

## HISTORICAL GIS RESEARCH IN CANADA

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## “I do not know the boundaries of this land, but I know the land which I worked”: Historical GIS and Mohawk Land Practices

*Daniel Rueck*

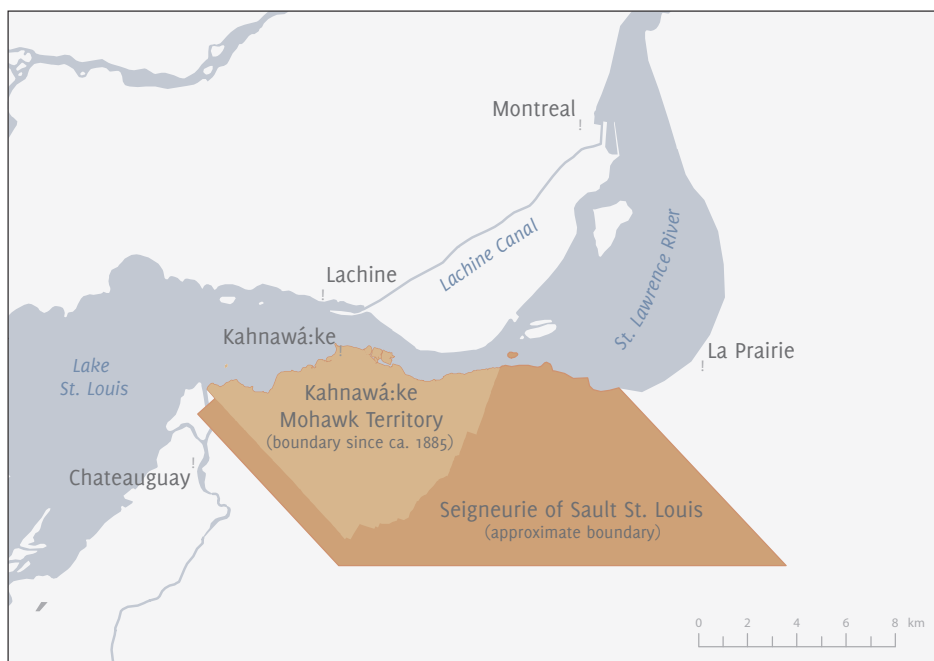
“Who is the rightful owner of a hole in the ground?” That was the question that an 1895 inquiry in Kahnawá:ke, a Mohawk community near Montreal, sought to answer. In 1894, a fertile hill was excavated by the Canadian Pacific Railway (CPR) as a borrow pit to provide gravel and earth for the building of the rail approach to the new bridge across the St. Lawrence. The CPR did not ask for permission; in fact, it did not even ask whose land this was – it simply gave \$100 to the Department of Indian Affairs (DIA) and asked it to pass the money along to the rightful owner. Three men came forward to claim the money and an inquiry was called to discover who was the rightful owner. As the inquiry progressed, it became clear that all three men had a valid claim to this lot, labelled Lot 205 on the DIA map, and that it would not be possible to choose one over the others. Why was it so difficult for the department to know the identity of the owner in light of the fact that it had carried out an extensive land survey only a few years before and was in possession of a detailed cadastral map? This chapter sheds light on this situation by exploring what happened when traditional Kahnawá:ke land practitioners were faced with DIA efforts to eradicate their way of relating to the land. It focuses specifically on the most comprehensive land survey in

the history of Kahnawá:ke, known as the Walbank Survey, and discusses the implications of the survey for Mohawks and their land. The latter half of the chapter moves from the past to the present, as I share some of my experiences in conducting this research. The chapter ends with a discussion of the possibilities and limitations of learning about Indigenous land practices using GIS tools. I argue that, although the western cartographical tradition has been hostile toward Indigenous ecological knowledge and practice, historical GIS (used judiciously) offers a way to turn historical maps against themselves. Histories and knowledges that were undermined by government surveys and maps can be brought to light by the very maps and data created to destroy them.

Kahnawá:ke dates from the 1660s when several hundred Indigenous people settled across the river from Montreal, then a tiny colonial outpost. The community was initially multi-ethnic, including people from more than twenty nations, but within a few decades it took on a primarily Mohawk character. The French were thankful for this powerful and friendly military presence near their poorly defended towns. Kahnawá:ke Mohawks (hereafter Kahnawakehró:non) decided to settle there for a number of reasons: their 50,000-acre seigneurie promised them perpetual revenue in the form of rents from farmers; Jesuit missionaries offered spiritual services and a dry community; and the geographic location of the village allowed for a continuation of their vocation as traders. Kahnawá:ke was the largest Indian village in Canada until the latter decades of the nineteenth century, and, at around 10,000 people today, it continues to rank among the most populous Indigenous communities in Canada. Located only ten kilometres from

downtown Montreal (see Fig. 7.1), the 12,000-acre reserve is today surrounded by suburbs and traversed by highly intrusive transportation and hydroelectric infrastructure. The effects of Montreal industrialization were felt as early as the 1820s when stone quarried in Kahnawá:ke was used to construct the Lachine Canal, and in the 1850s when Kahnawá:ke became the terminus for one of the first railway lines to connect Lake Champlain with the St. Lawrence River.<sup>1</sup> Nevertheless, Kahnawá:ke remained relatively independent and self-governing until the 1880s, when Mohawks experienced intensified and interrelated incursions into their lives and lands. This kind of uninvited development on Mohawk territory continued throughout the twentieth century with the construction of high-voltage power lines, highways, bridges, and finally the St. Lawrence Seaway, which cut through the village in the 1950s and is widely seen today as the ultimate environmental and cultural tragedy in the history of the community.<sup>2</sup>

My research for this chapter focuses on the last two decades of the nineteenth century when the magnitude of these incursions, along with heavy-handed DIA interference in Kahnawá:ke affairs, were felt for the first time. One particular DIA project, the Walbank Survey, attempted to define property boundaries and standardize ownership practices along Euro-Canadian capitalist lines in the 1880s. The Mohawk land-management regime, which the Walbank Survey sought to replace, was a customary system that aimed to maximize access of all community members to land and resources while limiting the potential for individual commercial profit from the same. Over the course of the nineteenth century, these customs had been frequently challenged by reformist



*Fig. 7.1. The geographical situation of Kahnawá:ke. (Map by Louis-Jean Faucher.)*

Mohawk landowners who wanted a land tenure regime in line with Canadian norms and the DIA which supported those landowners. The Walbank Survey was the culmination of these efforts.

## THE WALBANK SURVEY

The DIA initiated the Walbank Survey for a number of reasons. First, DIA officials, like most of their non-Indigenous contemporaries, believed that Mohawks made poor use of their land.<sup>3</sup> They believed that this was due, not only to a supposed Mohawk lack of interest in agriculture, but, more importantly, to the belief that Mohawk landowners lacked security of ownership. Furthermore, the DIA felt it lacked the information it needed to act as an effective arbiter in land disputes between Mohawks.<sup>4</sup>

Creating accurate cadastral maps and a standardized system of titles would encourage owners to ‘improve’ their land and would give the government the information it needed to effectively intervene. The department also had a mandate to ‘enfranchise’ Indigenous people, which meant transforming their legal status from Indians into non-Indians. According to contemporary legislation, one of the requirements for enfranchisement was for a male Indian to own and farm land. By giving a piece of land to each Mohawk “head of household,” DIA officials reasoned, the entire community could be enfranchised, that is to say, effectively eliminated. Finally, department officials believed that the survey would facilitate the expected expropriations that would accompany the 1885–87 construction of the St. Lawrence Bridge for the Canadian Pacific Railway, one end of which would rest on Mohawk territory.

Although the DIA did not express it in these terms, the Walbank Survey was also an effort to erase a way of living on the land. The existing property regime was the result of Mohawks adapting their ancient land practices to new realities, including a permanently located village, shrinking land-base, and the industrialization of neighbouring Montreal. To outsiders, it appeared that Mohawk land ownership was no different from standard individual free-hold tenure, except that Mohawks lacked a standardized system of land titles and appeared not to respect others' property. But the Kahnawá:ke system of land ownership had its own logic and was in many respects similar to the practices in other Haudenosaunee (Iroquois) communities at the time. Kahnawakehrónon considered their entire territory to be owned collectively, but small pieces could be claimed by individuals as long as they were cultivated. Land left uncultivated became available to others. An individual could not claim more land than he or she could work. Standing trees could not be owned by individuals, the only exception being maple trees actively tapped for sugar. Most other trees were available to all community members who wished to cut them and use the wood for their own purposes. Such wood was not to be taken out of Kahnawá:ke or sold.<sup>5</sup> The consistent articulation of these principles by Mohawk leaders throughout the nineteenth century shows that Kahnawá:ke land practices were not the result of lawlessness, as advocates for the survey insisted. Instead, the Mohawk understanding of their relationship to land was based on the conception of the territory as a commons that limited the possibilities for land-related commercial activities while offering community members free wood and small plots of land suitable for small-scale farming.<sup>6</sup>

In the second half of the nineteenth century, Kahnawakehrónon became increasingly concerned about the steady encroachment of non-Mohawk farmers along the boundary of their territory. Many of these farmers had been in the habit of periodically moving boundary markers, and this had not gone unnoticed. Throughout the 1870s, Kahnawá:ke chiefs called on the DIA to conduct a boundary survey that would restore lost territory and ensure that such encroachment would not happen again. DIA responses to these requests made it clear to the chiefs that the priority of the department was not the boundary but the interior of the territory. The department wanted to subdivide the reserve, but the chiefs always refused proposals of that nature. In 1874, for example, Kahnawá:ke chiefs submitted a powerfully worded petition stating that it was their duty to protect and represent those who would suffer most from such a subdivision. The lots produced by such a subdivision, they argued, would be small and of uneven quality, and, with the loss of the common wood and land resources, the community would no longer be viable.<sup>7</sup> DIA plans for subdivision were thus put on the back burner until the 1880s.

