Decolonization in a Digital Age: Cryptocurrencies and Indigenous Self-Determination in Canada

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Abstract

Indigenous scholars and leaders have long been interested in reducing the role of the Canadian state in their political, economic, and social lives. This paper explores the extent to which digital currencies, such as Bitcoin or MazaCoin, might be used to facilitate Indigenous self-determination, political autonomy, and economic prosperity. Based on our review of the literature, we argue that cryptocurrencies demonstrate some potential for advancing these goals but that there are a number of potential roadblocks as well. Future research should investigate how Indigenous communities might use digital currencies and other related technologies to further their political, economic, and social goals.

Keywords: Indigenous self-determination, autonomy, digital currency, cryptocurrency, Bitcoin, decolonization

Résumé

Les chercheurs et les leaders autochtones cherchent depuis longtemps à réduire le rôle de l'État canadien dans la vie politique, économique et sociale des Autochtones. Cet article examine le rôle et l'importance des devises numériques, comme Bitcoin ou MazaCoin, dans l'atteinte, par les Autochtones, de l'auto-détermination, de l'autonomie politique et de la prospérité économique. D'après notre analyse documentaire, nous postulons que les crypto-monnaies peuvent contribuer à l'atteinte de ces objectifs, mais qu'elles posent également leur lot de problèmes. De futures recherches pourraient examiner les moyens que les groupes autochtones auraient pour exploiter les devises numériques et d'autres technologies connexes dans l'atteinte de leurs objectifs politiques, économiques, et sociaux.

Mots clés : Auto-détermination autochtone, autonomie, devise numérique, Bitcoin, décolonisation

Introduction

In early 2014, a number of media outlets in Canada, the United States, and the United Kingdom published a series of stories about how a Native American tribe, the Oglala Lakota Nation, had adopted something called MazaCoin as its national

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currency. MazaCoin, a digital currency, was to act as a medium of exchange in and beyond the Lakota Nation. Digital or cryptocurrencies are virtual currencies that are secured by cryptography. Unlike fiat currencies that are issued by governments, cryptocurrencies can be issued by anyone and rely on the computing power of a decentralized network of computer nodes that track and validate accounts, balances and transactions. MazaCoin, according to its developer, Payu Harris, was going to dramatically increase the Lakota Nation's autonomy and financial wealth. "I think crypto-currencies could be the new buffalo. Once, it was everything for our survival. We used it for food, for clothes, for everything. It was our economy. I think MazaCoin could serve the same purpose" (Sparkes 2014).

Shortly after these news reports came out, Oglala Lakota Nation officials quickly distanced themselves from Harris and MazaCoin. Some leaders proclaimed that they had never heard of MazaCoin while others remarked that they were simply working with the developers to explore its potential for addressing their community's needs (Vigna 2014). More recently, however, it has become evident that the Oglala Lakota Nation will likely never adopt MazaCoin as its national currency. MazaCoin's developers have made it clear on their website that they now plan to expand the scope of the cryptocurrency beyond its original purpose (https://mazacoin.org).

Although MazaCoin seems to have failed to accomplish its original goal, the idea of an Indigenous-backed digital currency may still have promise for helping some Indigenous communities increase their autonomy, capacity for self-determination and economic prosperity. In this paper, we explore the potential for a MazaCoin-like digital currency to help Indigenous communities in Canada achieve these goals. Many Indigenous communities have expressed a desire to free themselves from at least some of the colonial institutions and practices of the Canadian state, which they see as powerful roadblocks in their quest for political and economic freedom (Alfred 1999; Coulthard 2014). Leaders and community members have traditionally turned their attention to political institutions, constitutional and legal jurisprudence, and policy-making arenas to achieve their goals (Alcantara 2013; McCrossan and Ladner 2016). The results have been decidedly mixed, so there has been some interest in turning to alternative mechanisms for social justice and reform. A digital currency somewhat akin to MazaCoin, but with some improvements and backed by a consortium of Indigenous governments and organizations, could provide a new and innovative way to achieve these goals.

The organization of our article is as follows. We begin with a brief overview of the academic literature on Indigenous self-determination and autonomy in Canada, emphasizing a particular strand of literature that is critical of the political economy of the Canadian state. Next we describe how digital currencies work and how an Indigenous cryptocurrency might be developed for use in Canada. We conclude by analyzing the opportunities and constraints that such a currency might provide for those Indigenous communities that choose to develop and/or adopt it.

Indigenous Self-Determination and Decolonization

Advocates of Indigenous self-determination and decolonization take firm aim at the Canadian state and the role that it plays in the oppression of Indigenous peoples.

