Knowledge, Technology, and the Pragmatic Dimensions of Self-Determination

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Contemporary globalization depends on the ability of the elite to exercise a command over information and communication technologies (ICTs). ICTs include, but are not limited to, networked information systems, such as local and wide area networks, high-speed Internet, laptops, tablets, mobile phones, data centers, radio frequency identification systems, and increasingly sophisticated sensor-based and algorithmic surveillance systems. These systems of devices—and the people, policies, and institutions that support them—accumulate data and disseminate information for human decision-making across workplaces. When we consider how institutional leaders rely on commanding stores of advantageous information, we can perceive the nature of the information asymmetries that Indigenous peoples experience, rippling from the Enlightenment-era explorations of the New World to the intertwined government, military, and trade regimes comprising the cores of contemporary globalization. What does self-determination mean for Indigenous peoples whose daily work is shaped by connectivity within a global Internet superstructure and the trade value of Indigenous knowledge (IK)? Where is the space for Indigenous self-determination within this networked environment?

As Indigenous thinkers, we must begin to understand the innovation of ICTs as semi-visible infrastructures growing within Indigenous homelands. Tracing the deployment of a fiber-optic Internet infrastructure across a sovereign homeland, such as the Navajo Nation, reveals an array of interlaced world-historical conditions, social and legal policies, and competing values orientations. From the romanticism of Silicon Valley to the hard rules of tribal sovereignty, these layers of meaning shape decisions about system design and deployment which, in turn, reveal the material and pragmatic aspects of Indigenous self-determination (Duarte 2011; 2013a).

A remarkable example is found in K-Net, a multi-point wireless mesh network connecting First Nations communities in the lake lands of northern Ontario (Beaton 2009). As an outcome of their technical efforts, the network designers have become agenda-setters in local and national forums with regard to spectrum regulation, federal subsidies, tribal and industry partnerships, and Indigenous rights to Internet access. Their experience has shaped federal responses to First Nations technology needs and has inspired First Nations leaders to create a long-term broadband Internet plan (DeBruyn 2012). The growth of K-Net demonstrates the social shaping of large-scale technical networks and, specifically, an Indigenous example in which the values driving design decisions are grounded in Indigenous

community needs and values.

Through examining various cases of Indigenous uses of ICTs, I have found that Indigenous peoples, in many different ways, harness ICTs to communicate more speedily with each other and with partners supporting tribal governance and grassroots social and political organizing (Alia 2010; Wilson and Stewart 2008; O'Carroll 2013; Woons 2013). Indigenous peoples who have a command over their local ICT infrastructure—through designing their own information systems to hosting tribal radio—are building a digital foundation for future practices of self-determination.

Social and Political Power and the Function of ICTs

How are exercises of social and political power shaped through the availability and accessibility of ICTs? A number of scholars have chimed in on this question (Mumford 1934; Ellul 1964; Heidegger 1977; Latour 1991; Law 1991; Star 1999; Tehranian 1999; Castells 2007; Wilson & Stewart 2008; Alia 2010; Howard 2010; Dourish and Bell 2011; Nahon and Helmsky 2013). The formulations that are most useful for understanding ICTs in Indigenous contexts are those that explain how elite classes of nationalist decision-makers utilize information gathered systematically through the media of ICTs to legally discriminate, economically exploit and disenfranchise, and otherwise subjugate Indigenous peoples in a continuous and cumulative fashion.

A prime example of this is represented in the history of the Cobell Settlement, in which banker and accountant Eloise Cobell (Blackfoot) accumulated years of data showing that the US government was not paying back to tribal landowners billions of dollars in revenues gained from the federal management of Indian trust land (Merjian 2010). Defendants argued that an accurate accounting was not technically possible, and yet through a painstaking audit, Cobell found the evidence of analog and digital systems rendering funds from the development of Indian land. These systems were not used to pay funds back—or even communicate an accurate accounting—to tribal landowners. This case reveals information asymmetry at work in Indian Country, in which systems of interlaced ICTs—including the hardware, software, policies, and administrators—are used to withhold actionable information from particular parties (Clarkson et al. 2007). One method of colonization is to articulate technical systems within elite institutions that withhold information, misinform, or disinform Indigenous peoples as a rule or practice. Indeed, Indigenous scholars have argued that Western universities are likewise designed to prevent the participation and deflect the theoretical interventions of Indigenous thinkers, specifically through habitually legitimating scanty and erroneous information about Native peoples as canonical knowledge (Dei 2000; Waziyatawin and Yellow Bird 2005).