The DIA finally responded to Mohawk calls for a boundary survey in the summer of 1880, when it gave the contract to Provincial Land Surveyor, William McLea Walbank. The son of a lawyer and Conservative member of the Newfoundland House of Assembly, Walbank (1856–1909) studied architecture and civil engineering at Queen's University in Ireland before earning a degree in civil and mechanical engineering at McGill University in 1877. He spent his career in Montreal working as an architect, engineer, and surveyor and was later involved in efforts to develop the

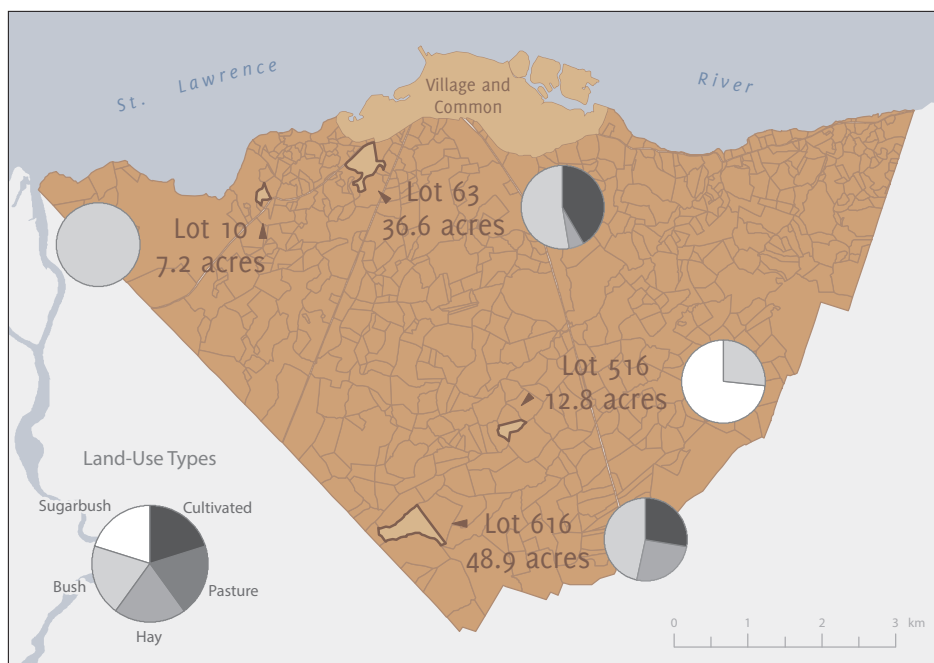


Fig. 7.2. Map of Kahnawá:ke showing the lots owned by Skatsentie (a.k.a. Joseph Williams), ca. 1885, and Walbank's land-use classification for each. (Map by Louis-Jean Faucher.)

hydroelectric potential of the Lachine Rapids. He was twenty-four years old at the start of the boundary survey.<sup>8</sup>

Walbank and his staff completed the survey of the reserve boundary by the end of 1880.<sup>9</sup> Walbank concluded his report on the project by suggesting that subdividing the entire reserve would be the logical next step and that he was well-situated to carry it out himself. Such a survey, he warned, should be planned and executed very carefully because if Mohawks were granted the same land rights as non-Natives, the whole reserve would be in the hands of Whites within five years. Instead, Walbank suggested “it might be beneficial to give rights to sell or exchange their lands with each other (with certain restrictions) and so by degrees educate them into the manners and customs of the more civilized people.”<sup>10</sup> In February 1882, a DIA clerk travelled to Kahnawá:ke to announce that the department intended to act

on Walbank's recommendations. The clerk reported to the department that the chiefs had manifested their contentment with the plan and that they had expressed a hope that the survey would be carried out quickly.<sup>11</sup> There is no reason to believe that most chiefs were actually happy about the announcement, given that the DIA regularly misrepresented the views of Indigenous leaders and that Kahnawá:ke leaders had consistently opposed subdivision plans in previous years. Even if some chiefs decided to cooperate once it became clear that they could not stop it, such a decision should not be seen to indicate voluntary agreement when the implied threat of state violence lurked in the background.<sup>12</sup>

The one leader who appears to have had a genuine enthusiasm for the project was Chief Skatsentie (Joseph Williams) (1846–1885). He was a young, wealthy trader whose father had done considerable business in Germany selling

Indian curiosities. An anonymous columnist for *The Catholic World* reported in 1883 that the thirty-seven-year-old Skatsentie lived in a luxurious house and was sanguine as to the survey “working well and benefiting his ‘braves.’”<sup>13</sup> In a letter to the DIA in 1882, Skatsentie appeared to downplay Kahnawakehrónon opposition to the subdivision, saying that they simply wanted more information “as to the character of such a subdivision.”<sup>14</sup> According to Walbank data, he owned at least four lots in Kahnawá:ke, totaling 103.65 acres, as well as two barns. Walbank valued these properties at \$1,127.<sup>15</sup> Figure 7.2 shows the location and land uses of each of Skatsentie’s lots. Lot 516 included a substantial sugarbush. Both Lot 63 and Lot 616 included cultivated and haying lands. All four lots contained ‘bush,’ which was valued primarily for the provisioning of firewood.

Walbank, along with three teams each consisting of a surveyor and two Mohawk assistants, began work on the subdivision survey in June 1882.<sup>16</sup> He expected to complete the project the following year. However, Walbank’s ignorance of Kahnawá:ke land tenure, the paucity of maps and deeds, and the lack of cooperation from mistrustful community members meant that every part of the project took longer than anticipated. After finally completing a survey of the locations and boundaries of existing lots in 1884 (Fig. 7.5), he began the process of valuing them.<sup>17</sup> The DIA advised him to value lots not as if they were owned by Whites but based on a land market where Indians could only buy from each other. This had the effect of making Kahnawá:ke valuations much lower than valuations for similar lots on non-Indian land.<sup>18</sup>

Before designing the new property grid, Walbank had to know how many lots would be

needed so that he could assign one to each “head of household.” To this end, Walbank set up a tribunal process in which anyone who claimed to be a head of household could present him/herself to a tribunal, which would be made up of the council of chiefs, the agent, and Walbank himself. Claimants appeared and were asked a series of questions, which were recorded on standardized forms. The questions were designed to gather three types of information: 1) facts about each claimant for the creation of a membership list and list of electors; 2) information that could be used to exclude people from membership; and 3) information about lots and improvements owned by members. Aside from standard questions about names, birth dates, and birth places, Mohawks were asked many questions that reflected DIA concerns about race, monogamy, and absences from Canada.<sup>19</sup> The tribunal operated from February until June 1885. The information for each claimant and lot was recorded in five large volumes of record books, which, along with a map depicting land uses, existing lots, and projected lots, form the basis for my GIS analysis (Fig. 7.4).

Many questions can be raised about the accuracy of the information Walbank gathered in this way. He admitted to filling in answers to question number ten (“Do you hold any land on the Reserve; and how did you acquire such land?”) for the claimants because, in his words, “any information I might get from the individual Indians would be very unreliable and inaccurate.”<sup>20</sup> Answers to other questions were written down as standardized English phrases and never in the hand of the claimant. Considering Walbank’s young age, inexperience, and lack of empathy for those he judged uncivilized, it is likely that many Kahnawakehrónon claims were not fairly represented in

his workbooks. On the other hand, there is no reason to think he deliberately falsified information, and the involvement of the four chiefs on the tribunal served as a kind of counterpoint. They may not have had the full support of the community, but they were still subject to the kind of accountability that came with living among their constituents.

