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Tradition, Tech, and Transformation: Information Technologies and the Intellectual Property of Indigenous Peoples

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**Tradition, Tech, and Transformation:
Information Technologies and the Intellectual Property of
Indigenous Peoples**

By: Sam Grey

For Aboriginal communities, traditional knowledge consists of more than the inventions and creative works commonly covered by existing intellectual property law. Traditional knowledge is the expression of the human soul in all its aspects, as well as the foundation for economic, social and spiritual growth.

(Brascoupé and Endemann, 1999: 30)

Changes brought about by the globalization of laws and markets, and the geometric expansion of technological innovation, make intellectual property issues nebulous and mercurial, to the point that keeping pace with changes in the field is a full-time pursuit requiring a high degree of skill and dedication. For nations-within-nations, as is the status of most Native groups worldwide, intellectual property presents a particularly difficult legal and political problem, as indeed intellectual property rights (IPR) regimes challenge the sovereignty of even the strongest and most 'modern' of nation-states. Authorities on the protection of traditional knowledge (TK), resources, and cultural expressions assert that digital technologies are the strongest (if not the only) methods of establishing authorship and ownership, as well as preserving an eroding store of cultural materials for future generations. This claim becomes increasingly complex when considered in light of the dissonance between current information and communication technologies (ICTs) and Native cultural

practices, along with the stark fact that most Indigenous groups today find their communities on the wrong side of a deep – and growing – 'digital divide'. Lending urgency is the realization that the pace of the filing of alien claims on traditional knowledge, resources, and expressions is accelerating in response to market demands worldwide, while the cultural context of that same material is undergoing rapid and fundamental change. Framed properly, efforts to constrain the outward flow of cultural goods, as well as to develop and harvest digital resources, is linked to an internal struggle to reconcile the traditional and the modern as powerful oppositional forces in the contemporary Indigenous reality.

**PAST ENCOUNTERS, CONTEMPORARY PRESSURES AND
THE STAKES**

Indigenous peoples have existed within and adapted to a set of material and controlling social relations that provides others with greater access to wealth than themselves. (Robyn, 2002: 209)

With the birth of the environmental movement in the 1970's, a change began to reverberate through the Western empirical, 'natural' sciences, and move outward into applied fields – a craving for wholism and sustainability that looked to the 'wisdoms' of Indigenous peoples for inspiration and insight. The 1999 conference of the United Nations Educational, Scientific and Cultural Organization's International Council for Science (UNESCO-ICS) officially recommended that traditional knowledge be brought into mainstream science, and "Since this declaration, the study of indigenous knowledges has moved to center stage" (Ladislaus,

2002: 350) . Thus, despite having been denigrated as backward and primitive, or relegated to the category of folklore and superstition for generations, traditional knowledge has recently begun to earn scientific admiration and validation (Robyn, 2002: 201). Further, TK has become downright vogue, with a resulting 'bandwagon effect' (Nakashima, 2000:3):

In today's world, companies and institutions are increasingly seeking out the traditional knowledge of indigenous communities to create new products for the global marketplace. Consumers are increasing their demands for more natural and authentic products. The tourism and cultural industries are becoming increasingly aware of the value of the indigenous traditions, practices and ways of life and of the variety, beauty and novelty of Aboriginal symbols, designs and textiles. (Brascoupe and Endemann, 1999: 2-3)

The Huron treatment for scurvy – an infusion of plant material delivering a curative dose of vitamin C, initially shared with Jacques Cartier – was patented in the 1700s by Scottish Naval officer James Lind (Weatherford qtd in Colomeda and Wenzel, 2000:243-256). While the precise benefits Lind reaped are unknown, today the worldwide sale of drugs based on traditional medicines amounts to over thirty-two billion dollars (U.S.) per year, while the World Bank estimates that consultation with Indigenous peoples increases a 'bio-prospectors' success rate in identifying valuable medicines within samples from one in ten thousand to one in two (World Bank, 2000:1). Some seventy-five thousand plant species are employed in traditional medicines, only one percent of which are currently known by science and approved for use

in commercial products (Aguilar, 2001:241). The number of applications received at the World Patent Office jumped 1,800 percent between 1979 and 1997, from under 3,000 to 54,000, with patents in the TK-rife areas of agriculture (especially agribusiness) and biotechnology (especially pharmaceuticals) accounting for the bulk of this growth (*Redistributing wealth*, 1999: 1). This situation will only gain momentum in the future, creating greater urgency for Indigenous peoples caught up in IPR issues, since approximately forty percent of pharmaceutical drug patents will expire in or before 2006 (Mathur, 2003: ii).

While published statistics on the worldwide value of cultural expressions are less plentiful, extrapolation from smaller-scale surveys paints no less troubling a picture. Within the United States alone, the tribal craft market had a value of approximately one billion dollars in 1985. In 2003, the Hopi nation estimated that piracy captures about \$44 million dollars worth of business, exceeding their sales of legitimate tribal crafts by 400 percent. For the Hopi, such theft has serious consequences: almost forty percent of their people are employed in craftwork (Progressive Policy Institute [PPI], 2003-4). "Overseas, piracy is probably all but universal" (PPI, 2003-4). In a Canadian study of the market in Italy, importers estimated that items of inauthentic origin – either stolen, counterfeit, or fashioned using tribal designs or techniques without remuneration – represented over ninety percent of 'Native' crafts offered for sale (PPI 2003-4).