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While some scholars focus on establishing a postcolonial relationship by influencing the legal and political practices of the state that define and limit Aboriginal rights, land claims, cultural autonomy and self-determination (Turner 2006, Borrows 2002), others question the utility of engaging the state and its institutions. Among those who hold the latter view are advocates of the Indigenous resurgence paradigm. Represented by such notable scholars as Taiaiake Alfred, Glen Coulthard and Leanne Simpson, the Indigenous resurgence movement rejects delegated forms of self-government that operate "within the legal and structural confines" of the Canadian state (Alfred 1999, 99; Coulthard 2014, 151). Instead, these scholars claim the rights of self-determining peoples to Indigenous nationhood and the liberation of said nations from colonial power and domination. Achieving self-determination and decolonization will require a radical restructuring of Canada's relationship to Indigenous peoples and even a re-thinking of the precepts of international law. As Alfred explains, "International law has made colonialism illegal. Because of the domination of settler states in the international system, however, this legal principle is applied only in the context of state-to-state relations: the forms of internal colonialism practised in Canada, the United States, Mexico, Australia, New Zealand, and other countries with substantial indigenous populations are excluded. If fairly applied (as in other parts of the world that Europeans eventually vacated), international law would prescribe remedial actions for these situations; the decolonization process would not be subject to laws developed in the colonial context or constrained by contemporary legal doctrines or political justifications specifically intended to accomplish colonial objectives relative to indigenous peoples" (Alfred 1999, 99).

Echoing Alfred's frustration with the colonial context of international law, the Indigenous resurgence literature questions the logic of trying to work within Canada's domestic colonial paradigm in pursuit of self-determination and decolonization. Instead, it favours a focus on rebuilding Aboriginal communities from within their own borders by revitalizing traditional Indigenous values and practices. And although the potential benefits of adopting a community cryptocurrency may well transcend the debate over the value of state engagement, the idea of an Indigenous cryptocurrency seems to be particularly relevant to those who support the Indigenous resurgence paradigm.

At its core, the Indigenous resurgence paradigm rejects the modern state that governs Canada, calling for the creation of Indigenous modes of governance that not only solidify Indigenous nationhood, but do so in Indigenous ways, consonant with traditional core values and principles. On this account, Alfred, Coulthard and Simpson question the utility of focussing so intensely on negotiations with the state and trying to shape the contours of its legal and political systems. Instead, they direct their attention to the rebuilding of Indigenous nations from the inside out by resurrecting those traditional Indigenous practices, values, and ways of being that are best suited to the flourishing of self-sufficient Indigenous communities, given the current political, social and economic context.

Alfred, for example, rejects the state form of the dominant society and its reliance on hierarchy, absolute authority, the control of both territory and populations, and the coercive enforcement of state decisions (Alfred 1999, 56-57). This state form

conflicts with traditional understandings of Indigenous nationhood and their foundations of participation and consensus-based governing (Alfred 1999, 82). Rejecting the possibility that Indigenous peoples will find justice within this state system, he endorses "self-conscious traditionalism" as the path to self-determination: the selective resurrection of traditional modes of governance that accord with key values and teachings of traditional Indigenous cultures. As Alfred explains, "By abstracting core values and principles from the vast store of our traditional teachings, and selectively employing those aspects of their tradition that are appropriate to the present social, political, and economic realities," communities can begin to construct frameworks of governance that not only respect traditional teachings, but that offer a "viable alternative to colonialism" and state structures (Alfred 1999, 81).

Alfred's call for a return to traditional practices as a means to decolonization is echoed by Simpson and Coulthard. Simpson, for example, emphasizes "the need to engage in Indigenous processes … without the sanction, permission or engagement of the state" and to rebuild Indigenous political cultures by reclaiming the "Indigenous contexts (knowledge, interpretations, values, ethics, processes)" that serve as their basis (Simpson 2011, 17). Coulthard similarly argues that the focus of Indigenous resistance must move from engagement with the state in pursuit of recognition and reconciliation to the project of rebuilding Indigenous communities from the inside out (Coulthard 2014, 154). Like Alfred, Coulthard and Simpson both argue that the liberal politics of recognition and reconciliation, with its focus on negotiating legal and political concessions involving matters of self-government, territories, and economic development, are decidedly limited because they occur within a context that protects and perpetuates the colonial domination of Indigenous peoples (MacDonald 2011). Reconciliation efforts serve to convince Canadians that past wrongs have been righted, absolving the state of any further obligation to address the contemporary consequences of colonialism, while at the same time neutralizing Indigenous claims and naturalizing the hierarchical order in which the state bestows recognition upon Indigenous peoples, without undermining the dynamics of colonial power (Coulthard 2014, 48; Simpson 2011, 22). As Coulthard explains, the attempt to reconcile "Indigenous nationhood with state sovereignty is still *colonial* insofar as it remains structurally committed to the dispossession of Indigenous peoples of our lands and self-determining authority" (2014, 151).

On this basis, Indigenous resurgence proponents argue that Indigenous peoples must turn away from the Canadian state and its delegated forms of recognition in favour of a "resurgent decolonial politics" (Coulthard 2014, 154; Simpson 2011, 18-19). Drawing on the work of Frantz Fanon, Coulthard calls for "the revitalization of 'traditional' political values and practices" as a means to Indigenous liberation (2014, 154). Unlike Fanon, however, the goal is not to transcend traditional community practices but to allow them to serve as the foundation for noncolonial, alternative ways of being. For Coulthard, it is through such a "decolonial praxis" that Indigenous peoples will find liberation and relationships of "reciprocity and respectful coexistence," both within and among peoples (2014, 48). This outcome, however, requires Indigenous activists and leaders to recognize the limits of state engagement and the liberal politics of recognition as an "externally imposed field

of maneuver" that is too often mistaken for "freedom or decolonization itself" (Coulthard 2014, 156).