After the tribunal heard from all claimants, the DIA (in consultation with the Department of Justice) reviewed all the contested claims. These were claims for which at least one chief had contested the person's right to membership. Of the 610 total claimants (513 men and 97 women), 175 (27 per cent) were contested. Each of the four chiefs on the tribunal had the opportunity to either approve or contest each claim. Chief Skatsentie, mentioned earlier as an enthusiastic promoter, died of unknown causes in May 1885 and did not play a role in the tribunal decisions. In 122 of the 175 contested claims, all chiefs agreed to reject the claim of the individual; 53 disputed claims, however, were not unanimous. It is nowhere made clear exactly what the criteria were or who defined them, but it appears that the chiefs and the department were not working with the same understanding, nor were the chiefs always in agreement. Historical anthropologist Gerald Reid has analyzed the process in detail to better understand political rifts within the community and has offered a number of insights. Claimants were contested for a number of reasons: being underage, being non-widowed women, having been born elsewhere, having parents who were born elsewhere, having been absent for a long time, having been born out of wedlock, and being 'white' or 'half-breed.' The final decisions were a result of the back-and-forth between chiefs and DIA, but the chiefs

had little power over the final results. In most cases, the DIA applied *Indian Act* membership rules. The chiefs had the most say when it came to deciding who was excluded from membership on the basis of racial criteria. Since there was no complete membership list, the department usually took the chiefs' word on who was sufficiently Mohawk to belong and who would be evicted. The DIA intervened to contradict the chiefs only in the case of the Delorimier family, who had long been considered interlopers by a majority but whose Indian status had been confirmed by an 1850 court. The department also forced the inclusion of Mohawk women who had married non-Indians before the 1869 law that stipulated that such women lost their status. Reid argues that the chiefs' motivation was primarily to limit the number of band members so that each would receive an adequate share of the small territory.<sup>21</sup> In addition to the contested claimants, there were also approximately 130 cases of disputed ownership that were brought before the tribunal.<sup>22</sup> The tribunal was an important event in the history of inclusion and exclusion at Kahnawá:ke, but it did not resolve the matter. The question of membership remains extremely contentious to this day.<sup>23</sup>

Walbank's tribunal made the subdivision survey very real and personal to Kahnawak-ehró:non, and by 1885 many openly opposed it. The survey, however, coincided with events that circumscribed Mohawks' ability to resist it. The Canadian public became openly hostile toward Amerindians as Saskatchewan Métis and their allies set up an independent provisional government in the spring of 1885. Ottawa crushed Indigenous forces and executed the leaders of the movement. Following this incident, there was little sympathy for



Indigenous causes in Canada, and Mohawks took this into consideration as they registered their complaints that summer. In July 1885, for example, some fifty Kahnawakehró:non sent the DIA a carefully worded petition expressing concern over the long duration and high cost of the subdivision survey and requesting an investigation into the matter. “It is with anxiety,” they wrote, “that we look for the completion of said survey: we are inexpert in the nature of the work, but assuredly one acting faithfully should have finished it by this time, comparing to the small size of the Seigniorship.”<sup>24</sup> When the department questioned Walbank, he dismissed those behind the petition as nothing but a few alcoholic agitators, a common way of discrediting those who opposed DIA plans. “The complaint does not come from the respectable part of the tribe,” he bristled, “but from some whom I have prosecuted for bringing intoxicants on the Reserve, and is composed of some fifty or sixty of the most troublesome men of the tribe, and who take no interest in any matters except opposing all progress.”<sup>25</sup>

With the work of the tribunal mostly complete in the fall of 1885, Walbank began the work of creating the new property grid. As long as the claims were in limbo he could not begin laying out lots, so he started by marking out new roads that would serve as the basis for the grid. He urged the DIA to quickly process the disputed claims, but decisions were not forthcoming until the following summer.<sup>26</sup> In the meantime, Walbank drew a map of the new subdivision and invited successful claimants to choose their new lots. He also invited owners of existing lots to review the valuations Walbank had given their land and improvements.<sup>27</sup> These notices, written in both Mohawk and

English, sparked another round of protests, this one mostly from large landowners.

After two clandestine meetings in early June 1886, a group of Kahnawakehró:non sent the DIA a petition protesting the low valuations and the high cost of the survey.<sup>28</sup> These were concerns of the privileged minority who often supported DIA initiatives, and perhaps this is why the department decided to crack down. On June 25, Walbank and Agent Brosseau called a general meeting to denounce the petitioners and to announce a ban on unauthorized public meetings. Some landowners hired arbitrators to attempt re-valuations,<sup>29</sup> but the DIA rejected such actions. Deputy Superintendent of Indian Affairs Lawrence Vankoughnet stated that “the valuation would be on the basis of values of such property in Caughnawaga, as between Indian and Indian and not as between White people,” and that there would be no exception to that rule.<sup>30</sup>

One might have expected poor and landless Mohawks to support a project in which they were set to receive thirty acres. There is, however, little evidence to suggest this was the case. While the overt opposition came mostly from large landowners, there were a number of small landowners who also protested the subdivision. A good example is Ohionkoton (Angus Jacob), who returned his notice with the defiant message in the Mohawk language: “Now you gentlemen: I answer. I like the way that I have. I do not sell my land.”<sup>31</sup> Ohionkoton had also failed to appear at the tribunal interviews of the previous year. Walbank listed him as the owner of a 1.03-acre lot of cultivated land worth \$13.<sup>32</sup> Landless and land-poor Kahnawakehró:non were aware that the new property arrangement included the criminalization of wood-cutting on others’ lots and

would deprive them of an essential, hitherto free, heating and cooking fuel.

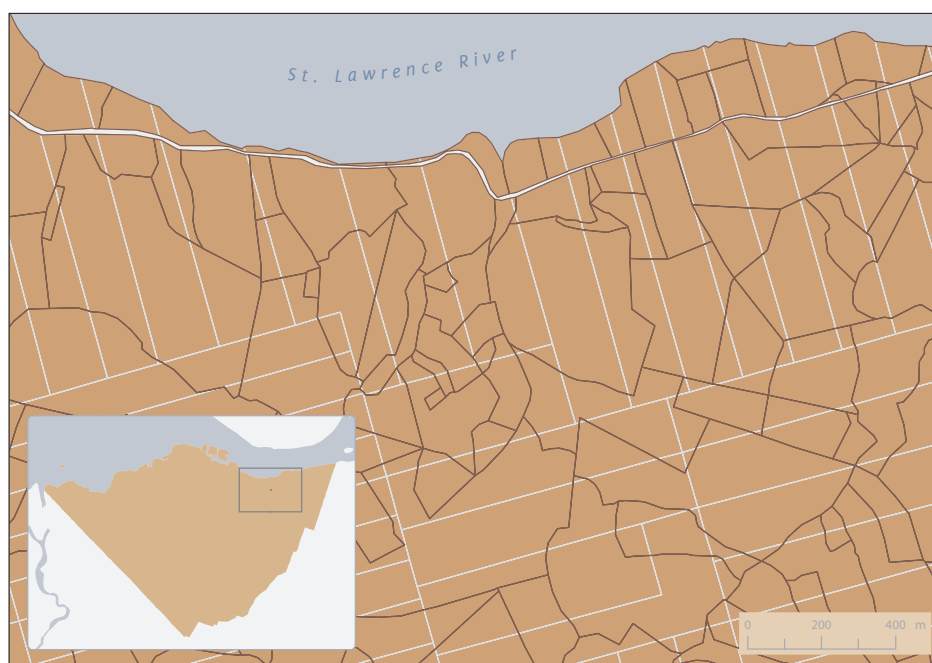
In the fall of 1886, Walbank began the actual subdivision of the land, aiming to make his map a reality. He planned to create 387 lots of about thirty acres each, most of which had already been assigned owners (Projected Lots in Fig. 7.5).<sup>33</sup> The most difficult part of the process would be to reassign land that was occupied and improved, so he started by subdividing the “Grand Park,” a 506-acre swampy area on the western side, known today as the “Big Fence.”<sup>34</sup> But how would land be transferred from old to new owners? Since the department was legally obligated to compensate owners for improvements, owners of the old lots had to be paid for lost buildings, cleared land, fences, and orchards before new lots could be taken up by new owners. The problem was that this would be very expensive, and, although Walbank’s valuations were much lower than they would have been off reserve, the total needed to compensate all landowners was still staggering. At a time when the DIA was facing serious questions about the \$15,000 already spent on the survey, Walbank asked the DIA for a \$50,000 temporary fund. Owners of new lots would be instantly indebted to the department for any improvements found on the new lot and would be asked to pay down this debt in instalments. If they could not make their payments, Walbank suggested the DIA reserve for itself the right to lease out that lot until the debt was paid.<sup>35</sup> The largest landowners would lose more improvements than they would gain and would thus end up with less land and more money. Without such a fund, Walbank wrote, he was at an impasse because people were not willing to abandon their current holdings without

compensation. The DIA told him that no such money would be made available but that he should continue surveying.<sup>36</sup>

Walbank was probably right in saying there was no other practical way to complete the process, and the department’s unwillingness to support him suggests that either officials failed to see his logic or they already saw the subdivision as doomed. With the prime minister facing questions on the cost and duration of the survey in the House of Commons in 1887-89, the survey was taking on the appearance of a political boondoggle.<sup>37</sup> In 1890, an opposition Member of Parliament asked the government why this incomplete survey cost \$1.80 per acre when the cost of the Dominion Lands Survey on the Prairies was 4 cents per acre.<sup>38</sup> In the face of this kind of questioning, it is not hard to understand why the DIA had to stop spending money on the survey, even though it was not complete.