In both science and commerce, there is an acknowledged presence of "a Eurocentric and reductionist world view which regards [...] Indigenous knowledges [...] as 'empty' resources to be enclosed and exploited for Western capital, much as the New World was regarded as empty land by

the colonists” (Ainger, 1999:32). The holders of IPRs over the resources of Indigenous peoples operate under the jurisdiction of no clear international instrument with the power to regulate their activity, and no body, treaty, or binding convention in which Aboriginal groups have a voice has been established to ensure the equitable distribution of benefits arising from that intellectual property (Aguilar, 2001:242). Those who steal, usurp or misrepresent traditional knowledge, resources, or expressions, beyond the protection of IPR law and without regard for ethics, often succeed because of a lack of awareness of the prevalence of cultural fraud, coupled with a lack of ‘authentic’ avenues for interaction (commercial or otherwise) between Aboriginal and non-Aboriginal peoples.

KNOWLEDGE AS PROPERTY: MODERN IPR REGIMES

[T]here is a need to reconceptualize neocolonial values deemed to be authoritative. (Robyn, 2002: 210)

In its contemporary form, Intellectual Property falls into three basic categories: trademarks (logos, etc.); patents on processes and inventions; and copyrights. To directly register a copyright in Canada can cost as little as sixty-five dollars, however associated fees (including ‘novelty searches,’ agent fees, and trademark and design registration) can cost thousands, and the bottom-line fee for a Canadian patent can top twenty thousand dollars (Brascoupe and Endemann, 1999:10). In the United States, successful patent applications involve a minimum cost of four thousand dollars (Brascoupe and Endemann, 1999:10). Even when bought and paid for, protection under legal instruments would extend only as far as

the national border,⁸ would not last indefinitely, and would not include any *enforcement* of intellectual property rights, which are the holder’s sole responsibility (Brascoupe and Endemann, 1999: 11). Defending a patent in court can cost millions (*Patently Problematic*, 2002: 75). Unfortunately, “Few legal mechanisms exist to help indigenous communities protect and preserve traditional knowledge. It is urgent that such mechanisms be developed, because of the increasing pace at which control of traditional knowledge is being lost due to misappropriation and pressures from the non-indigenous world” (Brascoupe and Endemann, 1999:3).

Although there is no such thing as an international patent or trademark, increasingly, arenas for the discussion and dispute of Intellectual Property Rights (IPRs) are inter- and supranational in nature, with the role for the state diminishing as global bodies such as the World Bank, World Trade Organization (WTO), United Nations (UN), World Intellectual Property Organization (WIPO), and specifically the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement assert their jurisdiction (Brascoupe and Endemann, 1999: 11). Prior to the *Convention on Biological Diversity* (CBD) in 1992, traditional knowledge was regarded as an unlimited resource for the benefit of mankind, with no system of restriction or compensation – in fact, since Indigenous knowledge was seen to have no intrinsic value, there was no need to ‘measure’ it at all. With the evolution of TRIPS in the 1990s, a firm global framework emerged for the classification, distribution and enforcement of IPRs. Under that framework,

⁸ Copyright is an exception, since Canadian copyrights are protected in nations belonging to the Berne Convention for the Protection of Literary and Artistic Works or the Universal Copyright Convention. (Brascoupe and Endemann, 1999: 11)

today disputes arising between states or across borders are subject to interpretation and enforcement within the WTO, following a complex and highly politically-weighted process that fails to recognize actors without a clear nation-state affiliation (Aguilar, 2001: 243).

The inclusion of intellectual property in the WTO, under TRIPS, was industry motivated, with the result that present IPR policy is not only trade-driven, but increasingly so. Over half of the gross domestic product (GDP) of the world's richest economies – the nations of the Organization for Economic Cooperation and Development (OECD) – comes from 'knowledgebased activity' (*Redistributing Wealth*, 1999: 1). "Knowledge is the new asset," (United Nations Development Programme [UNDP], 1999:57) has become a commonly-heard maxim, while control of intellectual property has been steadily concentrating in the hands of OECD transnationals (*Redistributing Wealth*, 1999: 1). Stripped of any pretence of concern for social welfare or the honouring of innovators, the TRIPS framework seeks to "maximize [...] foreign earnings by maximizing their legal control over innovative technologies or entertainment products" (Downes, 1997:6).

The patent system employed by TRIPS is known as 'first-to-file,' wherein the first party to apply for a patent need not be the first party to develop the process or invention being patented. Patent applications must satisfy three criteria: they must be novel, non-obvious, and useful (Tysver, 2004). Vandana Shiva observes that, "[m]ost patents based on indigenous knowledge appropriation violate the criteria of novelty combined with non-obviousness because they range from direct piracy to minor tinkering involving steps obvious to anyone trained in the techniques and disciplines involved"

(1997). The primary weapon against the misappropriation of knowledge possible under this system is proof that the process or invention described on the application is part of a 'prior art,' and therefore does not satisfy the patent requirement of novelty. Patent offices, however, have no obligation to conclusively prove or disprove the existence of any such 'prior art,' and modern IPR systems stress physical documentation as the primary, if not the only acceptable proof of knowledge, processes, or inventions predating a patent application (Ganguli, 2000:173). "The[...] patent office, not surprisingly, sees its mission as encouraging innovation through the generous granting of patents, and those who disagree can slug it out before a judge" (Rosenberg, 152: 106). Both of these aspects of the system in place disproportionately affect Indigenous peoples, whose oral histories and socio-economic status combine to make fighting a wrongful patent all but impossible.

