a place in cyberspace if these spaces are to be beneficial to Aboriginal peoples.

Aboriginal languages are frequently described by linguists and statisticians as disappearing at an alarming rate, with even the most widely spoken seen as threatened (Burnaby, 1996; Burnaby & Beaujot, 1986; Kirkness, 1999; Statistics Canada, 1993). However, a number of researchers in applied and sociolinguistics have found that reversing language shift is possible and that it might be not only possible, but beneficial both for speakers of minority languages and for society in general. For example, some have suggested that there are links between linguistic diversity and eco-diversity (Phillipson, 1998; Skutnabb-Kangas, 1998). Others have argued that active bilingualism or multilingualism is cognitively beneficial (Fishman, 1989; Peal & Lambert, 1962; Stairs, 1990) and that it may also promote and enhance global consciousness and international cooperation (Fishman).

Fishman (1991) gives three examples of endangered languages that have been successfully renewed. Although they are far from exact parallels, these examples may be helpful in maintaining or renewing Aboriginal languages. The examples are modern Hebrew in Israel, French in Quebec, and Catalan in Spain. In his discussion of these renewals Fishman makes the points that (a) reversed language shift can be accomplished without compulsion; (b) minority rights need not interfere with majority rights; and (c) bilingualism is beneficial to all in that it adds perspective, variety, opportunity, and meaning to life. Language renewal efforts must vary according to problems faced and opportunities encountered. In the case of Catalan, the language was repressed under Franco. Following his death, Catalan was restored as a language of education, government, and print, and free courses and translations were offered. With respect to Hebrew in Israel, a major problem in instituting it as the official language of the country was the need to modernize and standardize the language. In Quebec, a political party and the political will of the people, along with a vibrant cultural revival, were major factors in the renewal of the French language. Language laws pertaining to business, education, and government, although often seen as repressive by non-francophone Canadians, seem to have played a significant role in the reversed language shift.

In addition to these examples, Corson and Lemay (1996) present a discussion of Aboriginal language renewal in Canada. According to them, Quebec is the only province where a pattern of decline in Aboriginal language use has been reversed. Thus they suggest that Quebec's model of cooperation between Aboriginal,

federal, and provincial authorities might serve as a guide for other regions seeking to maintain or renew Aboriginal languages.

Knowledge of successful language reversals like those described by Fishman (1991) and Corson and Lemay (1996) and the problems and opportunities pertaining to such reversals may be helpful in any movement to support the use of Aboriginal languages in the Americas. Fishman's work also suggests that without political will and broad community support, language renewal is unlikely to be successful. School curricula or educational policy alone are not enough, although they may make a significant contribution. Support from other social and cultural institutions will be essential for language maintenance or renewal to take place.

The importance of language cannot be overestimated. Fishman (1989) writes that pluralistic language policies, cultural democracy and language maintenance efforts, democratic forms of enrichment, bilingual education, and support of third world struggles are all necessary "to attain pan-human sanity and salvation" (p. 54). As early as 1941 Whorf (cited in Fishman) was also writing in favor of language diversity:

Those who envision a future world speaking only one tongue ... hold a misguided view and would do the evolution of the human mind the greatest disservice. Western culture has made, through language, a provisional analysis of reality and, without correctives, holds resolutely to that analysis as final. The only correctives lie in all those other tongues which, by aeons of independent evolution, have arrived at different but equally logical provisional analyses. (p. 573)

Discussion of the Internet and Learning and Maintaining Aboriginal Languages
As Fishman (1991) has pointed out, language renewal efforts will vary according to the problems and opportunities encountered. The Internet can be seen as both problem and opportunity. It is a problem in that, as we see, most discussion takes place in English, even ironically on Web sites and mailing lists dedicated to the renewal or maintenance of Aboriginal languages. However, it is also an opportunity in that it can provide a means of linking geographically dispersed language communities and individual speakers; a forum for the study and meaningful use of such languages; and a lexical and grammatical resource for students, teachers, and others.

Warschauer (1998) suggests that language and dialect play a critical role in identity formation and the sense of community in the age of information. He points out that as of 1996 some 82% of the Web pages in the world were in English, as were most of the early nationally oriented Internet newsgroups. However, the number of non-English Web sites and newsgroups is growing rapidly, and in response to this growth and projected future demands, Web browsers are now being adapted for an increasing number of languages and character sets. The facts that producing a Web site in two or more languages is relatively simple and inexpensive and more and more people in poorer countries and regions are now gaining technical skills and access have also contributed to these changes. As Warschauer puts it, the Internet "first accelerated the spread of global English and now provides opportunities for those who challenge English-language hegemony."