Figure 7.3 visually represents the way almost every proposed new lot took in lands from more than one previously existing lot. One can only imagine the tragic comedy that would take place on the ground if such a redistribution were to take place. Existing roads and paths would cease to be useful, barns would be separated from fields, and the ecological, geographical, and cultural logics that had determined the original layout of the lots would become subservient to the bureaucratic logic of the rectangle and the grid. People would lose land, buildings, and improvements, and other people would gain those same things. The idea was to give everyone an equal portion of land, but the lots were not equal in quality. Aside from geographical differences, there were also great differences in how different lots had been used over the long occupation of the territory.

*Fig. 7.3. Detail of a part of the territory of Kabnarwá:ke, ca. 1885. Dark boundary lines represent existing lot lines drawn by Walbank. Rectangular light lines represent the projected lots. (Map by Louis-Jean Faucher.)*



It was inevitable that some would lose a great deal in the exchange while others would gain thirty acres for which they would be indebted. Walbank's scheme would transform the land-rich into money-rich (although landowners felt their improvements had been seriously undervalued), and would indebt the poor for land they did not request.

In a situation where legal forms of protest had been taken from them, Mohawks increasingly turned to other means. Walbank informed the DIA in September 1887 that one of his surveyors had been impeded by a number of Mohawks who had “offered obstruction to the running of the new lines of Lots [and] threatened personal violence,” as well as removing pickets and destroying marks.<sup>39</sup> Walbank specifically accused three men of these actions. The first, Thiretha (Peter Diome), was listed as owning four lots totalling 194 acres of all land use categories (cultivated, bush, hay,

pasture, sugarbush), valued at \$1,473. When Thiretha had earlier failed to appear at the tribunal, Walbank noted that “this man resides here upon his land which is very extensive; he refuses to attend here to make his statement.” The second man was Kataratiron (Joseph Jacob), born 1842, who was listed as owning an 80-acre lot, of which a significant portion was cultivated, valued at \$1,804.<sup>40</sup> The third man was a certain Doctor Jacobs, whose identity cannot be verified from the Walbank data. It is worth noting that two of these men were land-rich while the third was a medical doctor. For these men, the issue was apparently not access to firewood but the imminent loss of property without adequate compensation.<sup>41</sup>

In May 1887 Walbank staked out sixteen lots, lined up a new owner for each, and asked the DIA for money to compensate them for lots they would be giving up. The department refused to make money available.<sup>42</sup> In July,

Walbank tried again, this time proposing to transfer only one title. In this way, Walbank intended at least to set a precedent, but the department refused to grant the claimant a title before he had been compensated for lost lots.<sup>43</sup> In other words, the department would not pay to compensate owners, nor would it allow new owners to take up lots. This left Walbank with no way forward. He stopped working on the subdivision fieldwork in December of 1887 and said he was “extremely glad to be finished with it.” He went on to say “it is one of the most difficult and unsatisfactory surveys one could possibly have.”<sup>44</sup> He finished his paperwork in spring of 1888, filed a lengthy report with Prime Minister Macdonald, also the head of Indian Affairs, and soon distanced himself from the project.<sup>45</sup>

The redistribution never took place – not even for one person – and the standardized thirty-acre lots never became a reality. Nevertheless, Walbank’s map and data were used as the basis for most real estate transactions from then on. The lot lines were not rectangular but at least the DIA had something to work with. Technical problems were later found with Walbank’s work, but the department used it as if it had been perfectly executed. The DIA drained the Kahnawá:ke band account to pay Walbank the \$22,000 for the survey,<sup>46</sup> and when the account was empty, the DIA found money through a feat of creative accounting involving loans from Temiskaming and Sarnia Chipewa band accounts.<sup>47</sup>

The enclosure of the Mohawk commons, like the enclosures in the British Isles one hundred years earlier, had occurred in a piecemeal fashion. Throughout the nineteenth century, individual Mohawks claimed exclusive ownership to lots in ways that were at odds with

customary rules, but those who did this were in the minority and often poorly regarded. The Walbank Survey greatly accelerated this process. In the context of a customary land-ownership regime in which boundary lines were not fixed, Walbank’s lines represent a snapshot in time. Mohawks continued to dispute the legitimacy of Walbank’s lines for years and continued to use the land in ways they formerly had, but the lines were there to stay. Mohawk land ownership customs had prevailed as long as they did in part because outsiders simply did not have the cultural knowledge and data to understand and adjudicate conflicts. Walbank gave the DIA a powerful tool with which to take possession of the land and govern it according to its own rules.

## MAPPING THE WALBANK SURVEY WITH HGIS

In addition to giving the DIA a powerful tool for surveillance and control, Walbank also provided this historian with a rich data set with which to better my understanding of the history of Kahnawá:ke. When I started my doctoral research, I knew very little about GIS, but when I discovered the Walbank map at Library and Archives Canada, I sought ways to organize and interpret the information it contained. My friend, Louis-Jean Faucher, a geographer and a GIS instructor for ESRI, the leading producer of GIS software, offered to help. Together, we georeferenced the digital image of the map (Fig. 7.4) using government-produced topographic vector layers, historical maps, and

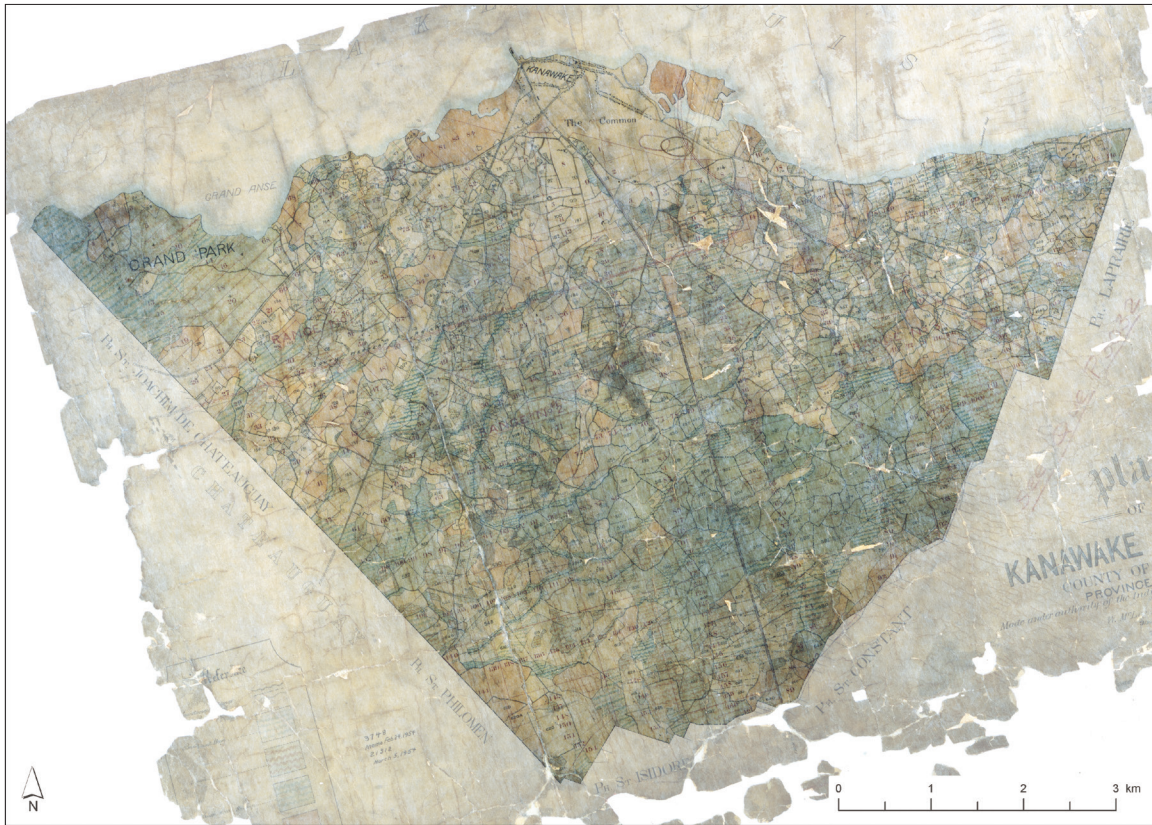


Fig. 7.4. Map of *Kahnawá:ke* produced by Walbank, 1885–89, after geo-referencing. (Source: *Plan of Kanawake reserve, county of Laprairie, Province of Quebec, made under authority of the Indian Act 1880 47 Vic. C ....by W. McLea Walbank, C.E., P.L.S., Montreal, Sep. 1885 and 29th Aug. 1889, Library and Archives Canada.*)

current satellite photographs. I spent a number of months entering the Walbank data into a spreadsheet and using ArcGIS to tease out the different elements of this extremely complex map. Faucher then used the plotted lines and spreadsheet data to create the maps that are included in this chapter.