REPATRIATION AND 'PRIOR ART': THE ARGUMENT IN FAVOUR OF TECHNOLOGY

If we don't define who we are on the Net, other people will do it for us. [...] And when that happens, part of who we are disappears. (Martin, 1995)

The WTO asserts that "the granting of patents on traditional knowledge already in the public domain amounts to unauthorized appropriation of the knowledge," and that "if patents are improperly granted, the patent system provides remedies, as demonstrated by the revocation of the neem and turmeric patents" (Council for Trade-Related, 2002:6). In March 1995, U.S. patent #5401504 was granted to Drs. Das

and Cohly of the University of Mississippi Medical Centre, for the use of turmeric in wound healing. In 1990 and 1994, U.S. patents #4946681 and #5124349 were granted to W.R. Grace and Company for improvements to the storage stability of neem seed extracts (Prakash, 1998). Both patents were vacated, true, but, what the WTO's blithe statement about the optimal functioning of their patent system omits, however, is the effort and cost of fighting illegitimate patents. Both the neem and turmeric cases were overturned in European and American courts, at significant cost, and with the help of millennia-old texts of Ayurvedic medicine⁹ in proving 'prior art.' There are between 2,000 and 3,000 cases of misappropriation of Indian traditional knowledge bound up in U.S. patents. V.K. Gupta of the Indian database project has stated "It would cost us a billion dollars to invalidate the wrong patents in court. We need defensive protection" (qtd in Rosenberg, 152: 106). In 2002, India began a digital library project to referencing all of the traditional compounds, herbs and spices described in Ayurvedic medicine, in order so that there exists a single database in which patent offices may check when reviewing relevant applications.

The digital cataloging of traditional knowledge is seen as the most effective measure yet proposed to fight the theft of traditional knowledge. In 2002 the Commission on Intellectual Property Rights (CIPR), a group made up of lawyers and academics but which also included an industry executive and a

⁹ The basis of Ayurveda is contained in two great medical compendiums written by Charaka and Sushruta over 2,000 years ago. These texts cover a vast array of topics including pathology, diagnosis, treatment, surgery, lifestyle advice and philosophy."(Young, 2004)

bio-ethicist, drafted a set of recommendations for an overhaul of the current system of intellectual property rights. Principal among their recommendations was the establishment of databases of traditional knowledge, creating proactive lines of defense against the filing of patents which lay claim to pre-existing knowledges. The commission's report claims that 'developed' nations have an obligation to help those on the periphery "set up their own systems without saddling them with rich-world standards until they are ready to benefit from them"(Patently Problematic, 2002: 75). Although the commission's plan is applicable to Aboriginal as well as 'Third World' nations, and the argument in favour of such technology-transfer has tremendous moral weight, the Economist magazine has astutely noted that "Inventing a way to do that might be worth a patent in its own right" (*Patently Problematic*, 2002:75).

The protection and nurture of Indigenous knowledge has thus been widely acknowledged as a priority extending beyond the confines of any single group – a global priority, in fact, lent urgency by the rate at which traditional knowledge, cultural integrity, and biodiversity are being lost to the forces of globalization, industrialization, and 'modernity.' In addition to this single, clear goal, various efforts to defend TK through technology may have mutually reinforcing side effects beneficial to Indigenous communities:

Indigenous people themselves, and others interested in the survival of native cultures, [...] are coming to the conclusion that the obliteration of traditional cultures and societies may be slowed down, if not halted, by insuring that Indigenous knowledge is recorded [...] and then passed on to younger

generations.

Rather than describing ICTs as inherently beneficial (or, in contrast, that they are fundamentally dangerous), Barbara Monroe writes that technology has no implied value. Instead, for Native groups, “Technology is not so much a thing as it is a ‘parliament of things’ a site of struggle for debating. We make it into a site of struggle for debating and deciding how to use a new technology, and in effect redesign it to sediment other values and to serve other agendas” (2000:286). In North America in particular, e-mail and the Web are becoming popular digital tools for Native peoples, who are creatively adapting information and communication technologies to suit the needs of individuals, communities, and tribal governments. The web site of the Oneida, a sovereign Indigenous nation in central in New York state, was the first Indigenous page posted on the web – in fact, its homepage predates the launch of the White House site – and has since assumed a dual purpose of passively archiving and actively broadcasting the identity of the people within and beyond their own borders (Polly, 1998). The Oneida’s virtual territory has become a primary contact point for non-Aboriginals seeking an tribal presence *authored by that tribe*, providing information about First Nations devoid of both derogatory or romantic stereotypes, and an account of history absent from the popular imagination (and most textbooks). Indeed, “One of the strongest reasons for having a presence on the Internet is to provide information from a viewpoint that may not have found a voice in the mainstream media” (Cisler, 1998).

