

Indigenous People on the Web

Laurel Evelyn Dyson¹ and Jim Underwood²

¹ University of Technology, Sydney, Laurel.E.Dyson@uts.edu.au

² University of Technology, Sydney, jim@it.uts.edu.au

Abstract

This paper explores the ways in which Indigenous people around the world are participating in the World Wide Web, through establishing their own websites or accessing services via the Web. Indigenous websites are remarkably diverse: in addition to those representing Indigenous organizations and promoting Indigenous e-commerce, many websites have also been established to further unique concerns of Indigenous communities such as the maintenance and revitalization of Indigenous cultures, intercultural dialogue between Indigenous and non-Indigenous people, political advocacy and mobilization, community rebuilding and social support for disadvantaged communities. Despite the early involvement of Indigenous people on the Web, there still remain many unresolved issues, which include low levels of computer literacy and Internet connectivity, the cost of the technology, low levels of business understanding to support e-commerce, and concerns over the misappropriation of Indigenous knowledge and culture.

Key words: Indigenous people, Indigenous websites, web adoption

1 Introduction

The aim of this paper is to explore the many ways in which Indigenous people are engaging with the World Wide Web. Here the term “Indigenous” people refers to “those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories” [34]. The term embraces Native Americans, Aboriginal Australians, Torres Strait Islanders, the Saami of northern Europe, various tribal peoples throughout Asia, Indigenous minorities in Africa, and the Maori people of New Zealand. In addition to the Maori, other Pacific Islanders, whether colonized or dominant in their countries, are normally included in this term. In total, there are an estimated 350 million Indigenous people living in over 70 countries round the world, comprising 4% of humanity [33]. They represent over 5,000 language and cultural groups.

Given the diversity of Indigenous people, it is perhaps not surprising to find a great number and variety of Indigenous websites around the world. Nathan [26, p. 39] notes that Indigenous people were early participants in the World Wide Web and that their participation was “vigorous and successful”. This contrasts with conventional media, in which Indigenous people have been, and continue to be, significantly underrepresented. Nathan sees the catalyst for Indigenous participation lying in the nature of the Web, particularly the challenge it poses to standard ideas of literacy, its interconnectivity and the fact that it is still “soft” and can be molded by those who engage with it. The Web’s replacement of text with graphics, animation, streaming audio and video files fits well with Indigenous strengths in art, music and oral forms of literature [6]. Moreover, the Web’s lack of any defined hierarchy, its absence of any “unifying force from above”, allows many viewpoints and opens the way for minority groups such as Indigenous people to have knowledge placed back in their hands, rather than being interpreted through scientists, anthropologists and others [21, p. 251].

Despite Indigenous people’s active engagement with the Web and the advantages of asserting a Web presence there are also several challenges to full inclusion. Issues raised by a number of researchers include low access to technology, insufficient business understanding, and concerns by many Indigenous people over the misappropriation of traditional knowledge if it is placed on the Web [1; 29]. Issues such as these need to be fully addressed if Indigenous participation in the Web is to grow and flourish.

This paper consists of a descriptive analysis of a selection of Indigenous websites. Such a study naturally includes sites established by Indigenous community organizations to represent and further their interests, but occasionally also comprises those of exceptional individuals, such as Indigenous sports stars, musicians, artists, professionals or elected representatives. Preferably – for true representation – these sites should be designed and built by Indigenous web designers, possibly even hosted by Indigenous Internet Service Providers (ISPs). The reality is, though, that there are few Indigenous Information Technology (IT) professionals [30], hence sites designed by Indigenous people are few in number. Therefore most sites examined here will be those designed by non-Indigenous people. Included also in this study are websites initiated by government or public institutions to provide services specifically for Indigenous people. One type of “Indigenous” website that has *not* been included is that which exploits Indigenous people or which purports to sell Indigenous art and crafts which are really fake.

Firstly, the challenges to the full involvement of Indigenous people on the Web will be examined. A protocol for evaluating Indigenous websites is then presented and this is used to analyze a number of websites from around the world. Examples are chosen to illustrate the variety of purposes for which websites have been established by and for Indigenous people, as well as to examine some of the issues surrounding Indigenous participation on the Web which still remain unresolved.

2 Challenges of the Web for Indigenous People

The Web poses a number of challenges for Indigenous people, the most important of which are described below.

2.1 Access

The most obvious challenge to Indigenous people participating in the Web is access to computer technology. Generally, Indigenous people have low computer ownership, low computer literacy and low connectivity to the Internet even in first world countries [7]. Exacerbating factors are the remoteness of many Indigenous communities, which are often located in regions where connectivity is difficult; poverty, which reduces computer and Internet access even when Indigenous people live in cities; the lack of computer programs in Indigenous languages; and low levels of literacy, particularly in English, the main computer language [31].

2.2 Cost

Indigenous peoples are amongst the poorest in the world whereas information technology is expensive. The remoteness of many communities exacerbates the problem because Internet connections via satellite technology are more expensive than connections in urban areas delivered by telephone lines or cable [8].