Indigeneity Is a Phenomenon of Globalization

Thus, to understand the relationship between ICTs, Indigeneity, and self-determination, we have to understand the dynamic between inherently sovereign Indigenous peoples and the governmental classification of Indigenous bodies, lands, and forms of knowledge under a largely Western mode of globalization. We have to acknowledge how, when we think of restoring self-determination, we pursue a metaphor of Indigenous and Settler embattlement in which Indigenous ways of being are at stake within a milieu of homogenizing nation-state encroachment. There is an unvoiced periodization at play, referring to a perhaps false memory of a past era in which Indigenous peoples enjoyed their own social organization, free of coercive governmental forces. We must unpack that metaphor and let go of the assumption that all Indigenous peoples bear the same land-based philosophy and attitude toward modernization within their homelands. The idea of capital-I global Indigeneity is fairly recent, and is best understood as an expression of the political solidarity that many land-based and nomadic peoples have in response to the exploitative aspects of nationalist pan-capitalist practices (Alfred and Corntassel 2009).

On the ground, in the communities, Indigenous peoples know themselves by the names and modes of governance they determined for themselves several thousands of years prior to the formation of modern nation-states. On the US Census, a Diné (Navajo) college student may report that he is a Native American. In addition to his Arizona state driver's license and US social security card, he may carry a tribal ID that proves his enrollment in the separate, sovereign Navajo Nation. He may use Facebook to encourage his friends to protest Mexican military violence in Chiapas and support Māori enforcement of the Treaty of Waitangi. But each of these political and legal

expressions—Native American, Navajo Nation citizenship, Indigenous solidarity—fundamentally emerges from the Diné experience of the colonial US bid for sovereignty, subsequent nation-state bureaucratization, and current global military and economic leadership. Capital-I Indigeneity is a phenomenon of globalization (Niezen 2003). Capital-I Indigeneity allows the myriad of original non-Settler, non-nationalist peoples of the world to articulate politically with supra-national regimes, such as the United Nations and the World Intellectual Property Organization, while maintaining their inherently sovereign systems of governance, language, histories, and philosophies just out of reach of the commercial machinery of globalization.

Our young Diné college student could encounter a professor who challenges his Indigenous views. He could be stripped of his Navajo Nation membership due to internal challenges within the tribal political order. The US Census Bureau could eliminate the category of "Native American." Yet our student would still be Diné. The Diné way of being does not depend on the nation-state articulation or global economic order to exist. This is precisely why many nationalist regimes treat Indigenous expressions as a threat to the nation-state order. This is also the means through which we can begin to let go of the assumption that the political and social strength of Indigenous peoples is in the past. It is in the here and now, everyday, just under the gaze of the mass media Panopticon (Woons 2013).

ICTs and Indigenous Knowledge under Globalization

We can understand Indigeneity as a functioning part within the interlaced networks of systems, devices, people, policies, institutions, and terrains that comprise the technical ecology—the machinery—of militarized economic globalization. We can understand how Native ways of knowing become commodified within global markets. We can also understand how both physical access to ICTs and the values informing the use of ICTs—who gets to use these tools, learn to build them, toward what purpose, and how—shapes the ability a person has to participate politically and socially within the technical ecology underpinning globalization.

Above all, we can understand Indigeneity as a diffuse and flexible force of resistance to one of the primary political and economic mechanisms of globalization: colonization. Reaching back through the historical canon, we can identify many kinds of globalization—that is, governmental aligning of distinct economies toward cross-border trade while, at the same time, consolidating internal hegemonic order. Yet all of these, from the Silk Road through the League of Nations and on to NAFTA, cohere to at least three functions: they must enhance connectivity, profitability, and mobility.

We are at a point in the history of ubiquitous networked devices wherein the technical elite of computing languages is operationalizing toward a singular language, Internet Protocol Version 6. This technical solution allows for increased connectivity and mobility of devices. A Toshiba manager stationed in Ciudad Juarez can email AutoCAD files on her smartphone with the same efficiency as if she were in her Tokyo office. This supple and resilient mode of digital connectivity has encouraged what Bill Gates, Thomas Friedman, and others have deemed a frictionless form of commerce: cash and documents—paper—don't change hands, but rather numbers do across systems of devices (Gates 1995; 1999; Friedman 2005). Under a digitally networked mode of globalization, prices are fixed based on a knowledge theory of value, rather than through a pure market value. A coral and silver Navajo squash blossom necklace could, alternatively, be valued as a priceless gift from one family to another, purchased in Shiprock for less than a hundred American dollars, or sold online for ten times that amount in the Shibuya fashion corridor. The values of commodities are fixed based on what consumers perceive is their value within the range of the consumers'—not the manufacturers' or artisans'—experience.