Without gatekeepers, the internet provides an equal-access conduit to the public ear unparalleled by any other communications medium; the opposite is also true, as the

internet allows an unprecedented equality of access to rare or privileged information. In Guatemala, twenty-two Indigenous cultures have undertaken ‘The Maya Project,’ an ambitious effort to retrieve and repatriate all documentation pertaining to their history and traditions. Prior to government archives and university libraries going online, access to this kind of documentation would have been made difficult, if not impossible, by the geographical distance between institutions (which had to be visited in person) and restriction or classification of information for certain patrons (usually, students or government employees). Their use of technology to research historical materials has led to a renewed effort to assert Mayan title in land claims disputes with the Guatemalan government, demonstrating the democratizing potential of information technology (Becker and Delgado, 1998). As one conductor of internet training on Navajo reservations commented, “When people can find information for themselves – and don’t have to travel hundreds of miles to do it – they feel empowered” (Dorr and Akeroyd, 2001:42).

A compelling case can and has been made for the use of digital media in the preservation and teaching of indigenous languages ¹⁰ Immersion programs for learners few in number and geographically scattered is made feasible by networking and bulletin board systems (BBS), while web sites have proven to be highly effective forums for distributing language information to both the Indigenous community and the ‘outside’ world. Interestingly, the teaching of computer technology to Aboriginal students has served to unintentionally

¹⁰ See, among others, the Papahana Kaiapuni Hawai’i, a Hawaiian language immersion program, <<http://www.olelo.hawaii.edu/>>.

reinforce a positive awareness of their own languages. Most Native tongues are agglutinative languages, wherein a relatively small number of root words give rise to a surprisingly extensive array of terms through the addition of appropriate suffixes; a similar agglutinative principle also operates in computer technology, evidenced in the branching structure and nomenclature of listservs, newsgroups, and websites (Becker and Delgado, 1998).

One of the most successful examples of the use of technology to support Native languages is found in Hawai'i. When an 1893 law banning the use of Hawaiian for instruction was overturned in 1980, it left in its wake fewer than thirty children who could speak their Aboriginal tongue. The establishment of a government-sponsored language immersion program led to the birth of the Oleo Hawai'i web server, which in turn grew into myriad associated endeavours that fostered Hawaiian cultural cohesiveness, including the development of custom fonts and keyboards providing Polynesian diacritical marks; a database of new vocabulary coined by the Hawaiian Lexicon Committee (introducing words for new technology, science, modern sports and other contemporary phenomena, expanding the relevance of the Native language); a Native language newspaper; a searchable, historical library of audio interviews with influential native speakers (many of whom have since passed on); and CD-Rom and internet-based Hawaiian language instruction materials (Donaghy, 1998).

Opportunities for e-commerce also present a powerful argument in favour of the 'wiring' of Native communities. Since there exists a strong global market for tribal crafts and related goods, the provision of *direct* access to that market would obviously help to steer benefits toward Aboriginal artisans, entrepreneurs, and organizations. E-commerce is

especially important for geographically isolated and reservation communities, since the internet permits access to a global customer base and e-commerce software allows online payments to vendors, significantly reducing barriers to purchase. Examples of competitive Native businesses with an online component are plentiful, though statistical data on Aboriginal economic development is notoriously lacking (PPI, 2003-4). The Intertribal Agricultural Council in Billings, Montana has used e-commerce initiatives to tap into international markets in China, Japan, Canada, and Europe, with the result that Native farmers of the Yakima, Sioux, Flathead, and Crow nations now regularly ship spices, fruits, vegetables, syrups, and wild grains and meats to customers across the globe. In the Pacific Northwest of the United States, the K'lallam tribe alone earns \$600,000.00 U.S. annually providing seafood products to gourmet restaurants in Asia (PPI, 2003-4). Moving beyond the protection of traditional knowledge, resources, and cultural expressions, the benefits of technology are myriad, limited only by the imagination invested in perceiving and tapping the potential of various ICTs. In one study alone, in a single New Mexico reservation library:

Tribal leaders spoke of their desire to use technology to interest children in their native language, and artists described creating art with digital tools and marketing their work through the Internet. Educators expressed interest in culturally appropriate software and online resources. Students wanted the opportunity for quality educational experiences without having to leave the reservations. Patrons hoped for hands-on training at a comfortable pace. (Dorr and Akeroyod, 2001: 38)

It is reasonable to assume that other Native communities would detect similar opportunities in current information and communication technologies.

ISOLATIONISM AND INCOMPATIBILITY: THE ARGUMENT AGAINST TECHNOLOGY

What is happening is that our culture is taken out of context and certain parts of it are sold or just extracted. [T]o me, that's appropriation of our culture. It's the same thing as expropriating our wild rice or our land. And it is one of the last things we have. (Laduke qtd in Jacobs, 1994: 306).