The Walbank map is a composite of three main layers: existing lot boundaries, projected lot boundaries, and land-use categories. I plotted all existing lot boundaries as irregular polygons and attached the associated lot number to each (Existing Lots in Fig. 7.5). This was painstaking work as it was often difficult to

know the difference between a road, a land-use line, and a property boundary. In many cases, the only way to make these distinctions was to compare the map with reference book data and twentieth-century maps. The map created from this data shows a cadastre of irregularly shaped and sized lots. Plotting the boundaries of projected lots (rectangular polygons) was much less time-consuming and considerably less difficult. The resulting map is a striking contrast to the map of the original lots, and the two placed side-to-side give a clear picture of what was at stake (Fig. 7.5).



*Fig. 7.5. Maps of Kahnawá:ke showing existing and projected lots, ca. 1885. (Maps by Louis-Jean Faucher.)*

The map divides land-use into seven categories: 1) bush and hay; 2) bush; 3) bush and swamp; 4) cultivated; 5) pasture; 6) beaver hay; and 7) sugarbush. Unfortunately these seven categories differ from the five categories used

in the reference books (cultivated, pasture, hay, bush, sugarbush), making direct comparisons difficult. Land-use data is coded on the map with a combination of colours and patterns, but these are extremely difficult to discern because

Fig. 7.6. Map of Kahnawá:ke showing percentage of lots classified as sugarbush, ca. 1885. (Map by Louis-Jean Faucher.)

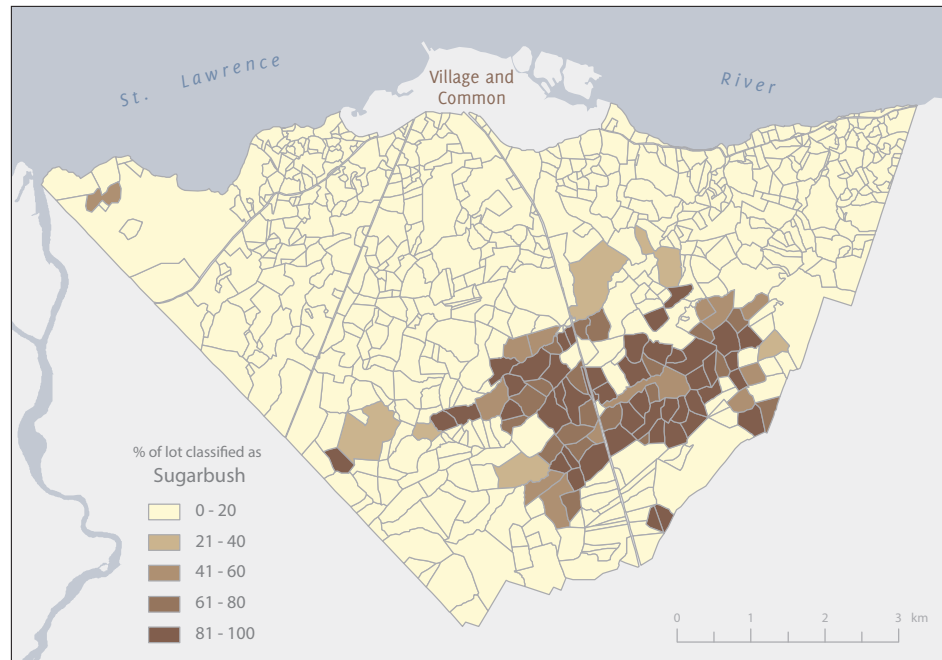
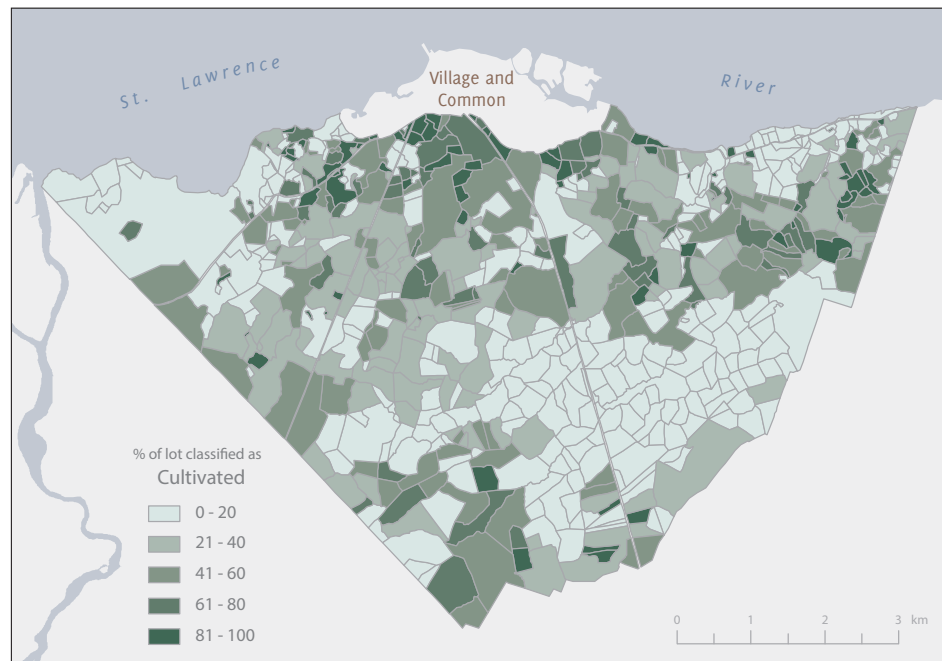


Fig. 7.7. Map of Kahnawá:ke showing percentage of lots classified as cultivated, ca. 1885. (Map by Louis-Jean Faucher.)



the colours have faded and the map is ripped and water-damaged. Reference book data was often useful for interpreting the map, but there are many inconsistencies and conflicts between the map and the reference books. These discrepancies may have resulted from the collection of data at different times and from the changing land uses from year to year. Given these problems I was able to visualize land uses only based on percentages for each lot, which reveals certain patterns over the entire territory. For example, Fig. 7.6 shows that sugarbushes were concentrated toward the southeast and Fig. 7.7 shows cultivated land clustered near the village, along the western border, and on the northeastern side of the reserve.

The completed project to date represents only a small part of what can be done to further develop a historical GIS for Kahnawá:ke. There is potential to incorporate much more, and many other types of information to the existing GIS, including historical photographs, stories, videos, and aerial photographs. Conscious of my place as a non-Native researcher telling the story of an Indigenous community, I have maintained regular contact with Mohawk scholars and other community members while conducting this research. Their comments have been essential in assisting me to interpret archival texts in ways that truthfully and respectfully reveal the actions of their ancestors. It remains to be decided exactly how this material should be made available to the community, but I believe it is important that current and future Mohawk cartographers and historians, professional and amateur, should have easy access to copies of digital images of historical maps I obtained from various archives, as well as the Walbank dataset and vector layers. With the memories of the Oka Crisis still fresh, and

with the knowledge of ongoing CSIS (Canadian Security Intelligence Agency) monitoring of Haudenosaunee communities, many Kahnawakehró:non would be uncomfortable with an outsider making detailed maps of the territory that could have military or police applications.<sup>48</sup> This historical mapping project, however, has not to my knowledge been perceived as controversial in Kahnawá:ke.

## HGIS AND THE HISTORY OF INDIGENOUS LAND PRACTICES

Flawed though it is, the Walbank data is a unique source in that it provides a highly detailed cartographic snapshot of the nineteenth-century land practices of an Indigenous community, one that is unparalleled in Canada. In the big picture, however, the emergence of GIS technology has raised a number of questions about its usefulness for Indigenous peoples. There are potential pitfalls in representing historical Mohawk land practices using the texts of a non-Mohawk surveyor who was decidedly ignorant of, and antipathetic toward, Mohawk ways. Surveyor texts are widely recognized to be some of the most effective tools of colonization.<sup>49</sup> Historian Raymond Craib identifies surveyors as one of the important “faces” of the state for people who had previously kept the state at arm’s length:

Surveyors were neither passive extensions of objective instruments nor an homogeneous and transparent group of lackeys in the service of the state or



landlords.... They often appeared in rural areas as intermediaries between an abstract state (and its policies) and local populations who were affected by those policies. People experience “the state” as they experience “the market” or “capitalism,” not as a broad abstraction but as a series of manifestations with a very human face: judges, notary publics, police squads, tax collectors. And surveyors.<sup>50</sup>

Laws concerning land may have existed, but it took a surveyor to make the law reality. In the case of Kahnawá:ke, Walbank’s job was to make the DIA vision a reality, at the expense of Mohawk visions. A number of scholars have also pointed out the problems inherent in using western cartographical tools to represent Indigenous territory. Robert Rundstrom, an early critic of GIS, protests that “from an Indigenous point of view, history is suffused with domination and disenfranchisement at the hands – and maps – of the inscribers.”<sup>51</sup> “Inscribing cultures” are ones that place great emphasis and value on the objects they produce – objects such as maps – and de-emphasize the process of making those objects. Indigenous peoples, to whom Rundstrom refers as “incorporating cultures,” have tended to emphasize oral communication and performance-based ways of expressing territoriality instead of valuing the object of the map.<sup>52</sup> Rundstrom argues that for non-Indigenous societies, “storage is crucial, and leads to stasis and fixity,” whereas Indigenous peoples have valued nuance, ambiguity, and flexibility. Writes Rundstrom, “the history of cartography is replete with examples of people from inscribing cultures appropriating geographical information from those of

incorporating cultures, and ultimately using it to disenfranchise, if not completely obliterate them.” For Rundstrom, GIS is part of the same process of “Western technoscience” that is disenfranchising Indigenous peoples.<sup>53</sup> It would seem to follow that incorporating state-produced survey data into an HGIS could contribute to the hegemony of the status quo, to the detriment of Indigenous peoples.