2.3 Lack of Business Understanding

A challenge to successful Indigenous e-commerce ventures is the lack of understanding of modern business and the tendency to mix social and commercial goals, which may be in conflict. For example, in Indigenous Australian communities there have historically been high business failure rates: government support has usually been targeted at the community level, where commercial ventures have rarely been successful, instead of at individual entrepreneurs [1].

2.4 Commodification of Indigenous Culture

E-commerce, involving the sale of Indigenous products and services, risks commodifying the culture. The culture and the people who produced it are reduced to a stereotype, centred on a few essential characteristics, and become the marketing tool for the commodity being sold [10]. Mainstream society, representing the greatest potential customer base, defines and fixes the stereotype, deterring Indigenous people's attempts to redefine it.

2.5 Intellectual Property and Misappropriation of Knowledge

The Web represents a particular challenge to Indigenous communities wishing to place traditional knowledge or culture on a web site. There is a widespread perception by many Web surfers that the Internet is the way of the free and there is a lack of understanding that material is covered by copyright laws. Indigenous people risk losing income from illegal downloads and risk misappropriation of cultural artifacts by their re-incorporation into the works or products of others without permission [29]. Further, Indigenous people have concerns over who has the right to knowledge and do not wish unauthorized members of even their own community, let alone outsiders, gaining access to knowledge that is seen as sacred or secret, viewable only by the initiated or by people of a certain gender.

2.6 Decontextualization

Indigenous cultures can be regarded as "high context" according to Hall and Hall's [9] analysis of cultural dimensions. That is, knowledge is highly dependent on its context for validity: it belongs to a community, to a place and time, to knowledgeable elders who are carriers of their culture, interpret its meaning and corroborate its authenticity [11]. An issue for web designers is how to provide context to knowledge suspended in cyberspace.

2.7 Governance

A challenge for Indigenous people is how to achieve control over websites set up on their behalf by government or other service providers. Often Indigenous people have little control over information placed on these websites and little say in how their community is portrayed. Proper governance of these sites needs to explicitly acknowledge Indigenous people as the beneficiaries of the site rather than the object of discussion, and to recognize collective ownership and collective privacy in determining how information will be accessed, used or interpreted [19].

2.8 Impact of Western Culture

One potential concern of Indigenous people using the Web is that they may be overwhelmed by Western culture brought to them on the information superhighway. Some Indigenous people fear change and the impact on their traditional knowledge and way of life [31].

3 Selection Criteria and Evaluation Protocol

3.1 Selection of Websites

In this study, a range of Indigenous websites were examined. There are an unknown number of such sites around the world, but probably they are in the thousands: for example, in 2001 Hobson [12] counted over 400 in Australia alone. Therefore, no attempt was made to take a statistical sample. Instead, the researchers reviewed a wide range of sites and selected 22 which were considered illustrative of the uses that Indigenous people are making of the Web. Both examples of best and worst practice were chosen in an effort to demonstrate what can be achieved, but also to highlight some of the issues that still need to be addressed. Where other writers, particularly Indigenous people, had written about the websites, their findings were taken into account in the evaluation. Sites were selected to cover all regions of the world where Indigenous people live: North and South America, Asia, Africa, Australia, Oceania and Europe.

The only limitation in the selection was that sites had to be in a language that the researchers could read: this meant that, for example, Ainu sites in Japanese could not be evaluated. Because of the widespread adoption of English on the Web, effectively most websites examined were in English, had an English-language version, or were at least partly in English.

3.2 The Evaluation Protocol

To evaluate the websites, various frameworks were considered. Over the years a number of Web adoption models have been proposed. Generally, however, these have focused on e-commerce and a range of business concerns. Since only a minority of Indigenous websites have been established for e-commerce, the existing models were considered inappropriate.

Instead, the researchers formulated an evaluation framework derived from protocols that have been developed for researchers and media personnel working with Indigenous communities [4, 16, 17, 32, 35]. These protocols have widespread Indigenous support and many have been created by Indigenous communities or produced with their co-operation. They include many elements that are common across Indigenous cultures in different parts of the world. The criteria for evaluating Indigenous websites are as follows:

1. **Indigenous Governance and Self-Determination**
In whose interests has the website been established? Who benefits from the website? Does the site appear to be under the control of the Indigenous community that it purports to represent? Does the website use first person pronouns ("our" and "we") or does it use the third person ("they"). Has it been created by Indigenous web designers, particularly from that community, and is it maintained by Indigenous people from the community?
2. **Community Access and Usefulness**
Is the website in the language(s) spoken by the Indigenous community? Does it provide information or services which might be useful to the Indigenous community? Does it have appeal across the community, i.e., for women and men, for children and adults?
3. **Cultural Appropriateness**
Does the website incorporate a method of conveying information that is appropriate to the culture of the Indigenous community? Given the oral and pictorial nature of most Indigenous cultures, is the main method of communication graphical, is text supported by graphics and thumbnail images, and are there audio files?
4. **Respect**
Are images of the Indigenous people depicted on the website and information provided about them dignified? Is a holistic portrait given, one which includes traditional culture with the modern reality of their lives, or are they always shown as victims?
5. **Protection of Knowledge**
Does the website credit knowledge or cultural works to named Indigenous individuals or communities? Does it include copyright symbols or assert moral rights? Is password protection offered to prevent misappropriation of traditional knowledge or inappropriate access to sacred cultural material? Are other methods of protecting Indigenous intellectual property offered, e.g., online ordering of cultural products kept off-line?
6. **Sustainability**
Does the website offer the potential for generating income for the Indigenous people? Are products or services offered for sale? Are donations sort? Is the website supported by a major sponsor, for example the government of the country or an NGO?