It has been claimed that the battle to protect and preserve traditional knowledge through IPRs is fundamentally flawed, based on irreconcilable definitions of knowledge and property in the Native and non-Native domain. A common viewpoint asserts that international institutions are not currently capable of fully understanding Indigenous concepts of knowledge and property, since “they fail to take into account the fact that these communities have a holistic approach [and] find it difficult to separate the resources from which their livelihood stems into distinct economic and social assets” (World Bank, 2000). ‘Property’ itself is a troublesome concept in discussions of TK, and many have argued that knowledge and culture, which are non-rivalrous and non-excludable,¹¹

¹¹ A good is non-rivalrous if “its benefits do not exhibit scarcity of consumption; once it has been produced, each person can benefit from it without diminishing anyone else's enjoyment.” A good is non-excludable if “once it has been created, it is impossible (or at least very difficult) to prevent people from gaining access to the good.” Definitions from Wikipedia, <http://en.wikipedia.org/wiki/Public_good>.

cannot be placed in the same category as material goods, which are usually depletable resources designed for a single ‘user.’ Ideas are, by their very nature, fluid, subtle, and creative, and thus do not lend themselves well to the rigid precedents on which legal systems rely. Traditional knowledge and its systems of transmission are even more fluid, and thus would seem to be beyond the scope of comprehension of modern, market-driven IPR regimes.

If it is granted that traditional and ‘Western’ knowledges are incompatible, and the very establishment of IPRs in some way violates Aboriginal concepts of ownership, efforts to protect TK through information and communication technologies become imbued with ominous potential. Nora Bransfjell, a teacher of South Sami Languages in Norway, feels that networked communications are fundamentally dangerous to the many Indigenous groups whose reclusiveness has been the reason for their very survival as separate, distinct cultures (Forsgren, 1998). This sentiment finds a significant measure of sympathy in other regions. Describing the launch of mainstream T.V. signals in Inuit territory in the early 1970s, Billy Day of the Inuvialuit Communications Society referred to the phenomenon as ‘neutron-bomb television,’ whose broadcasts blew the culture apart yet left the people standing (Royal Commission on Aboriginal Peoples [RCAP], 2003).

The fact that indigenous knowledge tends to be embedded in distinctive social practices and cultural frameworks [...] may have important repercussions for indigenous people. The extraction of Indigenous knowledge in the careless manner that other resources are mined from the landscape may contribute to the alienation of indigenous people from their own beliefs

and may, ultimately, accelerate the extinction of their traditional cultures. (Heyd: 63)

Though specifically discussing the Sami, the Indigenous inhabitants of Finland and the Russian Kola Peninsula, Bransfjell has additionally cautioned that internet privacy concerns hold special relevance for Native groups as nations-within-nations with a history of state persecution, and that the ability of government agencies to 'tap into' lines of communication could prove profoundly detrimental to efforts to assert Aboriginal rights (Forsgren, 1998). Half a world away, this same concern is echoed in a debate over running fiber optic cable into tribal homes in New York State, leading the Information Systems Director of the Mohawk Nation to wonder, "is big brother watching" (Polly, 1998)? To a certain extent, though, this risk is associated with any open medium of communication; "The internet is, after all, a two-edged sword. It not only gives indigenous peoples some leverage in dealing with the world around them, it also gives the world around them additional leverage that can be used against indigenous peoples" (Maybury-Lewis, 1998).

In the same way that the Web provides a global forum for Native peoples, the sheer volume of Native information and number of web sites with information on Aboriginal issues can be confusing and counterproductive, with fraudulent and misleading data not easily distinguishable from Native-authored materials (Monroe, 2000: 287). It is this lack of clarity which allows the commodification and theft of cultural goods to continue while consumers feel they are purchasing 'real' tribal crafts, participating in Indigenous practices, or otherwise engaging with Native groups and individuals. In this atmosphere,

Tribal web sites authored by tribes themselves, paradoxically, would threaten the very heritage such sites would aim to protect. Web-casting cultural knowledge and history enables commerce to appropriate and reproduce traditional knowledge [...]. Further, public dissemination of tribal knowledge is a sacrilege in many cases where that knowledge is decontextualized from its cultural functions. (Monroe, 2000: 288)

Despite the interest in, and abundance of Aboriginal information posted, the internet has nevertheless failed to produce a Native web presence proportionate to the three-hundred million Indigenous persons inhabiting seventy countries across the globe (United Nations Development Programme [UNDP], 1999). For many Native groups the pros and cons of web site authorship and surfing the 'Net are moot, with the 'information age' providing little more than a new area in which Aboriginal groups are relegated to the margins. Stranding people on the wrong side of the 'digital divide,' electronic inequality mirrors patterns of economic inequality, following a general core-periphery, 'more developed'/'less developed' hierarchical flow; further, a gender division in internet participation cuts across communities, leaving women lagging behind men in the uptake of communication technologies (Becker and Delgado, 1998).

The reality of (often profound) socio-economic disadvantage can also give rise to a simple lack of interest in ICTs. A legacy of colonization, dispossession, and oppression has led to exclusion from the wider society and the main opportunity structure by virtue of geographic isolation or

marginalization. In Canada alone – an undeniably wealthy country with a generous social safety net and comparatively liberal attitude – the number of Aboriginal people living below the poverty line is almost fifty percent higher than the national norm.¹² In the United States, the most recent survey of reservation communities found that only fifteen percent of Native homes had a computer, and only two-thirds of those were connected to the internet; in fact, only half of the houses on reserve lands even had a telephone line (Dorr and Akeryod, 2001: 38). As one participant in the World Bank's 1997 Global Knowledge Conference put it, "Our village does not have running water. Why should we have running data" (Cisler, 1998)?