Besides a clear rejection of the modern Canadian state, another particularly noteworthy aspect of the Indigenous resurgence literature is the attention that it pays to capitalism and its relationship to the colonial enterprise. Discussing Marx's theory of 'primitive accumulation,' Coulthard describes Marx's account of the transition from feudal to capitalist social relations, the relationship between the birth of capitalism and the state, and the state-led, often violent, "transformation of noncapitalist forms of life into capitalist ones" (2014, 8). Capitalist economic development and the advent of the sovereign state came hand in hand. Under the rule of the sovereign state, 'land' was transformed into 'territory' as the creation of property rights subjected collectively held lands and resources to the principle of privatization (Flanagan, Alcantara, and Le Dressay 2010). As Coulthard explains, "these formative acts of violent dispossession set the stage for the emergence of capitalist accumulation and the reproduction of capitalist relations of production by tearing Indigenous societies, peasants, and other small-scale, self-sufficient agricultural producers from the source of their livelihood—*the land*" (2014, 7).

Because of the inextricable link between the modern state and capitalism, when Indigenous resurgence scholars discuss the selective restoration of traditional values and practices as a means of revitalizing Indigenous nationhood, their scope of inquiry is much broader than structures of governance, with particular attention being paid to capitalism in general and its relationship to land in particular. Capitalism promotes the commodification of land and natural resources as things that hold a monetary value. Indigenous philosophies, on the other hand, see human beings as stewards of the land and land as something that cannot be possessed or conveyed. According to Alfred, "Nowhere is the contrast between Indigenous and (dominant) Western traditions sharper than in their philosophical approaches to the fundamental issues of power and nature. In Indigenous philosophies, power flows from respect for nature and the natural order. In the dominant Western philosophy, power derives from coercion and artifice—in effect, alienation from nature" (1999, 60).

Thus, Alfred's self-conscious traditionalism not only rejects the modern sovereign state form, it also rejects the form of capitalist accumulation practised in the dominant society. To be clear, Alfred's brand of traditionalism does "not reject modernization or participation in larger economies" (Alfred 1999, 61). Rather, "It is the intense possessive materialism at the heart of Western economies that must be rejected—for the basic reason that it contradicts traditional values aimed at maintaining a respectful balance among people and between human beings and the earth" (Alfred 1999, 61). The goal is to create and participate in economies in ways that are compatible with Indigenous values and the continued well-being of Indigenous lands and communities. It is to re-create sustainable, local Indigenous economies founded on traditional concepts of governance, including participatory, consensus-based decision-making processes in the economic realm. Coulthard explains that only this sort of economic transformation can serve the nation-rebuilding project. While there is no doubt that negotiations with the state, regarding resource revenue sharing for example, can generate capital to address poverty and

aid in the revitalization of practices and traditions, these activities also fail to extricate Indigenous communities from the very capitalist relations that continuously strip them of their lands and resources, leaving them "dependent on a predatory economy that is entirely at odds with the deep reciprocity that forms the cultural core of many Indigenous peoples' relationships with the land" (Coulthard 2014, 171). In Alfred's words, "supplying raw materials to foreign industry … requires that indigenous people actively participate in their own exploitation" (1999, 116).

Like Alfred, the economic transformation that Coulthard envisions does not eschew participation in non-traditional economic ventures or preclude trade with national and transnational communities; indeed, voluntary and mutually beneficial trade is a crucial part of traditional Indigenous economies (Flanagan, Alcantara, and Le Dressay 2010, ix). The critical move that must be made is to apply traditional principles of governance to non-traditional economic endeavours "as a way of engaging in contemporary economic ventures in an Indigenous way" (Coulthard 2014, 172). The goal is not to ignore economic opportunities; it is to take advantage of economic opportunities that promote self-sufficiency so that Indigenous cultures and communities can flourish (Alfred 1999, 114-16).

Thus, for Indigenous resurgence scholars, nation re-building must begin with and within Indigenous communities, beyond the settler state context and the "assimilative lure" that its politics of recognition and reconciliation entail (Coulthard 2014, 48). For Alfred, Coulthard, and Simpson, the path to self-determination lies outside of the colonial paradigm. Rejecting a preoccupation with state engagement, the resurgence paradigm calls on Indigenous nations to resurrect and strengthen their traditional values, practices and political cultures as a form of resistance to colonial domination. The decolonial praxis envisioned by these scholars rejects both the modern state form and its attachment to the principles of capitalist accumulation. Instead, economic development must reject these imperatives and instead find ways to recreate sustainable economies that accord with traditional concepts of governance and Indigenous values, "without the sanction, permission or engagement" of the Canadian state (Simpson 2011, 17). The question that remains is: how might digital currencies serve these goals?