It is important to note, however, that Rundstrom is writing about GIS used by government agencies to represent Indigenous lands in the present, not in the past. In fact, it appears that historians have been largely absent from this debate, which has raged for two decades. One scholar who has made a strong case for the use of GIS by historically disenfranchised communities is environmental sociologist Nancy Peluso. She argues that local people and activists in Indonesia have been able to use GIS technology to successfully press their land and resource claims. The goal of these efforts, she writes, is for local people to appropriate technologies previously used to consolidate state power and to use them for their own benefit. By creating their own maps, these people have been able to undermine the authority of government-produced maps. Indigenous “counter-maps” she argues, “greatly increase the power of people living in a mapped area to control representations of themselves and their claims to resources. Counter-maps thus have the potential for challenging the omissions of human settlements from forest maps, for contesting the homogenization of space on political, zoning, or property maps, for altering the categories of land and forest management, and for expressing social relationships in space rather than depicting abstract space in itself.”<sup>54</sup> Thus, the problem for Indigenous peoples is not

necessarily the technology of mapping itself but who controls the technology and in whose interests. When GIS is used in the interests of, and in consultation with, Indigenous peoples, it can serve to counter colonialist and statist narratives.

Many Indigenous peoples in Canada and elsewhere are already using GIS and mapping as tools of empowerment.<sup>55</sup> They are using cartography to press their claims, imagine their own spaces, and manage their territories. Indigenous communities across Canada have employed land-use and occupancy mapping to assert their territorial and resource rights since at least the 1970s,<sup>56</sup> and have made use of GIS software for these and other reasons since the software became available.<sup>57</sup> Some Inuit communities, for example, now use GIS to ensure that the traditional ecological knowledge of their elders is available to younger hunters who are increasingly dependent on the Global Positioning System (GPS) for navigation.<sup>58</sup> It is now common practice for Indigenous communities to create their own maps or to have maps made according to their own needs. Terry Tobias, an expert on Indigenous use and occupancy mapping, emphasizes that Indigenous communities do not have the luxury of choosing *not* to engage with the Western cartographical tradition in this way. He argues that, if presented in a way that non-Indigenous people can understand it, “land use and occupancy information warrants respect, even a level of reverence.” Tobias sees Western science as a potentially “powerful tool in the hands of First Nation governments.”<sup>59</sup> Although creating a GIS requires a certain expertise, the technology can be seen as a step toward the democratization of mapmaking. Peluso makes the comparison between GIS software and the printing press. As

the latter technological breakthrough brought the possibility of writing for publication to a large number of people, so also maps are no longer being made only by state bureaucracies and corporations.<sup>60</sup>

Another way to counter the colonialist effect of state-produced historical maps is to place them in context. Creating historical maps of Kahnawá:ke land practices using Walbank data and situating these maps in the context of Mohawk narratives of land and territory is a step in turning the Walbank Survey against itself. Walbank translated Mohawk land practices into data and maps, into the cartographical language he understood. In plotting and entering his data into a GIS, the purpose is not to simply make his work more accessible and malleable but to make his work understood in the context of Canadian and Mohawk history. Taken alone, the Walbank data entered into a GIS would only serve to further the purposes of Walbank and the DIA. Reinterpreted and placed in historical and cultural context, however, it can take on new meanings. In discussing the difference between data (information) and data placed in context (knowledge), Robin Boast et al. argue that we must “avoid information systems becoming knowledge deserts.”<sup>61</sup> In the sense that maps cannot be neutral (i.e., in that they are inherently ideological), they are no different than other kinds of text. Just as historians must place archival documents in context in order to paint a richer and truer picture of the past, the same must also be done with maps and related data.<sup>62</sup>

Boast et al. warn against the potential maps have for “freezing” the dynamic social processes of customary law. The Walbank map is a case in point. Creating maps of Indigenous territories, in much the same way as codifying customary

law or writing down oral traditions, can take away the flexibility inherent in traditional practices and distort their nature. Boast et al. argue, however, that people's actions are often completely at odds with the dictates of maps and that maps need to be constantly updated to take these actions into account.<sup>63</sup> Rundstrom's argument that "GIS technology, when applied cross-culturally, is essentially a tool for epistemological assimilation, and as such, is the newest link in a long chain of attempts by Western societies to subsume or destroy Indigenous cultures" is, in my reading, overstated.<sup>64</sup> While I agree that GIS has potential for harm, Rundstrom fails to recognize its great potential for good. As a point of comparison, the proliferation of reading and writing among Indigenous peoples greatly changed their lives, but few would today advocate for illiteracy as a way forward. A GIS is unlike a map in a way that Rundstrom does not acknowledge. While a map is printed on paper, a GIS can constantly evolve: new data can be added, and the process need never end. Information can also be intentionally left out of a GIS if silences and blank spaces are preferable. I believe that the great strength of HGIS for Indigenous history is its flexibility in this regard. Many projects across a number of disciplines have recognized the potential of GIS for visually representing Indigenous categories, stories, and place-names.<sup>65</sup> Historians have thus far not played an important role in these efforts, but there is no reason why these spatial representations of Indigenous spaces cannot be expanded to include historical information as well.

One final problem scholars have raised in conjunction with mapping Indigenous lands concerns the incompatibility of geographical categories. Categories used by nation states are

often at odds with categories employed by local people. Peluso gives the example of Indonesian forestry maps, which represent six forest land-use categories based on climate, topography, and soil. In deciding on these categories, government cartographers did not consider local peoples' land uses nor the composition of existing plant species. They characterized shifting cultivation as a "non-permanent" land-use, whereas local people did not see their actions in those terms.<sup>66</sup> Of course, differences in geographical categories are also related to a host of other factors, including language and environment. Geographer Nadine Schuurman illustrates this point by describing the problems inherent in creating a standardized vegetation classification system for the European Union.<sup>67</sup> Rundstrom suggests, however, that Indigenous categories may be so different from those of the dominant society that representing them on maps may be impossible. Indigenous people "often exhibit a trust in, or, if motivated, a *quest* for ambiguity in the meaning of naturally occurring features." Rundstrom argues that the complexity and difference of Indigenous geographical knowledge, tied as it is to kinship, spirituality, and experience, makes GIS mapping of such knowledge a practical impossibility.<sup>68</sup> Many Indigenous people understand the world in terms of ubiquitous relations between humans and nonhuman beings (for example, hunters' conceptions of prey as kin), and Rundstrom contends that GIS cannot but treat plants, animals, and land-forms as "manipulable objects under varying degrees of human control." "At present," Rundstrom wrote in 1996, "GIS does not capture relatedness, but constructs it."<sup>69</sup>

It is widely acknowledged, however, is that maps also fall short in portraying the

complexity, spirituality, and experientiality of people who belong to the dominant society. Maps do not and cannot show everything. They are by definition a simplified representation of reality. But, contrary to the relatively static maps of the past, GIS technology allows for the incorporation of more and more information of all kinds, virtually without limit. With each additional layer of text, narrative, and data, more opportunities present themselves for more accurate and creative portrayals of reality. Another response to Rundstrom is that both GIS software and GIS practitioners are becoming more sophisticated in their ability to deal with the challenges of representing different ways of perceiving the world. Technical progress has been made in GIS computing methods to allow for the inclusion of context-related categories and ontologies, geographical concepts that are relative to places and societies.<sup>70</sup> “It is increasingly accepted,” wrote Duerden and Kuhn in 1996, “that the integrative abilities of GIS can effectively replicate the eclectic way in which First Nations describe their world.”<sup>71</sup> Boast et al. agree that GIS tools are now flexible enough to allow for “the cultural diversity of knowledge resources” while still “incorporating sufficient systematic information to enable effective retrieval.”<sup>72</sup> None of this is intended to minimize the challenges inherent in cartographically representing Indigenous land practices, but I believe that GIS technology gives scholars and Indigenous communities a way to start doing so. I am excited to see the many ways historians will narrate environmental histories of Indigenous peoples using this powerful tool, and the fruitful inter-disciplinary and inter-community relationships that will result.