WITH AN EYE TO THE FUTURE: NATIVE AND NON-NATIVE VOICES ON TK

Unfortunately, "Few in the West truly have the gift to stand outside the dominant cultural assumptions about science, economics, nature and technology." (Ainger, 1999: 32)

To be successful in scope as well as efficacy, efforts to reform the definition of intellectual property, along with those to modify the system for the establishment and protection of intellectual property rights, must be made from both sides of the Aboriginal/non-Aboriginal 'divide'. "[T]he need for protection of this traditional knowledge is a cross-cutting issue at the moment involved in discussions from different

¹² This level is defined as subsisting on less than \$10,000 per year. K. B. Newbold, "Problems in Search of Solutions: Health and Canadian Aboriginals," *Journal of Community Health* 23.1 (1998): 59.

institutions, with different approaches" (Aguilar, 2001: 241). The World Intellectual Property Organisation (WIPO), an agency of the United Nations,¹³ addressed the issue of traditional knowledge at its opening meeting of the 2001 working year. At that gathering various protections for Indigenous communities were proposed, including model contract clauses covering access and the equitable sharing of the benefits of TK. Participants formally requested that the WIPO begin work on defining 'traditional knowledge' and taking inventory of the deficiencies of existing IPR regimes with regard to TK, creating a starting point for truly effective legal and technological initiatives in defense of traditional knowledge, resources and cultural expressions. About the outcome of the meeting, Francis Gurry, Assistant Director-General of the organization, commented: "Now, that may not sound like very much. But as a start in an international process, it is actually a very positive result" (qtd. in Kapp, 2001: 1510). Gurry believes that the outcome "really signifies a desire to view the knowledge economy in a comprehensive and inclusive manner and not just as the western knowledge economy but a knowledge economy which will include traditional knowledge" (qtd. in Kapp, 2001: 1510).

The call for cooperative work in the definition and protection of traditional knowledge has also issued from Aboriginal groups. In recognition of the 1993 'United Nations International Year for the World's Indigenous Peoples,' the First International Conference on the Cultural and Intellectual Property Rights of Indigenous Peoples was convened, producing the *Mataatua Declaration*. Since its presentation to

¹³ See the WIPO website, at <<http://www.wipo.int/about-wipo/en/overview.html>>

the UN Working Group on Indigenous Peoples in Geneva in 1993, the declaration has been signed by over 800 Aboriginal nations and both Indigenous and non-Native organizations (Mead, 1997: 26). Discussing the *Mataatua Declaration*, Maori lawyer Maui Solomon, who specializes in cultural and intellectual heritage rights, observes that “It hasn't formally been adopted in any legal sense but it acts as a benchmark and is a template for other similar initiatives in the future” (*The Wai 262 Claim*, 2001). The declaration is the first international agreement drafted by Aboriginal peoples with specific reference to the issue of cultural ‘property’ and IPRs (Mead, 1997: 26). It affirms that “Indigenous Peoples of the world have the right to self determination, and in exercising that right must be recognized as the exclusive owners of their cultural and intellectual property” Australian Institute of Aboriginal and Torres Strait Islander Studies and the Aboriginal and Torres Strait Islander Commission [ATSIC], 1997). The *Mataatua Declaration* goes as far as to dismiss conventional knowledge regimes as entirely inappropriate for TK, and to call for a worldwide moratorium on bioprospecting and the commercializing of traditional knowledge until appropriate protections have been developed and implemented on a global scale. This element of time is often overlooked in even the soundest arguments for the establishment and protection of Indigenous IPRs. “Many Aboriginal people have said that they need to consider how they share and protect traditional knowledge within their communities before deciding whether and how they will share this knowledge with others” (Brascoupe and Endemann, 1999: 4).

Although it is highly unlikely that such a moratorium would ever merit serious consideration in the World Trade Organization, if instituted it would afford stakeholders the time

to address not only protective measures per se, but also the ‘digital divide’ as a global phenomenon disproportionately affecting Native groups. For their part, Aboriginal peoples would be able to use this delay to decide how best to shape existing information and communication technologies to suit the values, goals, and needs of their own communities and nations; “to use technology to support Native ways of knowing and interacting in the world” (Monroe, 2000: 286). In short, a deliberate slowing of the pace at which claims are filed on Aboriginal TK, resources and cultural expressions could prove critical to the surmounting of culturally-based and attitudinal, as well as purely socio-economic barriers to global electronic equality.

CONCLUSION

[If] the constant refrain of the would-be high tech revolutionaries [...] that our new ‘information age’ will be more democratic and full of educated and empowered citizens [...] is true, the experience of indigenous peoples should be the perfect way to determine the meaning of the transformation. (Alfred, 2002)

As recently as 1999, the WIPO reported that “there has been to date no systematic global exercise by international organizations to document and assess, first-hand, the IP-related needs of TK holders” (World Intellectual Property Organization [WIPO], 1999:6). In the debate over traditional knowledge and intellectual property rights, international instruments such as the *Convention on Biological Diversity* and the *Mataatua Declaration* have elucidated the desires and obligations of both Native and non-Native groups, yet

sufficiently binding, protective measures are still lacking. Meanwhile, the International Working Group on Indigenous Affairs estimates that Aboriginal knowledge adds forty billion dollars to the world economy annually, with less than one percent of that serving to benefit Native communities (Settee:17). In light of these realizations, Indigenous peoples must be fiercely proactive and ingenious, now and in the future, in protecting their intellectual and physical resources from exploitation, undesired use or out-and-out theft. A burgeoning appreciation of Aboriginal knowledges and approaches in both scientific and cultural arenas holds some promise; it *could* provide the impetus for cooperative efforts to preserve Indigenous knowledge systems, to ensure that the benefits derived are equitably shared, and to build greater transparency and accountability into existing mechanisms for the collection, recording and utilization of TK.