Digital Currencies: A Primer

According to Tucker (2009, 593), a "digital currency is a store of value that is both (A) issued by a private entity and (B) fungible via an established system of exchange on the Internet." Although digital currencies have existed since the 1990s, they have only become well-known and widespread over the last seven years through the marketization of digital payment mechanisms such as PayPal and, more importantly for this paper, the popularization of peer-to-peer currency systems such as Bitcoin. In 2008, a developer using the alias of Satoshi Nakamoto, published a paper that sketched out the key components of Bitcoin, which was a new type of decentralized digital currency. Nakamoto had designed a system that permanently fixed the number of available bitcoins at 21 million and which set a mining rate for new bitcoins at approximately 50 bitcoins per 10 minutes (Tucker 2012,163). To acquire bitcoins, users obtained them either through voluntary exchange or they mined them by using their computers to solve a "proof of work" algorithm. All transactions

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involving bitcoins are recorded using "nodes" on a public ledger called the blockchain. When someone mines or transfers a bitcoin, this transaction is broadcast to everyone running the bitcoin software. The nodes validate the transaction and record it on the blockchain. In this way, attempts to "double spend" or illegally create new bitcoins are prevented (Antonopoulos 2015; Mougayar 2015).

To transact bitcoins, individuals must download and use an electronic wallet. The wallet is software containing a cryptographic key that identifies an individual as the owner of particular bitcoins. Individuals do not hold bitcoins in their wallet. Rather, all bitcoins remain on the blockchain and the wallet contains the key that individuals use to access and transact their bitcoins on the blockchain.

Although the inventor and early adopters of Bitcoin intended it to be used as a currency to purchase goods and services, others viewed it as a commodity in which to invest. As the popularity of Bitcoin grew, a number of Bitcoin exchanges such as Mt. Gox, Coinbase, and Bitstamp emerged to allow people to buy bitcoins using national currencies. The idea was not only to facilitate bitcoins as currency for use in the marketplace, but also to allow individuals to invest in bitcoins, buying them when the price was low and eventually selling them when the price was high (Normand 2014). To use these exchanges, a person with bitcoins deposits them into an account, allowing her to sell those bitcoins to other people in exchange for US dollars, British pounds, or whatever type of currency that is permitted on the exchanges. To purchase bitcoins, an individual opens up an account at the exchange and deposits government-backed currency, which can then be used to purchase bitcoins. The price of bitcoins is set by the exchange aggregating the preferences of the buyers and sellers (Woo 2013, 2-3).

Although Bitcoin is clearly the most well-known and popular digital currency in use today, programmers and designers have also produced dozens of other currencies since Bitcoin's emergence in the late 2000s. Of particular relevance for this paper is a new class of digital currencies called "community cryptocurrencies." These currencies are "a form of [digital] money issued by a non-government entity to serve the economic or social interests of a group of people, often in a small geographic area" (Vandervort, Gaucas, and St. Jacques 2015). Examples include Marscoin, which its designers hope will one day be the currency for Mars, IrishCoin, which is intended to promote tourism spending in Ireland, and of course, MazaCoin.

Community cryptocurrencies contain a number of features that make them different from "global" digital currencies such as Bitcoin. Although mining continues to be a crucial way for individuals to acquire units of community cryptocurrency, many communities will also pre-mine and distribute a small amount of the currency to its members. Some communities also place geographic limits on where the currency can be mined and/or spent, forcing individuals to reveal IP addresses, but many communities do not engage in this practice (called geofencing) because doing so limits the size and scope of the marketplace. Communities will also provide incentives for individuals to use their cryptocurrency for desirable purposes, such as giving discounts for buying socially responsible products or providing bonuses for donations to charities. Some groups also employ demurrage, which means reducing "the value of unspent notes over time" as a means of inducing people to spend their currency rather than holding on to it as a commodity or investment product.

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Finally, some groups also create community loan funds that provide individuals with small loans, usually to help them start up or improve businesses in a particular region (Vandervort, Gaucas, and St. Jacques 2015, 80-84).

At its core, the designers of MazaCoin initially intended it to be a type of community cryptocurrency, serving primarily the interests of the Lakota Nation. Like Bitcoin, individuals could mine mazacoins using their computers or they could obtain them through voluntary exchange. Mazacoins could also be purchased through a private digital currency exchange, like Bitspent, as long as the exchange agreed to host such transactions, which many currently do. Unlike Bitcoin, however, MazaCoin was designed to be inflationary in that there is no cap on the number of coins that can be mined now or in the future. Although MazaCoin is not geofenced, subject to demurrage, or tied to any community incentive program, the designer pre-mined 50 million mazacoins, half of which were supposed to be held by a Lakota Nation National Reserve and the other half by a Lakota Nation Tribal Trust. The logic for pre-mining these coins and for not placing a cap on the number of coins that could be mined was to prevent the wild speculation and volatility that seems to occur with most digital currencies and to encourage people to spend the currency. These were some of the lessons that the programmers learned from Bitcoin (Popper 2015, 219).