The small but growing body of research on language learning and the Internet strongly suggests that the Internet may have enormous potential for positive change in this area of education. For example, Warschauer (1996) found that when electronic discussion was included as a component in second-language classes, there was increased and more equal participation, and students also tended to use lexically and syntactically more formal and complex language in electronic discussion than in other language-learning situations. However, he emphasizes that teachers need to provide sufficient support and guidance for this to happen. What matters is how the Internet is used and the context in which it is used. Singhal (1997) suggests that users of e-mail, chat rooms and Web sites can use language freely in authentic situations, experience and present creative works, develop logic skills through searching for specific information, and gain access to supplemental language activities relating to grammar, comprehension, pronunciation, and so forth. Hanson-Smith (1997) also points out that an Internet connection can provide increased linguistic diversity, extended listening practice (through two-way video exchanges and the use of audio and video files), and global interaction with both language learners and native speakers. Finally, Murphy (n.d.) argues that meaningful language use is both facilitated and stimulated by the World Wide Web in that it enables the instantaneous exchange of information between sites and individuals.

With reference to Indigenous language learning and the Internet, Warschauer (in press) discusses the example of Hawaiian. A longish quotation from his discussion may be helpful to illustrate some of the problems and benefits of Internet use in language maintenance and revival:

When Hawaiian language educators first began thinking about using the Internet ... there was virtually no information in the Hawaiian language on the Internet, and web sites devoted to Hawaiian culture had mostly been developed by tourist agencies. Few Native Hawaiians had Internet access in the home nor in their schools. The Internet and the computers it was developed on did not readily support the use of Hawaiian language diacritical marks. In response to this situation, the Hawaiian educational community developed their own Bulletin Board System in Hawaiian, they worked to get their schools online, and they developed software solutions to modify computer operating systems to allow full Hawaiian-language operation, including Hawaiian language menus. Most important, they designed and implemented educational uses of the Internet that built from the social and cultural strengths of the Hawaiian community, emphasizing Hawaiian cultural traditions such as "talking story" and encouraging student development of multimedia online content that critically interpreted the Hawaiian experience.

Obviously each situation is different, but this kind of culturally appropriate use of the Internet combined with accessibility of the technology in schools may be helpful in many language maintenance and revival projects. A number of different types of Web sites may be helpful to educators who are interested in this type of project. The following Web sites and many others can be found by general search methods and are open to the public. The URL (address of the home page) of each site mentioned here is included in the Appendix as well as in the text. The sites examined here (and possibly language-related Web sites in general) can be placed in several broad categories: (a) lexicons and small language samples including both written words and phrases and audio samples; (b) fonts and other resources that

can be downloaded; (c) discussion groups that are either in or about Aboriginal languages; (d) sites for teaching or learning a language; and (e) sites that actually use an Aboriginal language as the main medium of communication.

Lexicons and language samples. Many of these, like the *Universal Survey of Languages* site (http://www.teleport.com/~napoleon/) are apparently compiled by non-Aboriginal amateur or professional linguists. This site is described as "a demonstration project that will hopefully develop into a major collaborative effort with the aim of creating a major reference work" and deals with numerous languages including many Aboriginal ones. Some other sites of this type, such as the *Dictionary of the Taino Language* site (http://members.dandy.net/~orocobix/tedict.html) or the *Numu Tekwapuha Nomneekatu/Comanche* site (http://www.skylands.net/users/ tdeer/clcpc/index.htm) are apparently presented by Aboriginal groups. All these sites, and many others like them, include audio samples where one can click on an icon to hear a sentence in the language or languages of interest. Most of the audio samples that I found seemed to be presented more as isolated curiosities than as systematic learning tools or pronunciation guides. For an exception, see the Lakota/Dakota site under *Sites for teaching or learning a language* below.

Sites in this first category vary greatly. It is important in using them that they be seen as resources that are continually under construction rather than as artifacts or curiosities. Thus they could become useful resources (as some already are). The *Universal Survey of Languages* site, one of the examples given above, is rudimentary at the moment for most of the languages it includes but it states,

This is intended to be a beginning, and as such, all information is tentative. Feel free to send criticism and suggestions, or to put forth any sort of help whatsoever. We want this to become a truly collaborative effort, with no true centre.

This seems to be a good approach, emphasizing the collaborative and fluid nature of language and its documentation. Internet sites such as those examined here might provide a means of wider dissemination and sharing of the results of such a project.