7. Achievement of Intended Purpose
Does the website appear to achieve its goal?

4 Indigenous Websites

Indigenous people are using the Web in both fairly predictable ways practised by mainstream society, such as e-commerce and organizational websites, but also they have established many websites which represent the unique concerns and interests of their communities. These include various websites for the maintenance and revitalization of their cultures (including language revitalization), websites to promote native title claims and political activism, sites which have been set up to promote intercultural dialogue with the mainstream community, websites for community rebuilding and social welfare. Various examples of these websites will be given, organized under some of these main concerns.

4.1 E-Commerce

With many Indigenous people living in remote communities, opportunities for traditional face-to-face commerce are extremely limited. Even in urban centers, the cost of setting up bricks-and-mortar shop-fronts limits business prospects for many Indigenous people, despite the high demand and high prices customers are prepared to pay for their art, crafts and cultural tourism services. As a consequence, many Indigenous artists and artisans have in the past been subject to massive exploitation by non-Indigenous middlemen, who have paid the maker a pittance for their work and then enjoyed huge profits themselves. E-commerce potentially allows Indigenous people to sell direct to the public and keep all the profits, as well as accessing a much larger market while continuing to dwell on their traditional lands and maintaining their traditional culture. However, despite this, the use of the Web for e-commerce is the most underdeveloped in Indigenous communities. Probably the main reason is the lack of business understanding and skills outlined earlier. Yet Indigenous e-commerce provides the greatest opportunity for the development of economically sustainable sites. Indigenous e-commerce opportunities include cultural tourism and the sale of arts and crafts.

The Kelabit people of Sarawak are using their e-Bario website (Site 7 – see list of Indigenous Websites) to promote community-based tourism for travelers tired of mass tourism and looking for a more authentic encounter. Home stays, lodges, camping and trekking in the jungle, fishing, cycling, cultural and food experiences are offered to travelers seeking to participate in the Kelabit life-style. Tourism such as this has the advantage of being under the control of the community and gets rid of intermediaries such as travel agents. The website was developed by Malaysian and other IT researchers and consultants in co-operation with the community: Kelabit governance enhances the respect with which the people and their way of life are portrayed. The site offers subsidiary benefits to the community in their local language in addition to income from e-tourism: these include a rural “smart school” with computer laboratories, an IT literacy program for teachers and students, and connection to global information sources to enhance community decision making with respect to health, education, etc. This added value means that, whether or not the e-tourism venture is successful on purely economic criteria, the site is useful to the community in other ways.

In Australia, which has a vibrant Indigenous artistic tradition, there are many Indigenous e-commerce sites selling art and crafts. Yirdaki, or didgeridoos, have a huge worldwide demand and are an ideal product for selling over the Web due to their ability to be viewed on a webpage and easily shipped [18]. Djalul Gurruwiwi (Site 6), one of the most respected makers of yirdaki, sells his creations for up to AU\$1,800 to clients from all around the world. The site gives respect to the maker and his family through Djalul's own words and images of the artisans at work. In contrast, Aboriginal paintings can be more difficult to sell, despite the many websites devoted to them. Maningrida Arts & Culture Centre (Site 14) reported that their website was more useful for the promotion of art, artists and the community rather than for actual sales [18], although the website provides many items for sale, accompanied by thumbnail photographs, prices and a system for checking availability and ordering. Problems encountered included the reluctance of buyers to purchase before they see and the lack of technical skills in the local community to maintain the website.

4.2 E-Government

A minority of Indigenous peoples around the world either retained self-government during the era of colonization or achieved self-government during the twentieth century. Most of these nations are located in the Pacific and many have established websites. The Kingdom of Tonga website (Site 11) is one example, providing an online information and email service with news items, press releases, speeches, obituaries and government job advertisements. The site is accessible to outsiders (with most articles being in English) but is chiefly directed towards Tongans, with its overwhelmingly local news and occasional items written in Tongan. A simple website such as this performs a useful

function by providing email accounts and enhancing democracy, even if it makes no attempt to supply more sophisticated e-government services, which would probably be too expensive for a small nation. It also affords a link back home for expatriate Tongans who have migrated to New Zealand, Australia and elsewhere.