A Canadian Indigenous Cryptocurrency

The developers of MazaCoin had hoped the currency would eventually and significantly increase the political, legal, and financial autonomy of the Lakota Nation. These outcomes, however, did not occur, mainly because the Lakota Nation never formally supported or adopted the currency nor did any users within or outside of the community. It may be that there were inadequate consultations with the community and leadership or perhaps the concept was too foreign for the community. Nonetheless, Indigenous groups and organizations in Canada have shown some interest in creating their own cryptocurrency to further their community's political and economic interests, given the strong emphasis in the technology on reducing the role of the Canadian state in monitoring and processing financial transactions.[1] What might a Canadian Indigenous cryptocurrency look like?

If the primary goal is to increase the autonomy of at least some Indigenous communities against the political economy of the Canadian state, then a new Canadian Indigenous cryptocurrency will likely need to mimic many of the features of MazaCoin. The main difference, however, is that the new currency would have to be developed and supported by an Indigenous government or consortium of governments,[2] probably through the use of an Indigenous corporation or non-profit

[1] Indeed, one of the authors of this paper received an email from an organization that was interested in exploring the political and legal implications of starting their own Indigenous digital currency in Canada.

[2] We are mindful, here, of the fact that many existing Indigenous governing bodies have been created through the mechanisms of the state, often mimicking the state form rejected by some Indigenous resurgence scholars (Alfred 1999, 56; Coulthard 2014, 159). However, in light of the demise of MazaCoin, we nonetheless take the position that the success of an Indigenous cryptocurrency will likely require the endorsement and support of some form of Indigenous government, whether it be a traditional government body like the Haudenosaunee Council or one that has emerged out of negotiations with or legislation passed by the Canadian State.

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organization, such as the First Nations Finance Authority or an Inuit Economic Development Corporation. An Indigenous Exchange would have to be created and supported by something akin to the First Nations Bank of Canada; the Indigenous Exchange is necessary to allow individuals and organizations to trade the new digital currency for government-backed currencies (although this service could also be provided by existing digital exchanges) and the bank would be needed to allow the Indigenous Exchange to make deposits to facilitate financial transactions between users. In addition to creating these bodies, participating communities would likely have to accept the new currency as a legal method of payment and pre-mine a set amount of coins to deposit in a pan-Indigenous reserve and/or trust, which could then be used to address market volatility and provide tangible incentives for economic development. In sum, the creation of a Canadian Indigenous cryptocurrency would likely involve the support of one or more Indigenous governments, the creation of Indigenous financial institutions tailored to facilitate transactions,[3] and buy-in from individuals who are willing to transact and/or invest in the currency on a long-term basis.

Opportunities and Constraints for Indigenous Self-Determination

A new, Indigenous cryptocurrency would provide both opportunities and constraints for Indigenous communities in Canada. One of the key characteristics of Bitcoin and most other digital currencies is the decentralization of control. Bitcoin is not backed by any state nor is its regulation left to any central authority. It is lauded for its ability to eliminate the need for state-sanctioned institutions to mediate exchange, giving power to the people who use the coin to engage in peer-to-peer transactions (Popper 2015, x-xi; Vandervort, Gaucas, and St. Jacques 2015, 78; Lanchester 2016). In this regard, digital currencies are decidedly anti-capitalist in so far as they challenge the state's self-granted monopoly over money and remove the need for those state-based institutions that support the capitalist mode of exchange. On this basis alone, the appeal of an Indigenous cryptocurrency should be immediately clear. With that said, Payu Harris' vision for MazaCoin did not embrace all of these aspects of cryptocurrencies. MazaCoin was to be backed by the Oglala Sioux Nation and supported by an institution somewhat akin to a central bank,[4] reintroducing a governing body and intermediary institutions into the mode of exchange. It sought to do so, however, to rebuild its nation and expand its autonomy against the political economy of the American state (Browning 2014, 4).

It is impossible to ignore the symbolic significance of adopting an Indigenous community cryptocurrency, both to the dominant society and to Indigenous peoples. Symbolically, national currencies, like flags and constitutions, have long been tied to nationhood, and the adoption of a MazaCoin-inspired currency operating outside

[3] It should be noted that once the software is up and running, there should be little to no administrative oversight needed on a daily basis, and so the administrative costs should be low.

[4] It should be noted, however, that the bank would not have had the same type of monetary controls that most central banks have at their disposal. MazaCoin was designed to be inflationary, with no upper limit on the amount of currency that could be produced; supply was to be managed by individual users through voluntary exchange and mining.

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of the institutions of the Canadian state would stand as a powerful declaration of self-determination to those beyond the community. But the symbolism of a community cryptocurrency would undoubtedly have effects on residents of the community as well. National currencies, writes Eric Helleiner, can awaken national pride, strengthen attachment to the community, and instill in community members "a sense of collective identity centered around nationalist images of a common past and culture" (Helleiner 1998, 1411). Community cryptocurrencies, which are currencies that are tied to specific community goals and philosophies, are particularly potent in this regard. They can serve as a rallying point for identity, promote community solidarity among those with a shared fate, and function as a form of political activism (Vandervort, Gaucas, and St. Jacques 2015, 90; Helleiner 1998, 1424). And where governing authorities manage community currencies in ways that accord with the will of the community, they can "bolster a kind of collective faith in the nation" in other community members, and in the governing authority that issues the currency (Helleiner 1998, 1424).