## CONCLUSION

Despite all the potential of HGIS, it also has its limits. A case in point is the 1895 dispute I described in my introduction wherein three men all claimed to have been owners of a particular hill, labelled Lot 205 on Walbank’s map. The relationship between each of these men and the land in question cannot be accurately mapped. The only data available are from the proceedings of the 1895 inquiry and the Walbank Survey. Walbank categorized three quarters of the 9.49-acre lot as haying land and the rest as bush. He valued the lot at \$73.<sup>73</sup> According to Walbank, the owner was Saionesakeren (Peter Montour) who died soon after the survey, and whose apparent successor was Jacques Lachandière.<sup>74</sup> But two other men came forward to claim the compensation money, and the department considered their claims legitimate enough to conduct a hearing and to call witnesses. It emerged from the testimonies that each man used the hill, or part of it, in different ways and at different times. Neither claimants nor witnesses were sure about the location of Walbank’s lot boundaries, but they did remember what they had done in that general area. The hill had been used for cutting hay, gathering wood, and planting different crops. One witness, fifty-six-year-old Satekarenhas (Matthias Hill), who had planted peas on the hill a number of times, was asked about the boundaries of the lot. He responded, “I do not know the boundaries of this land, but I know the land which I worked.”<sup>75</sup> Satekarenhas knew the land intimately, but Walbank’s lot boundaries meant nothing to him.

*Fig. 7.8. Lot 205 in summer of 2011. Once a fertile hill, it was turned into a borrow pit, and later filled in. Today it is a maintenance area for the Kanawaki Golf Course. (Photo by Daniel Rueck.)*



In his report to the DIA, Indian Agent Alexander Brousseau claimed that no ownership dispute existed for the lot previous to the CPR expropriation. He wrote, “qu’il n’y a en aucunes disputes pour ce terrain avant que la compagnie du C.P.R. ait en l’intention de prendre du terrain à cet endroit, que les propriétaires inconnus jusqu’alors ont commencés a faire leurs réclama-tions.” This statement paints a remarkably peaceful picture of pre-Walbank land practices that contradicts the official rhetoric from the early 1880s asserting that a subdivision survey was necessary to resolve land conflicts. Brousseau also reported that none of the three claimants worked the entire lot simultaneously but that they all used it in a number of ways at different times.<sup>76</sup> In the end, the DIA was forced to conclude that the witnesses on all sides were credible and split the compensation money three ways. In a subsequent internal memo, the

Secretary of Indian Affairs admitted that the Walbank data had not been accurate for this lot, but the department dared not deviate from it because “otherwise the expense involved in Mr. Wallbank’s [*sic*] survey ... would be of little value.”<sup>77</sup> This incident brings to light, not only a shortcoming in Walbank’s data, but also the limits of GIS for mapping Mohawk land practices. We know that a number of people used this lot in different ways, but the archives do not contain the kind of information needed to construct a GIS for this lot. Although Walbank got a few things wrong, his data do give us an idea of what he saw at a particular moment in time. While his rectangular grid never materialized, the existing lots he mapped eventually became a cadastral reality, on the ground as well as in people’s minds. This is testament to the power of land surveys and maps to transform landscapes and mindscapes. It remains to

be seen how effective HGIS will be as a tool of decolonization, but I am optimistic as to its potential. Mr. Walbank would have been surprised to learn that one day his survey would be employed to explain and illustrate the Indigenous practices he was seeking to stamp out.

## NOTES

- 1 Daniel Rueck, “When Bridges Become Barriers: Montreal and Kahnawake Mohawk Territory,” in *Metropolitan Natures: Urban Environmental Histories of Montreal*, ed. Stéphane Castonguay and Michèle Dagenais, pp. 228–44 (Pittsburgh: University of Pittsburgh Press, 2011).
- 2 See Stephanie Phillips, “The Kahnawake Mohawks and the St. Lawrence Seaway” (Master’s thesis, McGill University, 2000); *Kahnawà:ke Revisited: The St. Lawrence Seaway* (film), dir. Kakwiranó:ron Cook (Kakari:io Pictures, 2009), <http://www.kahnawake.com/community/revisited.asp>.
- 3 This was (and still is) a trope commonly applied to indigenous people. For examples, see James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, CT: Yale University Press, 1998), 273. For more on the trope of the indolent Indian, see John S. Lutz, *Makúk: A New History of Aboriginal–White Relations* (Vancouver: UBC Press, 2008), 147. For a study of how the DIA made farming on the Prairies next to impossible for indigenous people, see Sarah Carter, *Lost Harvests: Prairie Indian Reserve Farmers and Government Policy* (Montreal: McGill–Queen’s University Press, 1990). Peasants and small-scale farmers have often faced the same kind of criticism. For examples, see J. M. Neeson, *Commoners: Common Right, Enclosure and Social Change in England, 1700–1820* (Cambridge: Cambridge University Press, 1993).
- 4 For more on modern states’ need to “see” land, see Craib’s excellent study on the role of surveying and cartography in Mexican nation-building: Raymond B. Craib, *Cartographic Mexico: A History of State Fixations and Fugitive Landscapes* (Durham, NC: Duke University Press, 2004), 91.
- 5 I have distilled these principles from the Twenty-One Laws passed by Kahnawà:ke chiefs in 1801. These principles were reiterated repeatedly by members of all factions throughout the nineteenth century. “Règlements établis par les chefs du Sault Saint-Louis,” Feb. 26, 1801, RG10, vol. 10, p. 9446–9454, reel C-11000, LAC. It should also be noted that beginning around 1800, there existed a small number of Mohawks who disagreed with these principles or tried to re-interpret them to their advantage.
- 6 For more on Mohawk land practices, see Joseph François Lafitau, *Moeurs des sauvages américains comparées aux mœurs des premiers temps*, 4 vols. (Paris: Chez Saugrain l’aîné et al., 1724); Harmen Meyndertsz van den Bogaert, *A Journey into Mohawk and Oneida Country, 1634–1635: The Journal of Marmen Meyndertsz van den Bogaert*, ed. Charles T. Gehring and William A. Starna, trans. Charles T. Gehring and William A. Starna (Syracuse, NY: Syracuse University Press, 1988); Lewis H. Morgan, *League of the Ho-de’-no-sau-nee or Iroquois* (North Dighton, MA: JG Press, 1995 [1851]), 306–17; Matthew Dennis, *Cultivating a Landscape of Peace: Iroquois–European Encounters in Seventeenth-Century America* (Ithaca, NY: Cornell University Press, 1993).
- 7 Chiefs Jarvis A. Dione, Jos. K. Delisle, Jos. T. Skey, and Thos. Asennase to E. H. Meredith, May 14, 1875, RG10, vol. 1917, file 2764, LAC.
- 8 “Walbank, Matthew William,” *Encyclopedia of Newfoundland and Labrador*, vol. 5, p. 496; “William McLea Walbank” Canadian Architecture Collection, McGill University, accession 20, <http://cac.mcgill.ca>, accessed Feb 16, 2011; “William McLea Walbank,” CA601, S139, ANQ, <http://pistard.banq.qc.ca>, accessed Feb 16, 2011; Larry