It is within this digitized economic order that Indigenous peoples find their creative and spiritual expressions, medicinal and agricultural ways of knowing reduced to mere information and repackaged as IK within the supranational registry of intellectual property (Harry 2006; Smallacombe 2006; Belarde-Lewis 2011; 2013). Yet as Indigenous peoples know, the value of the squash blossom is not found on a fashion runway, but in the long histories and the homeland of the Diné people from wherein the design emerged. Here is where the values of an information-driven frictionless economy conflict with Native ways of knowing. The continual reduction of lived Indigenous experiences into bits within global trade circuits conflicts with the holism of Native ways of knowing.

Sensations of Globalization

Indigenous peoples' unique ways of being have emerged over millennia through the refinement of unique non-European languages, philosophical and spiritual orientations to the landscape, world-historical perspectives, and modes of self-governance (Holm et al. 2003). The expressions that emerge from this lived experience comprise whole ways of knowing. Salmon fishing comprises one Salish way of knowing. Drought farming represents one Hopi way of knowing. Silverwork comprises one Diné way of knowing. There are at least four mechanisms of colonization under globalization: classification of citizenry to subjugate Indigenous peoples; redistribution of lands and waters to nationalist settlers; articulation of institutions to enforce class rule and property ownership; and erasure of Indigenous languages, histories, and philosophies (Quijano 1992). When these mechanisms compromise Native ways of knowing, the ways of knowing gain a political significance, reflecting a set of values that in many ways paradigmatically opposes the centripetal force of globalization efforts.

For example, even if a Skokomish fisherman's particular technique for cultivating wild salmon can be scientifically shown to improve fish yields, reduce pollutants, and contribute to affordable local food stores, to patent that technique would, in one step, allow a single party to profit from this method while also preventing other peoples of the Pacific Northwest from utilizing that technique toward strengthening their own relationship with the living landscape. The subjugation of Native ways of knowing to intellectual property—Indigenous knowledge, traditional knowledge, or traditional environmental knowledge—and the subsequent commodification within global trade circuits exploits Indigenous peoples as peoples who are not recognized as sovereign governments by many other sovereign governments of the world.

The way of knowing becomes objectified, the part extracted from the whole, translated from a way of knowing to bits of data. The sensation for Indigenous peoples emerges physiologically. There is an association between the inability to grow or eat heritage foods and high rates of diabetes. There is an association between the inability to make a living through work that provides for tribal families and high rates of depressive behaviors. The violence regenerates, psychologically, emotionally, and spiritually. The ideation is of nationalist and capitalist encroachment through technical and economic means. Indigenous unwillingness to participate in industrialization of lands and waters, or reduce ways of knowing to the status of patentable technique or copyrightable product, has contributed to a widespread assumption that Indigenous peoples are anti-technological, which is only a paraphrase of prior colonial descriptions of Indigenous people as anti-modern, pre-modern, or pre-historic.

It isn't as if Indigenous peoples do not use and benefit from the availability of intellectual property rules, knowledge stores, and ICTs. A section of the UN Declaration on the Rights of Indigenous Peoples includes a reference to the right to affordable and robust Internet access for purposes of participation in self-governance. In the mid-2000s, when the regime of Canadian Prime Minister Harper initiated a series of bills abetting the removal of First Nations children from their families and erosion of homelands for an international oil pipeline, four Indigenous women utilized their programming and marketing acumen to launch the Idle No More social media campaign. The *Globe and Mail* reported that, from December 23rd to the 29th, 2012, the campaign went viral, generating between 19,000 and 25,000 tweets per day (Blevins 2012). Smart phones in hand, activists circulated invitations to flash mob prayer rallies and protests in shopping malls, public parks, and at select international borders from Albuquerque to Toronto. Checking Facebook and re-posting anti-colonial memes became an opportunity to transform a mundane technical activity into political empowerment (Duarte 2013b). This strikes at the core significance of what self-determination is: beyond an act of Congress, it bears a transformative capacity.

Pragmatic Dimensions of Self-determination

When, in 1978, the US Congress enacted the Indian Education and Self-Determination Act, it allowed American Indians to take command as tribes over their own social programs, free of federal supervision and intervention. A generation of Native people went to college, inhabited the world of Western ideas, combined those with Native ways of knowing, and transformed those into what are considered legitimate state-sanctioned forms of knowledge: books, movies, classroom lessons, school and health care programs. This represented a turning point in the histories of Native peoples within the US. Before, for at least three generations, a set of Spanish, French, British,

and—later—Mexican, Canadian, and American nationalist social policies were aimed at erasing Native languages, histories, and philosophies and articulating institutions to destroy tribal modes of self-governance. For centuries, modern health care institutions, universities, banks, and courts relied on misinformation and disinformation about US Native peoples and their relationships with land and property, codifying these into false knowledge that pervades decisions to this day about tribal family dynamics, the psychology and spirituality of Native peoples, their scientific credibility and financial credit worthiness, not to mention treaty claims and rights to exist as separate sovereign peoples (Deloria and Lytle 1983).