Of course, among the potential advantages of an Indigenous cryptocurrency is the generation of community wealth. Indigenous communities currently rely on the Canadian dollar for almost all financial transactions. This means that they are subject to the whims of inflation, which are driven by market forces that sometimes have little relevance to Indigenous peoples. The two most common inflationary pressures are an increase in money supply and high demand accompanied by low supply of goods. Creating and making use of an Indigenous cryptocurrency could mean partially insulating Indigenous communities from these broader inflationary pressures and the resulting devaluing of their individual and collective wealth.

In keeping with the Indigenous resurgence paradigm's rejection of capitalism, what is particularly noteworthy about community cryptocurrencies is that they can help address poverty without succumbing to the principles of capitalist accumulation. They can generate wealth without transgressing the traditional practices and values of the community by introducing values other than profit into economic exchange, such as economic sustainability and respect for the land. Thus, a central strength of community cryptocurrencies in relation to the Indigenous resurgence paradigm is their ability to be tied to a set of ethical principles. In this respect, the "purposes of community currencies often go beyond economic exchange to supporting values and causes including social, environmental or ethical dimensions" (Vandervort, Gaucas, and St. Jacques 2015, 78). In short, community cryptocurrencies can help promote consumption choices that defy capitalist imperatives and support self-sufficient and sustainable Indigenous economies (Helleiner 2000, 35; Seyfang 2001, 60-61).

There are several mechanisms that can be employed to accomplish these goals. First, in addition to distributing coins to individual community members and those in need, communities can create loan and grant programs for local businesses that engage in economic development consonant with the goals, values, and needs of the community. Funds for such programs can come from pre-mined coins kept under the control of the coin's developers or generated by charging transaction fees on exchanges that exceed a certain threshold. Alternatively, community funds

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can be generated by imposing fees on transactions considered undesirable to a community's goals or environmental stance (Vandervort, Gaucas, and St. Jacques 2015, 84). In addition to levying fees on transactions that transgress community values, a MazaCoin-like cryptocurrency can also allow for the creation of "privileged transactions." Here, transactions furthering community goals or expressing community practices and values can be rewarded by providing discounts for certain transactions, such as the purchase of environmentally friendly or authentically-produced Indigenous goods, with the difference in price being subsidized by a community fund (Vandervort, Gaucas, and St. Jacques 2015, 82). In these ways, a community cryptocurrency that is tied to the goals of economic self-sufficiency and sustainability can function "as a tool for setting into practice values other than profit during economic transactions" (Orraca and Orraca 2013, 2). Community cryptocurrencies of this sort can aid in re-building the values and principles that guide social and economic relationships. Unlike fiat currencies, which are ethically neutral, community cryptocurrencies can be imbued with ethical principles and values that a community wishes to promote. In this sense, they present the possibility of an Indigenous alternative to capitalism.

Of course, creating and enforcing a system of privileged and discouraged transactions within a geographically confined area is one thing. In the case of transnational currencies, the landscape changes. While individuals outside the community who use the coin might identify with the community's goals and choose to use the currency in ways that respect the community's ethos, an openly traded digital currency could be used for a host of undesirable ends. And while, at present, connecting crypotcurrencies to community goals through incentives and disincentives is a local matter, we may not be far from the creation of transnational cryptocurrencies that are ethically constrained via artificial intelligence (AI) technology.

Drawing on the example of automated trading systems that rely on artificial intelligence to guide economic exchange, Matthew Gladden explains that, together, computer scientists and ethicists can create AI software that is capable of ethically constraining cryptocurrencies. Thus, rather than focussing solely on the financial aspects of exchange, a community currency programmed to promote certain values could, quite literally, reject transactions that contravene the ethical principles programmed into the coin (Gladden 2015, 87-88). For Gladden, the prospect of fusing a community cryptocurrency, such as MazaCoin, with AI intended to ethically constrain the coin's use offers a powerful mechanism not only to affirm and promote a community's ethical values and goals, but to create "new communities of economic solidarity" around a shared set of principles to which users of the coin subscribe (2015, 93).

Whether a geofenced community currency or a transnational currency would be highly beneficial when it comes to the generation of wealth remains an open question. Community currencies are often thought to be local, complementary, and often incontrovertible currencies that enable exchange and increase purchasing power in communities where cash is scarce. Their purpose is "to plug the gaps where mainstream money fails to meet needs" and boost economic activity within the community (Jeffries 2014, 3; Seyfang 2001, 61). A cryptocurrency circulating within a geographically bounded area would have the advantage of re-circulating

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in the community, "multiplying the wealth created, each time it is spent," rather than leaving the community to be spent elsewhere (Seyfang 2001, 62-63). Additionally, community cryptocurrencies supported by incentive programs can make spending locally a particularly attractive option when compared with converting the local currency into dollars and going outside of the community to purchase goods and services (Jeffries 2014, 3).