Altogether new mechanisms are also emerging. The self-directed use of the internet and digital databases has been identified as the most promising avenue for the preservation and defense of cultural goods and TK. Though significant socio-economic and attitudinal barriers exist, creative use of the 'Net and the Web by Native groups is consistent with the broader goal of self-determination, and the many projects undertaken by Aboriginal individuals, communities and nations demonstrate a pragmatic, if not openly enthusiastic attitude toward ICTs. Ultimately, the question of the appropriateness of digital technology as a tool for the protection and nurture of traditional knowledge, Aboriginal resources, and Native cultural expressions is but one aspect of "the dilemma which all indigenous peoples and other minorities face, namely of how to balance their interaction with, and participation in the wider society with their desire to maintain a vibrant and

separate culture" (Maybury-Lewis, 1998).

Works Cited

- Patently problematic. (2002, September) *Economist* 364.8290. pp 75-75.
- Redistributing wealth: a Jubilee vision for a global village. (1999, October). *Economic Justice Report* 10.3
- Aguilar, Grethel. (2001). Access to genetic resources and protection of traditional knowledge in the territories of indigenous peoples. *Environmental Science and Policy* 4, 241-256.
- Ainger, Katharine. (1999, April). [Review of *Biopiracy: the plunder of nature and knowledge*]. *New Internationalist*, 32-32.
- Alfred, Taiaiake. (2002). A 21st Century Solution to a 17th Century Problem? In *taiaiake.com Column*. 4 Retrieved April 2004 from the World Wide Web:
<http://www.taiaiake.com/pdf/DigitalDivideColumn.pdf>
- Australian Institute of Aboriginal and Torres Strait Islander Studies and the Aboriginal and Torres Strait Islander Commission (ATSIC). (1997). Indigenous Cultural and Intellectual Property Rights. *Our Culture: Our Future*. Retrieved 10 November 2003 from the World Wide Web: <http://www.icip.lawnet.com.au>
- Becker, Marc and Guillermo Delgado. (1998). Latin America: The Internet and Indigenous Texts. *Cultural Survival Quarterly* 21.4. Retrieved 9 April 2004 from the World Wide Web:
<http://www.culturalsurvival.org/publications>
- Brascoupe, Simon and Karin Endemann. (1999). *Intellectual Property and Aboriginal Peoples: A Working Paper*. Ottawa: Indian and Northern Affairs Canada Research Directorate.
- Cisler, Steve. (1998). The Internet and Indigenous Groups. *Cultural Survival Quarterly* 21.4. Retrieved April 2004 from the World Wide Web: <http://www.culturalsurvival.org/publications>
- Colomeda, L. A. and E. R. Wenzel. (2000). Medicine Keepers: issues in Indigenous health. *Critical Public Health* 10.2, 243-256.
- Geneva. Council for Trade-Related Aspects of Intellectual Property Rights. (2002). *The Protection of Traditional Knowledge and Folklore: Summary of Issues Raised and Points Made*. Briefing paper IP/C/W/370. Geneva: World Trade Organization Secretariat.
- Donaghy, Keola. (1998). Olelo Hawai'i: a Rich Oral History, a Bright Digital Future. *Cultural Survival Quarterly* 21.4. Retrieved 9 April 2004 from the World Wide Web:
<http://www.culturalsurvival.org/publications>
- Dorr, Jessica and Richard Akeroyd. (2001, October). New Mexico Tribal Libraries: Bridging the Digital Divide. *Computers in Libraries*, 36-42.
- Downes, David. (1997). *Using Intellectual Property as a Tool to Protect Traditional Knowledge: Recommendations for Next Steps*. Madrid: Centre for International Environmental Law Briefing Paper on the Convention on Biological Diversity Workshop on Traditional Knowledge. Forsgren, Aanta. (1998). Use of Internet Communication Among the Sami People." *Cultural Survival Quarterly* 21.4. Retrieved 9 April 2004 from the World Wide Web: <http://www.culturalsurvival.org/publications>
- Ganguli, Prabuddha. (2000). Intellectual property rights: Imperatives for the knowledge industry. *World Patent Information* 22, 167-175.
- Heyd, Thomas. (2001). Indigenous knowledge, emancipation and alienation. *Knowledge & Policy* 8, 63-74.
- The Wai 262 Claim by Six Maori Tribes: Flora and fauna and cultural and intellectual heritage rights (2001, April). [Interview with Maui Solomon] *In Motion Magazine*. Retrieved 2 February 2004 from the World Wide Web:
<http://www.inmotionmagazine.com/nztrip/ms1.html>