Another example of Indigenous e-government is the Sami Parliament website operating from Sweden (Site 19). This is purely an information site, serving to "inform the world about the Sami people, our history and culture" and to provide information to the Sami (or Saami) themselves. English, German, Swedish and Russian provide intercultural communication to the outside audience, while Algosiidu (the Sami language) as well as two of the dominant languages of the Sami region (again Swedish and Russian) ensure that the site serves its constituents. Respect is given by the provision of the entire website in Algosiidu (highly unusual for an Indigenous website), and by the inclusion of contemporary and traditional information and images, not to mention the sense of ownership denoted by the use of "we" and "our".

4.3 Indigenous Knowledge Management

Many Indigenous communities are exploring ways of preserving their culture and the knowledge of their elders in a digital format. The multimedia nature of the Web is proving ideal for cultures which are oral and pictorial rather than written. Sound recordings, videos, photographs and animations are all being used to store and deliver traditional culture in CD-ROM or over the Web. Some Indigenous nations are choosing to make their stories widely accessible by providing them on open access with translations and audio files in English in addition to the original language [3].

On the other hand, for many the possible misuse of their traditional knowledge is a real issue and therefore passwords are in place so that only members of the community can gain access to the cultural archive, and also different levels of access are provided so that only women can access women's business, men access men's business, etc. One such cultural archive is that developed at the Wangka Maya Pilbara Language Centre (Site 22) in Western Australia. Because of the scattering of communities through this remote region, it was decided that access could best be delivered via the Web [15]. Wangka Maya was established initially as a language centre but developed into a more general cultural program due to community demand. The Wangka Maya collection is a living, growing one based on new recordings, videos, photography, music and language materials as well as repatriated digitized copies of old recordings, photographs and documents that were taken by anthropologists in the past and are now held in museums, art galleries, libraries and the Australian Institute of Aboriginal and Torres Strait Islander Studies. Nyirti, a customized version of File Maker Pro, is used for organizing the archive and is an easy tool which does not require high levels of sophisticated IT knowledge. Users view lists created by Nyirti and then order copies on CD-ROM from head office in Port Headland. To provide absolute security and to avoid misuse of intellectual property, items cannot be directly downloaded from the website. A challenge at Wangka Maya in managing Indigenous knowledge is the legal anomaly whereby the Australian law gives copyright to the person who has made the recording rather than to the person who is being recorded and who in traditional Indigenous law would own the knowledge. Another major issue is the necessity of users to be literate in order to read the lists or to be assisted by someone who is: the very wordy lists are not supported by thumbnails.

4.4 Language Revitalization

In addition to cultural management websites, there are many projects around the world focused purely on the important issue of maintenance of Indigenous languages, many of which are threatened with extinction. One is the Dena'ina Language Archive (Site 5) in Alaska funded by the United States National Science Foundation [13]. The archive brings together a wide range of audio recordings, texts, grammars, word lists and field notes, most of which were previously inaccessible to the Dena'ina community. These have been digitized, stored at the Arctic Region Supercomputing Centre to ensure permanent preservation and then made available via the Dena'ina Qenaga portal. As with Wanka Maya, access is password protected. However, users can download material directly from the website once they have been authenticated as community members.

4.5 Political Advocacy

Indigenous people in many parts of the world have established websites to support political activism in their attempts to achieve self-determination, the return of misappropriated lands and in some cases the achievement of self-government. Some of the most active sites are owned by Native Americans in Latin America. For example, the Mapuche people of Chile have established 25 or more websites hosted in their home country or abroad, used as channels of communication and mobilization of Mapuche people, but also as a means of reaching people outside their own community. Despite the fact that Mapuche make up 10% of the population of Chile, they have almost no access to mainstream media, which is largely controlled by the political establishment, Military and Church [28]. Sites such as Net Mapu (Site 18) have been significant in raising the visibility of Mapuche culture and the issues

which impact on them historically and today, such as assimilation, logging of forests, planting of exotic timbers, construction of highways dividing Mapuche lands, and forced relocations when dams are built. However, the irony of a website such as Net Mapu is its unavailability in the language of the people it represents.

4.6 Native Title and Treaty

Web sites to support native title or land rights are one form of political activism which lies at the heart of Indigenous cultures, given their traditionally close relationship with the land. There are also many websites to support the enforcement of treaties that were struck with colonial powers to guarantee Indigenous rights but have often been breached. For example, the Midwest Treaty Network website (Site 15) offers a range of documents, news items and events notices in support of Native American sovereignty over their lands.

4.7 Intercultural Dialogue

Communication with the broader community via the Web is needed to correct false representations and stereotypes of Indigenous people and their culture [23]. All Indigenous websites which provide at least some measure of access to outsiders could be said to promote intercultural dialogue, although there are many sites for which this is the *primary* function. One such is the Karen website (Site 10), designed as a "Cultural Exchange and a Communication Centre", obviously with the outside world for its intended audience since its chosen language is English. The site presents images and information about the Karen people in the Thailand-Burma region, traditional stories, songs, news items, FAQs, links, a message board and chat room. It avoids stereotyping by presenting a profile of a Karen IT professional, and provides respect to the people it represents by including the traditional culture in addition to modern and historical political issues. The message board and chat facility transform the site from purely information provider to a tool of communication and interaction between educated Karen and the outside world.