Conventional currencies, on the other hand, often exit impoverished areas, leaving communities vulnerable to "disinvestment" and highly affected by the choices of those outside the community. As explained by Gill Seyfang,

> Community currencies can be set up as a shelter from the storm of global economic forces, and enable people to exercise some degree of economic self-determination. In places where conventional money is in short supply, community currencies can enable residents to gain access to goods and services that they could not afford to buy for cash. Likewise, people who are unemployed in the mainstream economy may find that they are able to sell their labour and skills for local currency, using the currency as a mechanism for organising informal employment. (Seyfang 2001, 62; see also Helleiner 2000, 38)

As a form of "multi-reciprocal barter," community cryptocurrencies used in this way operate more as a mechanism of trade than a commodity, offering a degree of economic autonomy and self-determination that is independent of outside economic forces (Seyfang 2001, 60-61).

Leaving aside the potential material benefits, a geofenced coin can also promote the "re-territorialization of money," which contemporary transnational currencies cannot. A currency that is linked to a specific community and aimed at the exchange of local products by local people ties the coin not only to a specific territory with a specific identity, but to the community's values and local resource management. In short, "when money is linked to a territory in this way, it becomes part of the socio-environmental relationships through which a territory is built" (Orraca and Orraca 2013, 11).

Nonetheless, MazaCoin's Harris had no such desire to limit the reach of the currency of the Oglala Lakota Nation; nor did he envision MazaCoin as a complementary, local currency that would operate in tandem with the American dollar. His ultimate goal was to replace all federal currencies with MazaCoin, and to have the coin function as the currency of the community for casinos, powwows, the purchase of goods and services, and even to pay federal taxes. He also envisioned MazaCoin being traded for other digital currencies and accepted by retailers across the globe, with transaction costs levied on users to fund the tribal trust (Browning 2014, 3; Landry 2014, 2). While this approach to crafting an Indigenous digital currency would still bring some reinvestment of wealth into the community, it might be less successful at recirculating wealth back into the community than its geofenced alternative. With that said, the transnational approach advocated by Harris opens up the possibility of trading in the global marketplace and gaining support for its nation-building goals from those outside the community. It also avoids some of the weaknesses of geofenced cryptocurrencies, including the loss of anonymity, the inability to complete transactions when outside the area,

and the geographic barriers that work against widening the pool of people who use the currency (Vandervort, Gaucas, and St. Jacques 2015, 81).

Naturally, the advent of digital currencies has been marked by both uncertainty and flaws, including the legal grey area that currently marks their regulation. In fact, governments around the globe do not even agree on how to categorize cryptocurrencies. Are they a currency or a commodity?[5] In Canada, while cryptocurrencies are subject to existing laws regulating the transmission of business, including income tax regulations, it remains to be seen how the government will choose to legally address the rise of cryptocurrencies, though one can imagine a strong response is likely if the proliferation of digital currencies starts to impact the state's control over the use and circulation of money.

Among the concerns of Indigenous communities is whether abandoning the dollar in favour of a digital cryptocurrency might result in a withdrawal or reduction of federal funding (Jeffries 2015, 5). The environmental implications of cryptocurrencies have also been a source of criticism. The expenditure of wasted energy as miners put their computers to work to solve the proof of work algorithm (e.g. data that are complex and onerous to create but which can be easily verified by the participating community), when there can only be one winner, involves a massive energy drain. To address this concern, MazaCoin mining was designed to require less processing power than that required to mine Bitcoin, making MazaCoin a more environmentally friendly alternative (Hamill 2014, 3; Lanchester 2016). Digital currencies also present a challenge to those without smartphones, apps, internet access, or a working knowledge of these technologies. To address this problem, Harris planned on developing a paper wallet system. Paper wallets are simply slips of paper that record private keys. The plan was to create a central institution, akin to a bank, where community members could store their paper wallets. To buy goods and services, individuals would retrieve their paper wallets from storage, make their purchases at local businesses, and then return their wallets and their remaining balances to storage (Jeffries 2014, 4-5; Antonopoulos 2015, 106).

A different concern arises around the security of cryptocurrencies. As noted earlier, the cryptography at the heart of blockchain technology offers a very high level of security; however, like their fiat counterparts, cryptocurrencies are not immune from fraudulent activity. For example, in June 2014, GHash.io, a mining pool, accounted for 51% of the total hashing power on the Bitcoin network, despite having promised never to do so. While the situation was resolved within a matter of hours, the incident illustrated a major weakness in cryptocurrency technology (Hern 2014). Blockchain's ledger technology is lauded for its decentralization and consensus-based approval process, as nodes across the network check transactions to validate them and add them to the blockchain. However, when a single miner or mining collective is able to account for 51%[6] of the total processing power on

[5] For example, while the United States presently treats digital currencies as a commodity, Canada and the EU consider them a currency (Canada Revenue Agency 2013; Schechner 2015; United States Commodity Futures Trading Commission 2015).