- S. McNally, "Pringle, Thomas," Dictionary of Canadian Biography Online, www.biographi.ca, accessed Feb 16, 2011.
- 9 The history the boundary itself is a fascinating and contentious issue, but it is not the subject of this chapter.
  - 10 Correspondence between Walbank and the Department of Indian Affairs, 1880–1881, RG10, vol. 2109, file 20,131, LAC.
  - 11 J. V. de Boucherville was clerk in charge of land sales. De Boucherville to Dept of Indian Affairs, March 11, 1882, RG10, vol. 7749, file 27005–1, LAC.
  - 12 Robert M. Cover, "Violence and the Word," *Yale Law Journal* 95, no. 8 (1986): 1607. Nicholas Blomley, "Law, Property, and the Geography of Violence: The Frontier, the Survey, and the Grid," *Annals of the Association of American Geographers* 93, no. 1 (2003): 130.
  - 13 n.a., "At Caughnawaga, P. Q.," *Catholic World* 37, no. 221 (1883): 612–13.
  - 14 Joseph Williams to De Boucherville, February 28, 1882, RG10, vol. 7749, file 27005–1, LAC.
  - 15 Caughnawaga Reference Books, 1885, RG10-B-8-aj, vols. 8968–8972, LAC. Skatsenhati (claimant 407) was born 1846, died 15 May 1885, married Anen Katsitsarokwas in 1869, and owned four lots totaling 103.65 acres: 27.83 acres cultivated (\$529), 14.5 acres hay (\$149), 51.54 bush (\$159), 10.32 sugarbush (\$290). Total value assessed: \$1,127.
  - 16 Walbank to Vankoughnet, Sept. 27, 1882, RG10, vol. 7749, file 27005–1, LAC.
  - 17 W. A. Austin Report, Feb 25, 1887, vol. 7749, file 27005–1, LAC.
  - 18 Vankoughnet to Walbank, July 28, 1884, RG10, vol. 7749, file 27005–1, LAC.
  - 19 Caughnawaga Reference Books, 1885, RG10-B-8-aj, vols. 8968–8972, LAC.
  - 20 Walbank to Vankoughnet, Feb 28, 1885, RG10, vol. 7749, file 27005–1, LAC.
  - 21 Gerald Reid, *Kabnarwà:ke: Factionalism, Traditionalism, and Nationalism in a Mohawk Community* (Lincoln: University of Nebraska Press, 2004), 40–45.
  - 22 W. A. Austin report to Deputy Minister of Indian Affairs, Feb. 25, 1887, RG10, vol. 7749, file 27005–1, LAC.
  - 23 See the 2008 NFB film "Club Native" directed by Tracey Deer, and numerous newspaper reports on attempts to evict non-Natives in January and February 2010.
  - 24 Petition from about fifty Kahnawakehrónon (in general council) to Vankoughnet, July 7, 1885, RG10, vol. 7749, file 27005–1, LAC.
  - 25 Walbank to Vankoughnet, July 27, 1885, RG10, vol. 7749, file 27005–1, LAC.
  - 26 Walbank to Vankoughnet, Oct. 19, 1885, RG10, vol. 7749, file 27005–1, LAC.
  - 27 LAC, RG10, vol. 2181, file 36,622-3A.
  - 28 Petition from several Kahnawakehrónon to Vankoughnet, June 15, 1886, RG10, vol. 7749, file 27005–1, LAC.
  - 29 Walbank to Vankoughnet, [July 26], 1886, RG10, vol. 7749, file 27005–1, LAC.
  - 30 Vankoughnet to Walbank, July 30, 1886, RG10, vol. 7749, file 27005–1, LAC.
  - 31 Caughnawaga Reference Books, 1885, RG10-B-8-aj, vols. 8968–8972, LAC. Translated by a contemporary interpreter, probably Owakenhen (Peter Stacey).
  - 32 Caughnawaga Reference Books, 1885, RG10-B-8-aj, vols. 8968–8972, LAC. Ohionkoton (claimant 582) owned 1.03 acres of cultivated land, valued at \$13.
  - 33 Not included in the area of these lots were 550 acres for the village and common (a community managed pasture), 30 acres for quarrying, and 60 acres for roads.
  - 34 Walbank to Vankoughnet, Sept. 10, 1886, RG10, vol. 7749, file 27005–1, LAC.
  - 35 Walbank to Vankoughnet, Mar. 29 and May 18, 1887, RG10, vol. 7749, file 27005–1, LAC.
  - 36 Vankoughnet to Walbank, May 21, 1887, RG10, vol. 7749, file 27005–1, LAC.
  - 37 Canada, House of Commons, *Debates*, June 15, 1887; March 28, 1888; May 21, 1888; March 7 & 8, 1889.

- 38 Canada, House of Commons, *Debates*, Mar. 18, 1890, p. 2158.
- 39 Walbank to Vankoughnet, Sept. 13, 1887, RG10, vol. 7749, file 27005-1, LAC.
- 40 Caughnawaga Reference Books, 1885, RG10-B-8-aj, vols. 8968-8972, LAC.
- 41 Walbank to Vankoughnet, Sept. 13, 1887, RG10, vol. 7749, file 27005-1, LAC.
- 42 Walbank to Vankoughnet, May 18, 1887; Vankoughnet to Walbank, May 21, 1887, RG10, vol. 7749, file 27005-1, LAC.
- 43 Walbank to DIA, July 4, 1887; R. Sinclair to Walbank, July 13, 1887, RG10, vol. 7749, file 27005-1, LAC.
- 44 Vankoughnet to Walbank, Dec 31, 1887; Walbank to Vankoughnet, Jan 2, 1888, RG10, vol. 7749, file 27005-1, LAC.
- 45 Walbank report to John A. Macdonald, June 14, 1888, RG10, vol. 7749, file 27005-1, LAC.
- 46 Internal memo, Feb 5, 1890, RG10, vol. 7749, file 27005-1, LAC.
- 47 R. Sinclair memo to Deputy Minister, Jan 30, 1891, RG10, vol. 7749, file 27005-1, LAC.
- 48 For more on the Oka Crisis, see Geoffrey York, *People of the Pines: The Warriors and the Legacy of Oka* (Toronto: Little, Brown, 1991); Brenda Katlatont Gabriel-Doxtater and Arlette Kawanatatie Van den Hende, *At the Woods' Edge: An Anthology of the History of the People of Kanehsatà:ke* (Kanesatake, QC: Kanesatake Education Center, 1995).
- 49 Giselle Byrnes, *Boundary Markers: Land Surveying and the Colonisation of New Zealand* (Wellington, NZ: Bridget Williams Books, 2001), 10.
- 50 Craib, *Cartographic Mexico*, 10.
- 51 Robert A. Rundstrom, "Mapping, Postmodernism, Indigenous People and the Changing Direction of North American Cartography," *Cartographica* 28, no. 2 (1991): 4.
- 52 For more on inscribing and incorporating cultural practices, see Paul Connerton, *How Societies Remember* (Cambridge: Cambridge University Press, 1989).
- 53 Robert A. Rundstrom, "GIS, Indigenous Peoples, and Epistemological Diversity," *Cartography and Geographic Information Systems* 22, no. 1 (1995): 50-51.
- 54 Nancy Lee Peluso, "Whose Woods Are These? Counter-Mapping Forest Territories in Kalimantan, Indonesia," *Antipode* 27, no. 4 (1995): 386-87.
- 55 For examples, see: Rundstrom, "Mapping, Postmodernism, Indigenous People and the Changing Direction of North American Cartography": 8; Frank Duerden and Richard G. Kuhn, "The Application of Geographic Information Systems by First Nations and Government in Northern Canada," *Cartographica* 33, no. 2 (1996): 49-62; Kenneth G. Brealey, "First (National) Space: (Ab)original (Re)mappings of British Columbia" (PhD thesis, University of British Columbia, 2002).
- 56 For an excellent early example see, Hugh Brody, *Maps and Dreams: Indians and the British Columbia Frontier* (Vancouver: Douglas & McIntyre, 1981).
- 57 Duerden and Kuhn, "Application of Geographic Information Systems.
- 58 Claudio Aporta and Eric Higgs, "Satellite Culture: Global Positioning Systems, Inuit Wayfinding, and the Need for a New Account of Technology," *Current Anthropology* 46, no. 5 (2005): 729-53.
- 59 Terry N. Tobias, *Chief Kerry's Moose: A Guidebook to Land Use and Occupancy Mapping, Research Design and Data Collection* (Vancouver: Union of BC Indian Chiefs and Ecotrust Canada, 2000), 20-22.
- 60 Peluso, "Whose Woods Are These?" 387.
- 61 Robin Boast, Michael Bravo, and Ramesh Srinivasan, "Return to Babel: Emergent Diversity, Digital Resources, and Local Knowledge," *The Information Society* 23 (2007): 400-401.
- 62 Nadine Schuurman, "Formalization Matters: Critical GIS and Ontology Research," *Annals of the Association of American Geographers* 96, no. 4 (2006): 731.
- 63 Boast et al., "Return to Babel": 400-401.
- 64 Rundstrom, "GIS, Indigenous Peoples, and Epistemological Diversity": 45.
- 65 For an example, see Christopher Wellen, "Ontologies of Cree Hydrography: Formalization and Realization" (Master's thesis, McGill University, 2008).



- 66 Peluso, "Whose Woods Are These?": 389–90.
- 67 Schuurman, "Formalization Matters," 734.
- 68 Rundstrom, "GIS, Indigenous Peoples, and Epistemological Diversity": 50–51.
- 69 Ibid., 46–47.
- 70 See Pragya Agarwal, "Operationalising 'Sense of Place' as a Cognitive Operator for Semantics in Place-Based Ontologies," in *COSIT 2005, LNCS 3693*, ed. A. G. Cohn and D. M. Mark (2005); Nadine Schuurman, "Formalization Matters," 726–39.
- 71 Duerden and Kuhn, "Application of Geographic Information Systems": 49–62.
- 72 Boast et al., "Return to Babel" 397.
- 73 Caughnawaga Reference Books, 1885, RG10-B-8-aj, vols. 8968–8972, LAC.
- 74 Probably Tanekorens (James Lachiere) in the Walbank Survey.
- 75 Matthias Hill sworn statement, Feb. 15, 1895, RG10, vol. 2774, file 155,133, LAC.
- 76 Alexander Brosseau letter to DIA, Nov. 3, 1894, RG10, vol. 2774, file 155,133, LAC.
- 77 J. D. McLean memo to Deputy Minister, Apr. 9, 1895, RG10, vol. 2774, file 155,133, LAC.