- Jacobs, Jane M. (1994). *Earth Honouring: Western Desires and Indigenous Knowledges. Meanjin.*
- Kapp, Clare. (2001, May). New UN agency examines patent protection for traditional knowledge. *The Lancet* 357.9267, 1510-1510.
- Martin, Glen. (1995). Internet Indian Wars. *Wired* 3.12. Retrieved 10 April 2004 from the World Wide Web:
http://www.wired.com/wired/archive/3.12/martin_pr.html.
- Mathur, Ajeet. (2003). Who owns traditional knowledge? New Delhi: Indian Council for Research on International Economic Relations Working Paper #96.
- Maybury-Lewis, David.(1998). The Internet and Indigenous Groups. *Cultural Survival Quarterly* 21.4. Retrieved 9 April 2004 from the World Wide Web:
http://www.culturalsurvival.org/publications/csq/csq_article.cfm?id=B9C5F9AB-9717-4C35-9A55-96D4E650BBBB®ion_id=10&subregion_id=32&issue_id=19
- Mead, Te Pareake. (1997, August). Resisting the gene raiders: the genetic exploitation of indigenous peoples, and how they are fighting back [against bio-prospecting]. *New Internationalist* 293, p. 26-26.
- Monroe, Barbara. (2000). The Internet in Indian Country. *Computers and Composition* 19, 285-296.
- Nakashima, Dr. Douglas. (2000). *Traditional Knowledges: Resisting and Adapting to Globalization*. Geneva: United Nations Educational, Scientific and Cultural Organization.
- Newbold, K. B. (1998). Problems in Search of Solutions: Health and Canadian Aborigines. *Journal of Community Health* 23.1, 59-73.
- Prakash, Siddhartha. (1998). Country Studies: India. *Trade and Development Case Studies*. Trade and Development Centre, World Trade Organization and World Bank. Retrieved 11 April 2004 from the World Wide Web:
<http://www.itd.org/issues/india6.htm>.
- Polly, Jean Armour. (1998). Standing Stones in Cyberspace: The Oneida Indian Nation's Territory on the Web. *Cultural Survival Quarterly* 21.4. Retrieved 9 April 2004 from the World Wide Web:
http://www.culturalsurvival.org/publications/csq/csq_article.cfm?id=15B77874-2A64-45B1-AD6C-1ACC7097BEF4®ion_id=6&subregion_id=17&issue_id=19.
- Progressive Policy Institute. (2003, May). Main Obstacles to Native American Trade: Digital Divide and Intellectual Property Piracy. *Trade Facts of the Week*. Retrieved April 1, 2004 from the World Wide Web:
http://www.ppionline.org/ppi_ci.cfm?knlgAreaID=108&subsecid=900003&contentid=251687.
- Robyn, Linda. (2002). Indigenous Knowledge and Technology: Creating Environmental Justice in the Twenty-First Century. *American Indian Quarterly* 26, 198-220.
- Rosenberg, Tina. Patent Your Heritage. *The New York Times Magazine* 152, 52333. pp.106-107.
- Canada. Royal Commission on Aboriginal Peoples Indian and Northern Affairs Canada. (2003, December). *Arts and Heritage, Volume 3: Gathering Strength*. Retrieved 11 April 2004 from the World Wide Web: http://www.ainc-inac.gc.ca/ch/rcap/sg/si59_e.html.
- Semali, Ladislaus M. (2002, August). [Review of Indigenous Knowledges in Global Contexts: Multiple Readings of Our World] *Comparative Education Review*, 350-353.
- Secretariat of the Convention on Biological Diversity, United Nations Environment Programme. (2003, December). *Convention on Biological Diversity*. Retrieved from the World Wide Web:
<http://www.biodiv.org/convention/>.

Settee, Priscilla. (2002). Healing Indigenous Communities. *Briar Patch* 28, 17-17.

Shiva, Vandana. (1997). The turmeric patent is just the first step in stopping biopiracy. *Third World Resurgence* 86. Retrieved 30 March 2004 from the World Wide Web: <http://www.twinside.org.sg/title/tur-cn.htm>.

Tysver, Daniel A. (1996-2000). Patent Requirements. *BitLaw: A Resource on Technology Law*. Retrieved 3 April 2004 from the World Wide Web: <http://www.bitlaw.com/patent/requirements.html>.

Geneva. United Nations Development Programme (UNDP). (1999). *An Assessment of UNDP Activities Involving Indigenous Peoples*. Geneva: UNDP, 1999. Retrieved 4 April 2004 from the World Wide Web: <http://www.undp.org/csopp/CSO/NewFiles/ipdocunassess.html>.

UNDP. (1999) *Human Development Report 1999*. Oxford: OUP.

World Intellectual Property Organization (WIPO). (2004, January). *About the WIPO*. Retrieved from the World Wide Web: <http://www.wipo.int/about-wipo/en/overview.html>.

World Bank.(2000). Indigenous Knowledge and Intellectual Property Rights. *IK Notes* 19.

Young, Jacqueline. (2002) Ayurvedic Medicine. *bb.co.uk*. Retrieved March 27, 2004 from the World Wide Web: http://www.bbc.co.uk/health/complementary/medical_ayurvedic.shtml.