[6] In fact, 51% of the total hashing power may not be necessary to launch a consensus attack. Attacks are viable where an interest can account for as little as 30% of the network's total computing power (Antonopoulos 2015, 215).

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the network, the blockchain is subject to a "consensus attack." Here, the blockchain becomes susceptible to manipulation because it becomes impossible for honest nodes across the network to verify the blockchain; the ledger is in the hands of those with a majority of the hashing power. This means, among other things, that legitimate transactions can be denied or delayed and that certain addresses can be blocked from using their coins. It also means that recently completed[7] transactions can be invalidated, allowing users to double spend by removing transactions from the block, which returns spent coins to the original user's wallet (Antonopoulos 2015, 213-15). Given that this flaw has already afflicted Bitcoin, despite its vast network of nodes, it is important to note that the possibility of manipulation is higher with geofenced cryptocurrencies, where the total number of mining nodes is low, making it easier to account for 51% of the hashing power on the network (Vandervort, Gaucas, and St. Jacques 2015, 81).

Perhaps the most significant criticism of cryptocurrencies for our purposes, however, concerns their fluctuating value. Indeed, all currencies are subject to inflationary pressures. While critics acknowledge that an Indigenous cryptocurrency like MazaCoin might well further the goals of self-determination and nation building, given cryptocurrencies' poor record as a store of value, the economic risks of adopting a digital currency are often thought to be too great for impoverished communities (Landry 2014, 3). Whether a MazaCoin-inspired currency would fare better than typical cryptocurrencies in holding its value, where it was backed by an Indigenous governing authority, remains an open question (Lanchester 2016; Helleiner 1998, 1428).

One potential solution to the problems of inflation and fluctuating value is to back the Indigenous cryptocurrency with gold, with each coin valued at and secured against some sort of predetermined unit of gold that is physically located in a vault. Not only would this help shield an Indigenous digital currency against large value fluctuations and inflation but it might also make the currency more relevant and familiar to first-time Indigenous and non-Indigenous users. Alternatively, a geofenced cryptocurrency, especially one that cannot be mined by outsiders, might limit risk, being somewhat insulated from outside economic influences. However, as explained above, geofencing heightens the potential for fraud, complicates economic exchange when community members are temporarily outside of the area, and limits the pool of potential users of the coin.

Conclusion

The principal goal of our paper was to provide a starting point for thinking about the possibility of using digital currencies as a tool for increasing Indigenous autonomy and self-determination in Canada. A number of commentators have argued that the political economy of Canada is designed to oppress and limit the ability of Indigenous communities to exercise meaningful self-determination (Alfred 1999; Coulthard 2014). On the other hand, many digital currencies were designed specifically to further libertarian goals, such as reducing the ability

[7] While older blocks are considered to be "practically immutable," a consensus attack can target future transactions and very recently completed transactions (Antonopoulos 2015, 213).

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of the modern state to regulate the lives of communities and individual citizens. An Indigenous digital currency, therefore, may hold some promise if the goal is to promote and further Indigenous political and economic freedom vis-à-vis the Canadian State.

In this paper, we have only scratched the surface of how new economic technologies might be used to address a number of contemporary yet persistent policy problems related to Indigenous peoples in Canada, the United States, Australia, and New Zealand. In the field of Indigenous politics and Indigenous-settler relations, for instance, the dominant focus has almost always been on political institutions, policy processes, constitutional orders, and Indigenous rights in the context of domestic and international law. Our paper suggests that Indigenous community members are starting to turn to other mechanisms for social justice and political-economic change, and that these alternatives may have some promise for delivering the kinds of outcomes envisioned by advocates of Indigenous self-determination. From a governance perspective, for instance, geofenced cryptocurrencies offer a platform for community, consensus-based decision making. Take the example of loans and grants to community businesses. Rather than using a top-down approach to approving loans from a tribal trust, entire communities could participate in the process by registering votes via blockchain technology to approve loan transactions, with funds released to specific addresses only when a certain voting threshold was reached (Vandervort, Gaucas, and St. Jacques 2015, 84-85). Another particularly noteworthy aspect of blockchain technology is its potential for creating immutable ledgers to register land claims and customary leases (Alcantara 2007). Experts and policymakers from the United States, Denmark, and Ghana, for instance, have launched a program called BitLand to help people in southern Ghana record land titles (Aitken 2016). As a global ledger, blockchain technology offers Indigenous peoples a new and potentially reliable mechanism for making land claims "far beyond the authority of nation states," (Vollstädt 2015) who have at times failed to register and respect Indigenous and non-Indigenous title fairly, efficiently, and effectively (De Soto 2000; Flanagan, Alcantara, and Le Dressay 2010). Under a blockchain type of system, however, land claims could be registered and verified by millions of people around the world quickly and efficiently while at the same time offering international support and recognition to these claims (Vollstädt 2015). An Indigenous digital currency and the blockchain technology that supports it, therefore, may be promising avenues for those Indigenous communities interested in increasing their autonomy and reducing the reach of the modern state.

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