Some sites that provide audio samples may be helpful, for example, where the language is used meaningfully rather than as words or phrases in isolation. Leo Ussak School's Web site (http://www.arctic.ca/LUS/ LUS_welcome.html/) provides links to recordings of its own choir and popular singers like Susan Aglukark singing in Inuktitut. Thus speakers or learners of the language can listen for pleasure or sing along, and teachers could develop listening comprehension exercises or discussion activities based on the songs. It would also be useful if more extensive audio samples of sounds and phrases were presented systematically as part of a series of lessons or a lexicon.

Sites in this category also include written lexicons. Again, some are much more developed than others. Lexicons such as those provided here must be used with care as languages are not simply transparent media where meaning can be directly transposed from one to another. Indeed the notion of what a word is varies from one language to another so that in Maliseet, for example, a shape or property of an object cannot be grammatically separated from the object itself. Thus *etutapskonuwat*, which could be considered a single word, can be translated into

English as "he or she has very chubby cheeks" (Leavitt, 1993). The famous example of Inuktitut having 50 (or some other large number) words for snow is not meaningful in that, again, many language "chunks" that might be considered words in Inuktitut would be considered phrases or sentences in English. However, a list of words for snow can be seen at http://www.arctic.ca/LUS/Inuktitut.html.

The Taino site is an interesting example of a lexicon prepared by members of the ethnic-linguistic group rather than linguists. It includes a disclaimer pertaining to another lexicon of their language compiled by Spanish-speakers:

It is to be noted that this other dictionary of Taino is written solely in Spanish. This dictionary of Taino terms can not be trusted because many of these words are false and not completely accurate. These terms have not yet been studied by our Taino language project team. We would like you to know that our new version of the Taino language dictionary [is] going to incorporate these terms and all other documented or recognized Taino dictionary terms, that were gathered by the past Spanish historians, via our Taino language project.

The amount of effort that has gone into this site seems to suggest a considerable political will to renew the language. In addition, their willingness to draw on and examine all available sources of information and share this information at their Web site is typical of the generosity of many web site owners. The Taino also have other sites and extensive links to Aboriginal resources.

Sites in this category can at their best provide extremely useful resources for teachers, students, or anyone else interested in learning, maintaining, or supporting the use of an Aboriginal language.

Fonts and other resources that can be downloaded. Examples of this category can be seen at http://www.nunatsiaq.com/download.html for an Inuktitut font and http://babel.uoregon.edu/yamada/fonts/cree.html/ for a Cree font. These are quite straightforward and simply provide fonts that are believed to be in the public domain and that can be downloaded. For languages commonly written in syllabics such as Inuktitut, these fonts are necessary both for reading texts such as the online *Nunatsiaq News* and for creating documents and Web pages.

Discussion groups. Most of these apparently use English as their main or only language of discussion. Examples are a Cree-language mailing list reached through a link from the Cree-language home page described below, Nahuatl-l, which is described as "Aztec language and culture, in English and Spanish" and Iroquois-l, an Iroquois language list, both at http://babel.uoregon.edu/yamada/lists/nativeam.html, or Taino-l, which is also reached through a link at their site described above. Although I did not join any of these lists, I did look at some old messages from the Cree-language list, all of which were in English, possibly because of language loss among some participants, lack of standardization in Cree, or lack of fonts or related software and technical expertise.

The Taino-l discussion forum includes in its description "Use of an Arawak language as well as English and Spanish is encouraged." Providing specific support and incentive for enabling this to happen would also be useful. Their lexicon should help in this regard as a resource on which to draw. A site like the Dakota Lakota language learning site described below might also be a helpful resource.

Sites for teaching or learning a language. I found fewer of these than I had expected. A good example is the Dakota Lakota language home page, *Teaching Native Languages with Respect* (http://www.geocities.com/Paris/ 9463/method. html), which appears to be connected to a course at the Alliance Project for Tribal Colleges and is based on the "Silent Way," which emphasizes meaning over language analysis and oral forms over written. The site accomplishes this by linking color-coded squares to sound files in Dakota/Lakota, thus emphasizing oral forms and avoiding direct translation. However, it would have to be used in conjunction with an on-site language course or additional materials rather than just on its own, because students would need some way of associating the sounds with meaning as well as with the color codes presented at the Web site. If translations or other visual means of conveying meaning are not offered at the site, presumably they are somehow conveyed through context in class, and then the site is used to practice what has been learned. Nevertheless, this site is an interesting model that could be developed in other ways to become more self-explanatory, perhaps with the use of extensive visuals to avoid translation or text-based explanations.