Several sites in Africa also have intercultural dialogue as their primary function. One of the most attractive and respectful of these is the Maasai Association website (Site 13), which is aimed at empowering the Maasai people of Kenya to be "agents of our change rather than victims of change". It includes culturally appropriate imagery, many photographs, and an audio file. Though predominantly in English to serve its primary purpose of communication with people from outside the community, and to raise money for Maasai development and education projects, it contains quite a few words in the Maasai language. Stories and images cover both traditional and modern-day practices, people in traditional dress and in blue overalls. Maasai control of the website is exercised by the managing director of the association (currently studying in the USA) in conjunction with a local committee of Maasai advisors. Economic sustainability seems to be provided by the US board directors from major companies.

By way of contrast, the San Organization website from southern Africa (Site 20) presents very differently. Its home page describes the San people in the third person and focuses on their "genetic origins" and their current victimhood: "Now southern Africa's 110,000 remaining San face cultural extinction, living lives of poverty on the outer edges of society." The website notes that the organization was established at the request of San groups, but the site appears to be one of advocacy on behalf of the San, rather than *by* the San. It operates as a portal to other San sites, but several links are dead.

4.8 Re-Establishing Indigenous Communication

Web technologies have become important in providing channels of communication between different Indigenous groups and also in helping to rebuild community in cases where colonization practices and forced relocations have created a diaspora, or where people have moved away looking for work. Following the collapse in 1996 of the Koror-Babeldaob Bridge in the Pacific nation of Palau, a newly created website and email list were important in keeping expatriate Palauans up to date and in contact with their community back home [20]. Kitalong and Kitalong believe that most Palauan-built websites are targeted primarily at other Palauans, not at outsiders, because of their use of Palauan language and insider cultural allusions. They point to the significance of online guest-books to help Palauans connect over the labyrinth of the Internet, and also note the willingness of some Palauans to align themselves with other Pacific nations by registering their websites on the Pacific Island Web Ring, which helps connect sites at a click.

A website (and an organization) aimed very much at fostering Indigenous communication and rebuilding Indigenous cultural expression is that of CLAPCI, the Latin American Indigenous Council of Film, Video and Communications (Site 4). This site is primarily aimed at Indigenous people from South and Central America. It promotes training, production and dissemination of film and video made by Indigenous Latin Americans, and organizes film festivals to this effect. The overwhelming predominance of Spanish on the website shows that it is not aimed at people outside the target group.

4.9 Indigenous-Run Social Services and Youth Support

Indigenous communities are often amongst the most marginalized socially, with poor access to medical, employment, youth, disability and aged-care services. Indigenous organizations have been proactive in trying to address this disadvantage and are now using web technology to this purpose. The Keewaytinook Okimakanak First Nation in Northern Ontario, Canada, instituted a telehealth program in 1999, starting with weekly telepsychiatry sessions videoconferenced from a hospital in Winnipeg [27]. Following extensive local consultation, mental health services were targeted because of the lack of qualified mental health professionals in the region. Since then services have extended to 14 telehealth centers with a full range of specialist doctors. Telehealth is supported by the nation's website and technology network, K-Net (Site 12).

Youth services are particularly targeted as many Indigenous communities have as much as 50% of their population under 20 years of age [3]. Gooris on the Macleay (GOTM – Site 9) is a website launched in Australia in 2002 to promote the well-being of young Goori people and offering news and event information, an outlet for local creative talent, profiles of successful young people, and information on employment services. IT students worked on the website, which is designed to be as interactive as possible [22]. One challenge with Indigenous web projects such as this, however, is to achieve continuity of funding: despite the fact that GOTM is still running, the content is generally old, dating from the initial development and launch. Economic sustainability is there in name only, with no funds available for continuing maintenance and renewal of content.

4.10 Sport and Recreation

Several websites around the world support the achievements and aspirations of Indigenous sportsmen and women. Examples include the Aboriginal Sport Circle from Canada, the Native American Sports Council website from the USA, and NASCA (National Aboriginal Sports Corporation Australia) Online (Sites 1, 17 and 16). These sites provide sports news, access to special programs and awards, sporting role models, and other services. In addition, individual sporting stars host their own websites which serve a triple function as fan sites, role models for young Indigenous people, and a positive image of Indigenous people for non-Indigenous visitors to the sites. One well-known example is Olympic gold medalist Cathy Freeman's website (Site 3). Generally all these sites are under the control of Indigenous people and are well funded, well designed and kept up to date.

5 Websites for Indigenous People

Here web services are discussed that were initiated largely *outside* Indigenous communities, for the most part by public organizations acting on behalf of Indigenous as well as non-Indigenous constituencies. The best of these, however, have involved collaborations with Indigenous people, either with communities or through Indigenous staff members employed by the organization.