At present, as Indigenous peoples, we are experiencing the articulation of information systems operating under a single computing language. Many of the systems we rely on everyday accumulate data that incrementally reifies the classification of Indigenous peoples as ethnic minorities; reserves lands and waters for future industrialization and human settlement; articulates institutions to enable elite nationalist class rule and commodification of property; and reduces Indigenous languages, histories, and philosophies to bits of information, devoid of the context of homelands.

This is precisely why, when Indigenous activists describe contemporary decolonization, it is spoken of in terms of restoring Native ways of knowing. To counteract the misclassification of Indigenous peoples, activists practice naming and claiming, and the enforcement of sovereign treaty rights. To counteract the settlement and industrialization of lands and waters, activists practice the sovereign protection of homelands and sacred places, ecological restoration, subsistence hunting, and tribal food practices. To balance the hegemony of Settler institutions, activists build Indigenous institutions, such as tribal colleges, clinics, and courts, as well as revitalizing sacred ceremonies, like the Bear Dance, and social ceremonies, like Canoe Journey. When Indigenous peoples speak original languages and share their histories and philosophies within the stream of contemporary world histories, they are able to relieve, locally, some of the more alienating sensations of pan-capitalist globalization.

Self-determination occurs the moment these practices become expected modes of community self-governance, as in the case of tribal courts. When we realize the ways that global information systems accumulate data for decision-making about Indigenous lands, waters, and bodies, then we can see how Indigenous peoples use information systems to build knowledge with one other toward self-determination. To design a tribal program takes information, including ways of knowing and the technical systems for channelling data, information, and knowledge. The Native Nations Institute at the University of Arizona is creating a database of hundreds of hours of videos of tribal leaders sharing their experiences. The Northwest Portland Indian Health Board hosts a database for recording incidence of disease across tribal communities, so that leaders can plan for their community's wellbeing. The work of Eloise Cobell represented a remarkable realization for many US Native peoples: we instinctively knew the land had been stolen, but an audit created the record to prove each case in a detail that could not be denied in US courts. Similarly, Idle No More represented a remarkable realization for many activists: here was a case that revealed the political capacity of Indigenous peoples communicating transnationally through social media networks and mobile devices.

Building the information systems—including the technical infrastructure, policies, interfaces, jobs, and educational programs—toward decolonizing Indigenous homelands is an act of self-determination. Sharing information inter-tribally, through networks of Indigenous peoples and allies, transforms silos of data into actionable information and builds communal knowledge about how to deal with the many manifestations of colonialism. For this reason, the Native American Broadband Association referred to broadband Internet across tribal homelands as the "third network," powerful enough to substantially change Native daily life. However, unlike the first two networks, the railroad and the electric power grid, US Native peoples can have a say over this build-out process (Native American Broadband Association 2011). Indeed, in 2013, the Navajo Nation completed a key phase in a $32 million dollar project to build a wireless mesh broadband network across the reservation, including a data broadband center and regulatory commission to oversee data flows, network use policies, and to strategize long-term planning. The goal is to create a digital environment in the Navajo Nation that makes it possible for the community to build their own systems for self-governance and the flourishing of Navajo language and culture.

Conclusion

Friedman ironically titled his 2005 bestseller *The World is Flat*. As Indigenous peoples, we are keenly aware that the

world is neither flat nor frictionless. The sensations of immediacy, urgency, and placelessness that accompany heavy use of digital networked systems are also accompanied by sensations of alienation, information overload, and consumerist ideation. Indigenous peoples who observe the ecological devastation of their homelands due to economic wars of the global elite recognize the psychological and philosophical entanglements of a technologically dependent social order. But many Indigenous peoples also harness ICTs to surface Native ways of knowing that extend beyond situated locales. Designers of tribal community-based broadband Internet systems see their efforts as part of a bigger process for laying the groundwork to architect Indigenous possibility. Scholars and artists use ICTs to incrementally divest occupying powers in Native homelands across political, intellectual, and spiritual domains, filling the vacuum with ways of knowing that stem from an awareness of anti-colonial resistance and the hope for the flourishing of Indigenous peoples beyond colonialism. Indigenous uses of ICTs are about connecting to homelands, strengthening ways of knowing, participating in global markets as a matter of choice and not coercion, and disseminating Indigenous ideas about what it takes to survive, resist, and transform.

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