Another site for teaching and learning Cree (Cree Language Home Page at http://www.nisto.com/cree/) takes a more traditional approach and presents an online phrase book with English translations and some background material on the Lubicon Cree. This site suggests that the learner should use it in conjunction with help from a native-speaking teacher and should use the Cree language with the teacher as much as possible. The site also provides links to information on institutes and educational resources and a link to a language-related discussion group where learners could presumably contact others interested in using Cree, at least in its written form and perhaps orally too as that technology becomes more widely available.

Sites that use an Aboriginal language as a medium of communication. Two of this type can be seen at http://www.innu.ca/ (*Innu Nation/Mamit Innuat*) and http://www.nunatsiaq.com/ (*Nunatsiaq News: Northern News You Can Trust*). The former is a trilingual (Innu Aimun, French, English) information site based in Sept Isles and Sheshashit. The latter is a bilingual (Inuktitut, English) online newspaper. Both these sites contain extensive material on various topics in the Aboriginal languages, a clear sign of their vitality. Although these sites may be less helpful for beginners, they may play an invaluable role in keeping the languages alive for speakers and more advanced learners.

Pedagogical Implications for Language Learning and the Internet

Language is social (Vygotsky, 1978; Bakhtin, 1981). It is not something that can be defined and measured, although it can, of course, be documented and analyzed. It is endlessly developing and truly meaningful only in the context of some form of dialogue. It is through spoken and written language and through continuous dialogue with our inner selves, with written texts, and with others that we experience the world, become members of a community, and write ourselves into history.

Thus although the documentation of Aboriginal languages in particular is of great importance, they must also be used and taught primarily as means of communication. The term *communicative competence* is well known in the field of lan-

guage education. It is commonly used in language-teaching contexts to refer to "the ability to convey meaning, to successfully combine a knowledge of linguistic and sociolinguistic rules in communicative interactions" (Savignon, 1983, p. v). In addition to this, Peirce (1989) suggests that achieving communicative competence alone is not an adequate goal. She outlines some of the ideological and political aspects of second-language teaching that also need to be considered. In particular she emphasizes the students' role in making meaning through naming the world on their own terms, using language in ways relevant to their own lived experience, and thereby taking power into their own hands.

Understanding these notions is crucial to possible pedagogical uses of the Internet in language maintenance and renewal. Language-learners must be involved in personally meaningful communications through the medium of the Aboriginal language. Lexical and grammatical Web sites such as those discussed above can be useful resources to draw on to enable such communication to take place. Indeed, given the dearth of usable print materials for many Aboriginal language curricula, these sites might eventually play a fundamental role in language pedagogy. Most of the Web sites I looked at would need to be extensively developed for this to happen, but there is at least a beginning. Their potential for enabling speakers and learners of Aboriginal languages at many different sites to share their knowledge and resources, to converse with each other, and to keep records for the future is exciting.

Lexical and grammatical sites may also serve to give young people a sense of the multiplicity and diversity of languages. This is important in itself for both Aboriginal and non-Aboriginal students, both because this heightens language awareness in general and because it can denote the value of the specific language of the site, and by extension the culture and history the language carries. However, if sites that provide lexical resources remain at the present fragmentary sample stage of most, there is a risk that they may have the opposite effect and serve to present the languages as artifacts or curiosities rather than as living languages. It would, therefore, be crucial that teachers present such sites as ongoing developmental resources that their students can both draw on and contribute to. One Aboriginal language curriculum specialist promoted the project of encouraging language students (in this case Labrador Inuktitut) to ask community Elders how to say various phrases the teachers did not know, then developing a collective lexicon based on the students' research for future curriculum use (Sophie Tuglavina, Labrador East School Board, personal communication). Such resources could be made much more widely available through the Internet. They could also enable teachers and learners to examine regional differences in language use, share their resources, and deepen their knowledge of the richness of the language.