5.1 Government Services

An important potential of the Web is the better delivery of a wide range of government services to remote and rural Indigenous communities. Remote communities have never been well serviced by government, and communities located in rural districts have also experienced a decline in public services with the move away from agriculture and forestry and the shrinking of the population in these areas [27]. Examples of Internet-enabled service delivery include providing online information regarding government entitlements and special Indigenous programs; online claims for health benefits and welfare claims; videoconferencing of court hearings and also to provide family link-ups with prisoners; and telemedicine [5].

Unfortunately, not all web services meet the needs of Indigenous communities, particularly where control is exercised from outside the community, consultation is lacking and websites are designed in a culturally inappropriate way. An example of a poor website is First Australians Business (Site 8), established by the Australian government to help young Indigenous Australians enter business, but with no Indigenous cultural content, an over-reliance on text and with little use of graphics [7]. The site came off poorly when assessed against usability criteria by Aboriginal students of one of the authors.

5.2 E-Learning

One of the most important services available through web technology is the delivery of education to Indigenous people. Because of the remote location of many Indigenous communities, access to formal education is often limited. Distance learning via online learning environments provides a way of overcoming this. Edith Cowan University in

Western Australia has built a system to deliver bridging courses to Nyoongar students which reflects their cultural and learning needs. Principles adopted to ensure the system is culturally supportive include recognition of the students' capacity to construct their own knowledge; the provision of authentic learning activities; access to multiple resources to give students a choice of perspectives and shift the locus of control away from the teacher; collaborative and interactive learning to promote co-construction of knowledge; flexibility in learning goals and assessment; and good support from tutors in discussion forums and through an online helpdesk [25]. In addition, the use of Nyoongar design motifs, the incorporation of an Aboriginal English term into the renaming of the discussion board the "Yarning Place", and the focus on people and communal knowledge with its photographs of tutors and aerial views of students sitting in a group discussion, all make the system culturally appropriate to its community of users [24; 25]. More e-learning systems such as these need to be developed for learners in different Indigenous cultures around the world, although obviously cost is a major deterrent.

5.3 Museum and Cultural Collections

Huge collections of Indigenous art, craft and artefacts are held in public and private museums, libraries and other cultural institutions. Originally assembled by non-Indigenous collectors, for whom Indigenous people were the "other", the object of their gaze, some of these institutions are now using the Web to make their collections more widely available. Te Papa Tongarewa, the Museum of New Zealand (Site 21), has transformed itself into a bicultural institution. A bilingual Maori-English website presents its feather cloaks and carved meeting houses to Maori and pakeha (non-Indigenous) web surfers alike. Photographs of woodcarvers and weavers at work help empower the artisans as subject of their art. Most importantly, the website offers training and collaborations with Maori organizations to promote art as a living tradition.

The Ainu Museum site in Japan (Site 2) provides a somewhat different experience. It acts as an information site about Ainu people, with only one of its 17 web pages devoted to the museum as such. This page shows Ainu people performing a traditional dance and thus helping to preserve and "popularize" Ainu culture. It notes that other dances as well as ceremonies are performed. The museum is thus providing employment to Ainu people. However, there is no indication of the evolution of their culture being encouraged. Moreover, the site talks consistently about the Ainu in the third person. They are the object of the collection, according to the website, not collaborators.

6 Conclusion

Indigenous people around the world have appropriated the medium of the Web for their own purposes. As we have shown, they have been proactive in establishing their own websites. Apart from the sites discussed in this paper, there are many more representing the full range of interests, aspirations and concerns of Indigenous people. Should we be surprised at this? The Web, after all, is relatively new, able to be shaped by those who use it. It is a democratic medium, free of the old power elites of print. Its multimedia capabilities are peculiarly suited to the needs of peoples whose cultures are rooted in the oral and visual.

However, despite the success of Indigenous people taking up their position on the Web, there are still many challenges. Probably the greatest challenge and the most persistent is the lack of Internet access for most Indigenous people due to poor connectivity, the cost of technology and lack of computer skills. Given the low numbers of Indigenous people connected to the Internet, one must question who their websites are really for. As Hobson [12] points out "the majority of substantial websites continue to talk about [Indigenous] peoples in the third person. You are still reading a non-Indigenous 'expert' writing". The few websites in Indigenous languages further confirm that many of the sites are probably aimed more at an outside audience. This would be the case particularly where the language chosen for the site is the major international language of English in countries where this is not the normal means of communication. Additionally, there are sometimes issues when governments, educational providers and other cultural institutions create websites for Indigenous people rather than in consultation and collaboration with them.

Much more work will have to be done, and is being done, on a national and global scale. Community owned and run computer technology centers have been the most effective means of improving access and are now widespread in the first world as well as increasingly in many developing countries, often financed by governments or NGOs. Some issues, such as protecting intellectual property and traditional knowledge and culture have to some extent been solved by password protection or by keeping sensitive information off the Web. There are also new technical solutions in the pipeline, such as the use of rights markup languages to restrict access and enforce protection [14]. Measures such as these will ensure that Indigenous people make increasing use of their websites and continue to expand their presence on the Web.