Another major potential of the Internet is for language speakers and learners to communicate with each other in Aboriginal languages through e-mail, conferencing, and so forth. Electronic communication can in fact even have some advantages over face-to-face conversation as follows: (a) it tends to be informal, and for language-learners in classroom situations it might sometimes allow students who are not comfortable with speaking out to feel more comfortable participating in a discussion; (b) computer conferencing can allow many people to share thoughts

and ideas, thus potentially stimulating further exploration and reflection that might not otherwise occur. At the same time, e-mail still permits transmission of private messages to one or a number of individuals should this be desirable; and (c) e-mail and computer conferencing are part of an ongoing, rapidly developing, and lateral or divergent—rather than linear—dialogue (Yeoman, 1995). Of course, there are also drawbacks pertaining to the technological limitations of many computers and the lack of skills of many individuals using them. As well lack of access to computers and to the Internet, problems of connectivity in remote communities and issues of primarily oral traditions and the textual nature of much of the Internet are obviously serious concerns. Nevertheless, more and more Aboriginal schools, communities, and individuals are gaining technical skills and access to the Internet, so it is important to think about the best ways of using this technology in language maintenance and revitalization.

If teachers coordinate Internet language projects, it may be helpful to consider the following curricular and linguistic issues. It is important for learners to have common goals and topics of interest to discuss online, as in person. These might include research such as the language research suggested by Sophie Tuglavina above or other investigations ranging from local geography, traditions, and customs, to collective problem-solving and collaborative story-writing, to informal discussion of books, movies, or other topics. Pictures of various kinds can also serve as frameworks to help learners express their ideas and enter into dialogue with each other. For example, learners might prepare photographs to tell a story of an important event or experience in their lives, then use the series of scanned photos as a framework for telling the story and discussing it online. Because sound is also available online, songs and music can be useful for making traditional language-learning activities like structured listening exercises, dictations, and so forth more pleasurable and interesting. Obviously these are only a few suggestions as it is beyond the scope of this article to provide detailed pedagogy or curriculum.

Finally, for those who would like to learn a language and who do not have access to a teacher or a community of speakers, Web sites that are designed to teach the language might be of help. Ideally these should use sound technology and provide sound samples and various forms of oral interaction, which at present can still be quite expensive. However, presumably this technology will become more widely available with time.

Reyhner (1999) suggests some ways of responding to Fishman's (1991, pp. 88-109) eight stages of language loss. What follows is quoted from his article with my suggestions for the potential role of the Internet in brackets:

Stage 8: Only a few elders speak the language: Implement Hinton's (1994) "Language Apprentice" Model where fluent elders are teamed one-on-one with young adults who want to learn the language. Dispersed, isolated elders can be connected by phone to teach others the language (Taff, 1997). [If elders are literate in the language or interested in becoming literate, text and image exchanges could take place as well. Also, video Internet connections might be used instead of the telephone if the technology is available.]

Stage 7: Only adults beyond child bearing age speak the language: Establish "Language Nests" after the Maori and Hawaiian models where fluent older adults provide pre-school child-care where children are immersed in their indigenous language (Anonby, this volume; Fishman, 1991). [Part of such a child care program might involve children and

Elders learning to use computers together to design Web sites or access culturally and linguistically appropriate resources.]

Stage 6: Some inter-generational use of language: Develop places in community where language is encouraged, protected, and used exclusively. Encourage more young parents to speak the indigenous language in home with and around their young children. [Libraries and schools can provide Internet access to various kinds of support material for Indigenous language use. Families might also participate in various kinds of Internet exchanges with others of the same linguistic group in other communities.]

Stage 5: Language is still very much alive and used in community: Offer literacy in minority language. Promote voluntary programs in the schools and other community institutions to improve the prestige and use of the language. Use language in local government functions, especially social services. Give recognition to special local efforts through awards, etc. [The Internet can provide resources like dictionaries, fonts, and so forth online. Literacy classes might work on projects such as desktop publishing of students' materials.]

Stage 4: Language is required in elementary schools: Improve instructional methods utilizing TPR (Asher, 1996), TPR-Storytelling (Cantoni, this volume) and other immersion teaching techniques. Teach reading and writing and higher level language skills (Heredia & Francis, 1997). Develop two-way bilingual programs where appropriate where non-speaking elementary students learn the indigenous language and speakers learn a national or inter-national language. Need to develop indigenous language textbooks to teach literacy and academic subject matter content. [Reading materials in Indigenous languages are often hard to find and expensive. Such materials can be developed and shared via the Internet. As well, children can engage in the kinds of learning activities described in this article.]

Stage 3: Language is used in places of business and by employees in less specialized work areas: Promote language by making it the language of work used throughout the community (Palmer, 1997). Develop vocabulary so that workers in an office could do their day-to-day work using their indigenous language (Anonby, this volume). [Possibilities for using the Internet to develop lexicons and share language resources with others in similar situations are discussed elsewhere in this article.]

Stage 2: Language is used by local government and in the mass media: Promote use of written form of language for government and business dealings/records. Promote indigenous language newsletters, newspapers, radio stations, and television stations in the minority language community. [The Internet can play a significant role in disseminating newsletters and newspapers (such as the *Nunatsiaq News* described in this article). It can also enable the archiving and accessing of sound and video files such as radio and television programs. The CBC, for example, already has quite extensive archives of sound files including some programs in Indigenous languages. These can be found at http://www.radio.cbc.ca.]

Stage 1: Some language use by higher levels of government and in tribal/higher education: Teach tribal college subject matter classes in the language. Develop an indigenous language oral and written literature through dramatic presentations and publications. Give national awards for indigenous language publications and other notable efforts to promote indigenous languages (Reyhner, 1999). [Suggestions above regarding learning activities, dissemination of materials and information, and so forth also apply here.]

Conclusion

To sum up, three important potential (and to some extent actual) uses of the Internet are as follows.

1. As a growing developing resource center where grammars, lexicons, fonts, and other resources can be developed, shared, and added to: the Internet could be used as a means of standardization and modernization of language if this were seen as desirable, or to record varieties of each language so as to emphasize diversity. The amount of language-related material on the Internet suggests that there is considerable interest and political will to maintain and renew numerous Aboriginal languages. It might be useful to establish search engines in Aboriginal languages rather than English. These might be small at first, but could grow quickly, especially if actively used by teachers and schools. Also, their smallness might even be an advantage as they would be less overwhelming and might form the basis of intimate language/knowledge communities. One could see who else was "out there" using the language.

2. For learners who do not have a teacher or community of speakers available to them: as a means of taking language lessons.

3. As a means of meaningful communication in Aboriginal languages: students and teachers could use e-mail, conferences, and/or Web sites to share ideas and information, co-author stories and other texts, and so forth. For those who live in communities where the Aboriginal language(s) is/are not the primary language of communication the opportunity to use the language(s) in meaningful communicative ways via the Internet would be invaluable.

Note

[1]The sites discussed here are not necessarily the best in any sense. They were simply chosen as being representative of the different categories I found. In addition, it should be noted that World Wide Web sites are often transient. At press time one of the sites, the *Dictionary of the Spoken Taino Language*, was not available, and many of the First Nations resources formerly available on SchoolNet had disappeared. Some excellent new sites had come online, and one had changed its address (URL). I modified my article somewhat because of these factors, but readers should understand that this is the nature of the World Wide Web. The best way to find what they want is probably to do their own search using search engines like Google (http://www.google.com) or Yahoo (http://www.yahoo.com) or to try the general sites I mention in this article as branching off points.

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Appendix: Web Sites

http://members.dandy.net/~orocobix/tedict.html (The Dictionary of the Spoken Taino Language [Unfortunately, at press time this site was no longer accessible.])

http://babel.uoregon.edu/yamada/lists/nativeam.html (Native American Mailing Lists [Includes an Iroquois language discussion group, others appear to be in English or Spanish])

http://www.skylands.net/users/tdeer/clcpc/index.htm (Numu Tekwapuha Nomneekatu: The Comanche Language and Cultural Preservation Committee)

http://www.innu.ca/ (Innu Nation/Mamit Innuat)

http://www.nunatsiaq.com/ (Nunatsiaq News: Northern News You Can Trust)

http://www.nunatsiaq.com/download.html (Inuktitut font download)

http://babel.uoregon.edu/yamada/fonts/cree.html (Cree font download)

http://www.arctic.ca/LUS/Inuktitut.html (Inuktitut: The Language of the Inuit People)

http://www.teleport.com/~napoleon/ (Universal Survey of Languages)

http://www.geocities.com/Paris/9463/method.html (Teaching Native Languages With Respect)

http://www.hartford-hwp.com/taino/docs/list.html (The Taino-l discussion forum)

http://www.nativeculture.com/lisamitten/natlang.html (Native Languages Page)

http://www.schoolnet.ca (Schoolnet [Unfortunately, much of the First Nations material that was available at Schoolnet has now disappeared. However, there are still some First Nations links at this site.])

http://jan.ucc.nau.edu/~jar/TIL.html (Teaching Indigenous Languages)

http://www.arctic.ca/LUS/LUS_welcome.html/ (Leo Ussak School)

http://www.nisto.com/cree/ (Nehinawe: Cree Language Home Page)

http://www.nativeweb.org/resources/languages_linguistics/ (NativeWeb)

http://www.yvwiiusdinvnohii.net/language.html (First People's Language Resources)