Indigenous Websites

Site 1: Aboriginal Sports Circle

www.aboriginalsportcircle.ca

Site 2: Ainu Museum

<http://www.ainu-museum.or.jp/english/english.html>

Site 3: Cathy Freeman's website

www.cathyfreeman.com.au

Site 4: CLACPI (Consejo Latinoamericano de Cine y Comunicación de los Pueblos Indígenas)

www.clacpi.org

Site 5: Dena'ina Qenaga portal

www.qenaga.org

Site 6: Djalul' Gurruwiwi's website

www.djalu.com

Site 7: e-Bario

www.ebario.com

Site 8: First Australians Business

www.firstaustralians.org.au

Site 9: Gooris on the Macleay (GOTM)

www.gotm.com.au

Site 10: Karen Website

www.karen.org

Site 11: Kingdom of Tonga

www.pmo.gov.to

Site 12: K-Net

<http://knet.ca>

Site 13: Maasai Association

<http://maasai-association.org>

Site 14: Maningrida Arts & Crafts

www.maningrida.com

Site 15 : Midwest Treaty Network

www.alphacdc.com/treaty

Site 16: NASCA Online (National Aboriginal Sports Corporation Australia)

www.nasca.com.au

Site 17: Native American Sports Council (NASC)

www.nascsports.org

Site 18: Net Mapu

www.mapuche.cl

Site 19: Sami Parliament (Sweden)

www.sametinget.se/sametinget/view.cfm?oid-1009

Site 20: San

www.san.org.za

Site 21: Te Papa Tongarewa (Museum of New Zealand)

www.tepapa.govt.nz

Site 22: Wangka Maya Pilbara Language Centre

www.wangkamaya.org.au

References

- [1] J. C. Altman. Indigenous communities and business: Three perspectives, 1998-2000 (CAEPR Working Paper Nr. 9/2001). Canberra: Centre for Aboriginal Economic Policy Research, Australian National University, 2001.
- [2] Ellen L. Arnold and Darcy C. Plymire. The Cherokee Indians and the Internet. In David Gauntlett (ed.), *Web.Studies: Rewiring media studies for the digital age*. London, UK: Arnold, 186-193, 2000.
- [3] Brian Beaton and Jesse Fiddler. Living smart in two worlds: Maintaining and protecting First Nation culture for future generations. *Proceedings of the Third Global Congress on Community Networking in the Digital Era*. Montreal, Canada 1-12, 2002.
- [4] Crossing Boundaries National Council. *Aboriginal Voice National Recommendations: From Digital Divide to Digital Opportunity*. Ottawa: CBNC, 2005.
- [5] DCITA (Department of Communications, Information Technology and the Arts). *Telecommunications Action Plan for Remote Indigenous Communities: Report on the Strategic Study for Improving Telecommunications in Remote Indigenous Communities (TAPRIC)*. Canberra: Commonwealth of Australia, 2002.
- [6] Laurel Evelyn Dyson. Indigenous Australians in the information age: Exploring issues of neutrality in information technology. In C. Ciborra, R. Mercurio, M. De Marco, M. Martinez and A. Carignani (eds.), *New Paradigms in Organizations, Markets and Society: Proceedings of the 11th European Conference on Information Systems (ECIS)*. Naples, Italy, 1-12, 2003.
- [7] Laurel Evelyn Dyson. Cultural issues in the adoption of information and communication technologies by Indigenous Australians. In Fay Sudweeks and Charles Ess (eds.), *Proceedings of the Fourth International Conference on Cultural Attitudes towards Technology and Communication (CATaC)*, Karlstad, Sweden. Murdoch, WA: Murdoch University, 58-71, 2004.
- [8] Laurel Evelyn Dyson. Remote Indigenous Australian communities and ICT. In Stewart Marshall, Wal Taylor, and Xing-Hou Yu, (eds.), *Encyclopedia of Developing Regional Communities with Information and Communication Technology*. Hershey, Pa.: Idea Group Reference, 608-613, 2006.
- [9] Edward T. Hall and Mildred R. Hall. *Understanding Cultural Differences*. Yarmouth, USA: Intercultural Press, 1990.
- [10] Stuart Hall. *Representation: Cultural Representations and Signifying Practices*. London, UK: Sage Books, 1997.
- [11] Stephen Harris. *Two-Way Schooling: Education and Cultural Survival*. Canberra: Aboriginal Studies Press, 1990.
- [12] John Hobson. Growing the Indigenous Australian internet. European Network for Indigenous Australian Rights, 2001. Available at: <http://eniar.org/news/net1.html> (accessed May 16, 2004).
- [13] Gary Holton, Andrea Berez and Sadie Williams. Building the Dena'ina Language Archive. In Laurel Evelyn Dyson, Max Hendriks and Stephen Grant (eds.), *Information Technology and Indigenous People*. Hershey, PA: Idea, (in press).
- [14] Jane Hunter. Rights markup extensions for the protection of Indigenous knowledge. *Proceedings of Global Communities Track, WWW2002*, Honolulu, USA, 2002. Available at: www202.org/CDROM/alternate/748 (accessed Jan 29, 2004).
- [15] Lorraine Injie and Fran Haintz. The natural development of Wangka Maya into the direction of a knowledge centre. *Indigenous Studies – Sharing the cultural and theoretical space: AIATSIS Conference*. Canberra, Australia, 2004.
- [16] Terri Janke. *New Media Cultures: Protocols for Producing Indigenous Australian New Media*. Sydney: Aboriginal and Torres Strait Islander Arts Board, Australia Council, 2002.
- [17] Terri Janke. *Issues Paper: Towards a Protocol for Filmmakers Working with Indigenous Content and Indigenous Communities*. Sydney: Indigenous Unit, Australian Film Commission, 2003.
- [18] Mary Ellen Jordan. Remote access: Maningrida Arts & Culture and the World Wide Web. *Australian Aboriginal Studies*, 1 & 2: 84-87, 2000.
- [19] Robyn Kamira. Kaitiakitanga: Introducing useful indigenous concepts of governance. *Proceedings of the Government Information System Managers' Forum (GOVIS) 2003 Conference*. Wellington, New Zealand, 2003.
- [20] Karla Saari Kitalong and Tino Kitalong. Complicating the tourist gaze: Literacy and the Internet as catalysts for articulating a postcolonial Palauan identity. In Gail E. Hawisher and Cynthia L. Selfe (eds.), *Global Literacies and the World-Wide Web*. London and New York: Routledge, 95-113, 2000.
- [21] Pierre Lévy. Education and training: New technologies and collective intelligence. *Prospects*, 27(2):249-63, 1997.
- [22] Rosemary Livingstone. NSW governor launches website by and for young Indigenous people. *Friends of Tranby Newsletter*, Spring(44): 1,10, 2002.
- [23] Cathryn McConaghy. The Web and today's colonialism. *Australian Aboriginal Studies*, 1 & 2:48-54, 2000.
- [24] Catherine McLoughlin. Culturally responsive technology use: Developing an on-line community of learners. *British Journal of Educational Technology*, 30(3):231-243, 1999.
- [25] C. McLoughlin and R. Oliver. Instructional design for cultural difference: A case study of the Indigenous online learning in a tertiary context. *Proceedings of the Australasian Society for Computers in Learning in Tertiary Education (ASCILITE) Conference*. Brisbane, Australia, 1999.
- [26] David Nathan. Plugging in Indigenous knowledge: connections and innovations. *Australian Aboriginal Studies*, 1 & 2:39-47, 2000.
- [27] OECD (Organization for Economic Co-operation and Development), (2001). *Information and Communication Technologies and Rural Development*. Paris: OECD Publications.

- [28] Jeanette Paillan. Indigenous Media and Communication Rights in Chile (address at forum and film screening). Sydney, Australia, December 9, 2004.
- [29] Peter John Radoll. Protecting copyrights on the Internet: A cultural perspective from Indigenous Australia. In Fay Sudweeks and Charles Ess (eds.), *Proceedings of the Fourth International Conference on Cultural Attitudes towards Technology and Communication (CATaC)*. Karlstad, Sweden. Murdoch, Australia: Murdoch University, 339-348, 2004.
- [30] Toni Robertson, Laurel Evelyn Dyson, Heidi Norman and Bill Buckley. Increasing the Participation of Indigenous Australians in the Information Technology Industries. In T. Binder, J. Gregory and I. Wagner (eds.), *PDC '02, Proceedings of the Participatory Design Conference*, Malmo, Sweden, 23-25 June, pp. 288-294, 2002.
- [31] Secretariat of the United Nations Permanent Forum on Indigenous Issues. *The Report of the Global Forum of Indigenous Peoples and the Information Society*. Geneva, Switzerland: World Summit on the Information Society, 1-34, 2003.
- [32] UNESCO. Guidelines for the final formulation of projects for the *ICTs for Intercultural Dialogue* initiative. March 4, 2004. Available at: http://portal.unesco.org/ci/en/ev.php-URL_ID=14636&URL_DO=DO_TOPIC&URL_SECTION=201.html (accessed April 11, 2006).
- [33] UNESCO. ICT4ID. February 28, 2005. Available at: http://portal.unesco.org/culture/en/ev.php-URL_ID=14203&URL_DO=DO_TOPIC&URL_SECTION=201.html (accessed April, 18, 2005).
- [34] UNESCO. About Indigenous Peoples. March 15, 2005. Available at: http://portal.unesco.org/culture/en/ev.php-URL_ID=14205&URL_DO=DO_TOPIC&URL_SECTION=201.html (accessed April 18, 2005).
- [35] University of Victoria. *Protocols & Principles for Conducting Research in an Indigenous Context*. Victoria, Canada: University of Victoria, Faculty of Human and Social Development, 2003.